

Sustainable Living



**Simple things
are sustainable
sustainable things
are simple**

BUILD TECH

skyyi®

Design Objective

- . Achieve a low carbon footprint
- . Ensure optimum LUX (Light) and ACH (Air) inside the homes
- . Reduce usage of water, recycle water and recharge ground water levels
- . Heat reduction in the homes

The Process

- . Use of MET data for the last 80 years to study the annual temperatures, sun path and wind path, wind speeds and directions, rainfall etc.
- . Test the building design on a CAD simulator for light, heat, shadow, air ventilation, indoor temperature etc.
- . Suggest design changes
- . Window size for brighter homes
- . Boxing for shading and cooling
- . Use low flow fittings to reduce water usage, install state of the art water recycling plants for recycling and reusing the water. Make pits for rain water harvesting.

SUN



WIND



WATER



Methodology

Study of MET data for the last 80 years

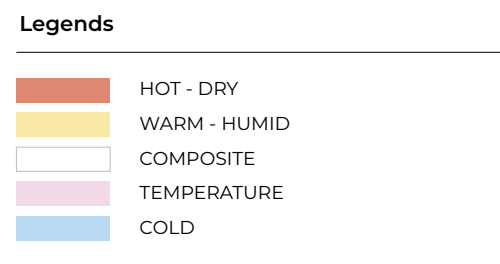
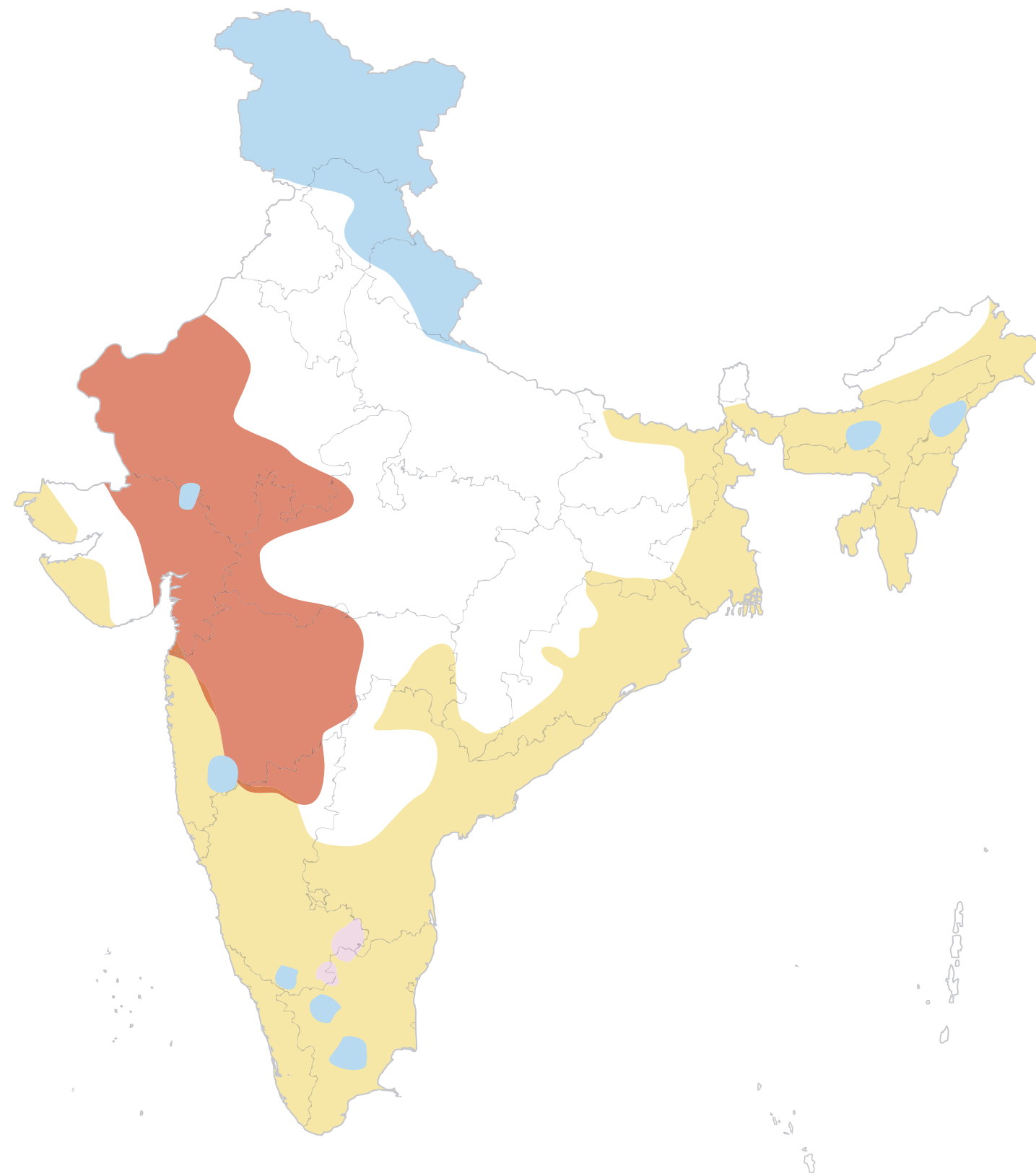
- . Annual temperatures
- . Sun path
- . Wind path
- . Wind speeds & directions
- . Rainfall etc.

CAD simulation of the building design

- . Light
- . Heat
- . Shadow
- . Air ventilation
- . Indoor temperatures etc.

Implement findings

Climate zone mapping of India



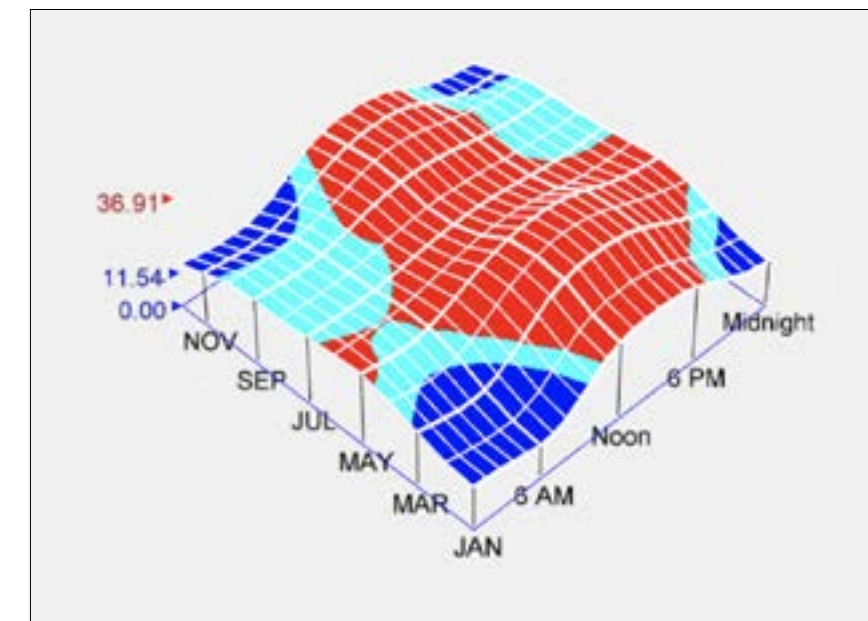
SOURCE: NATIONAL BUILDING CODE 2005, PART B

Climate analysis of Pune

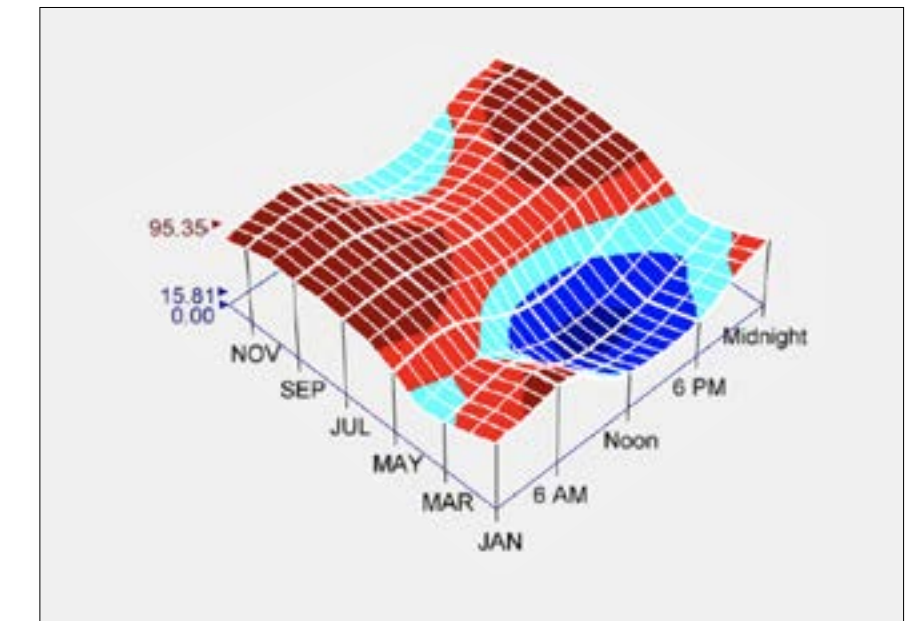
Dry bulb temperature
Average temperatures range from 28° C to 38° C

Relative humidity
Ranges from 60% to 90% making ventilation key for thermal comfort

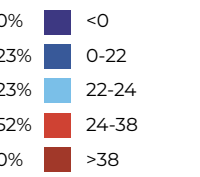
Dry bulb temperature



Relative humidity



Legends



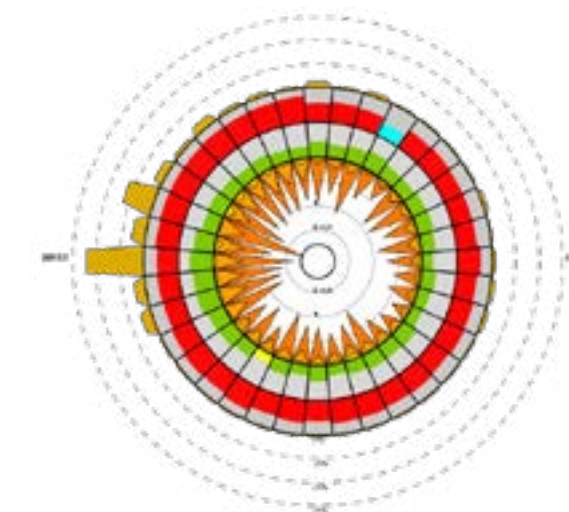
Dry Bulb Temp (Degrees C)

LOCATION: PUNE, MAHARASHTRA, IND
 LATITUDE/LONGITUDE: 18.53° NORTH, 73.85° EAST, TIME ZONE FROM GREENWICH +5:30 GMT
 DATA SOURCE: ISHRAE 430630 WMO STATION NUMBER, ELEVATION 559M

Prevalant wind direction is west

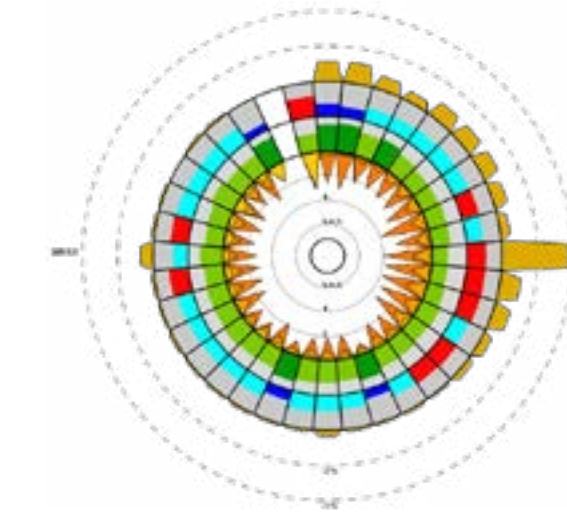
Wind speed in Summer

3m/s to 5m/s



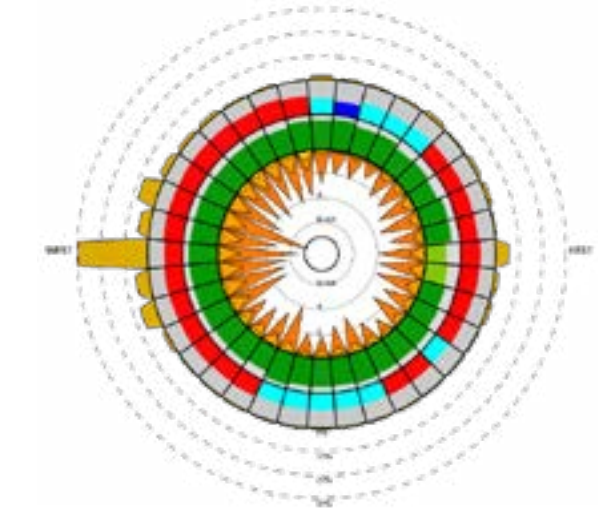
Wind speed in Monsoon

4m/s to 7m/s



Wind speed in Winter

2m/s to 4m/s



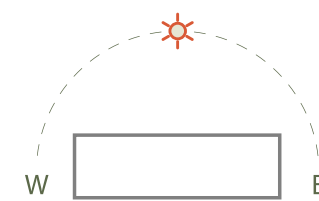
SUN



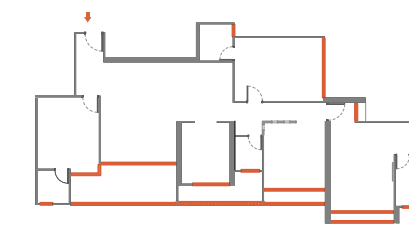
max light™

by SKYi®

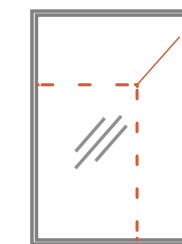
a proprietary technique of SKYi.
max light by SKYi is a registered
trade mark.



**Sun Path
Aligned Homes**



**Less Heat,
More Natural Light**



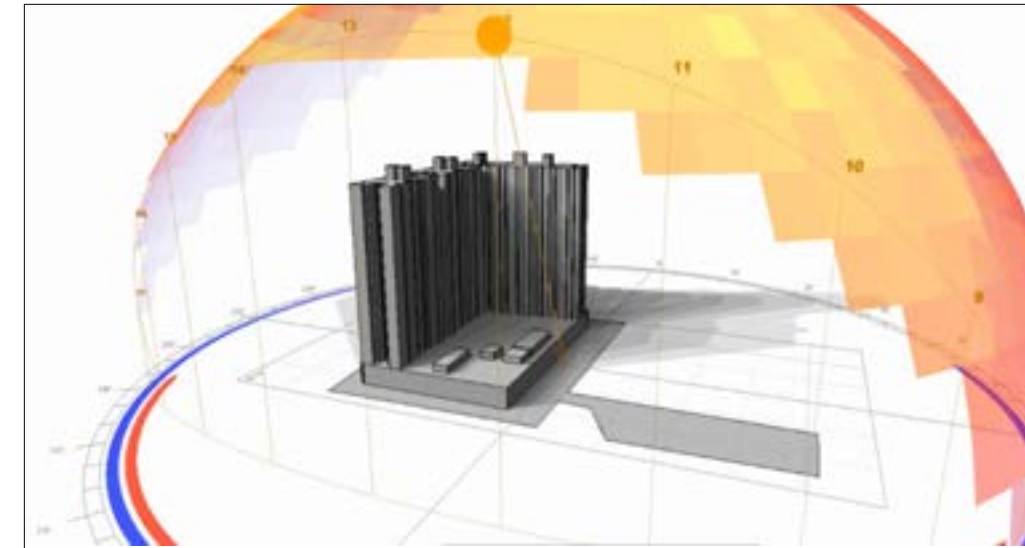
**Larger Shaded
Windows & Balconies**

Sun path analysis

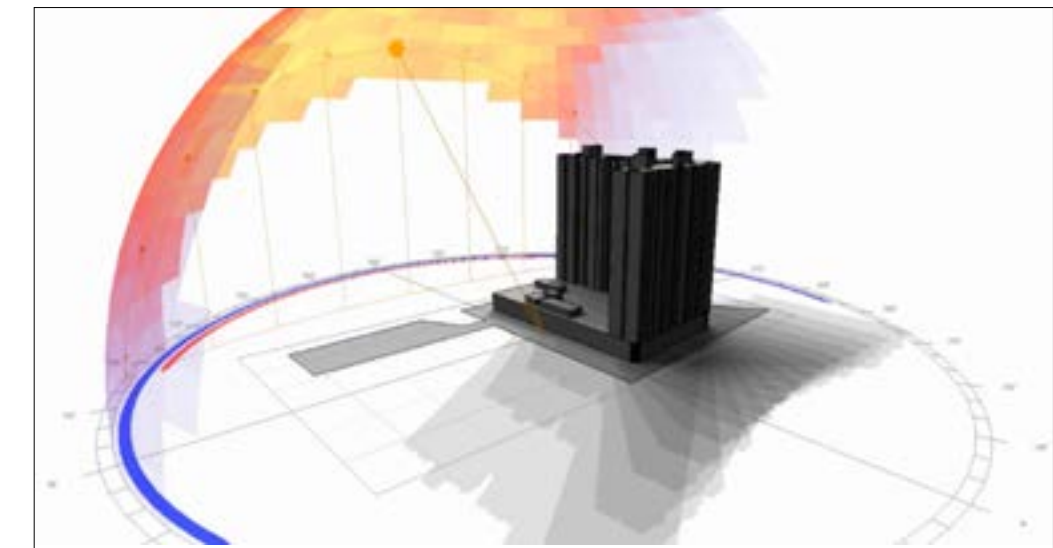
Homes at Skyi are designed to offer maximum sunlight and minimise the use of artificial light

Shadow analysis

The building is designed to ensure that the fenestrations (arrangement of windows in a building) are well shaded from direct solar radiations.



Shadow Range December 21

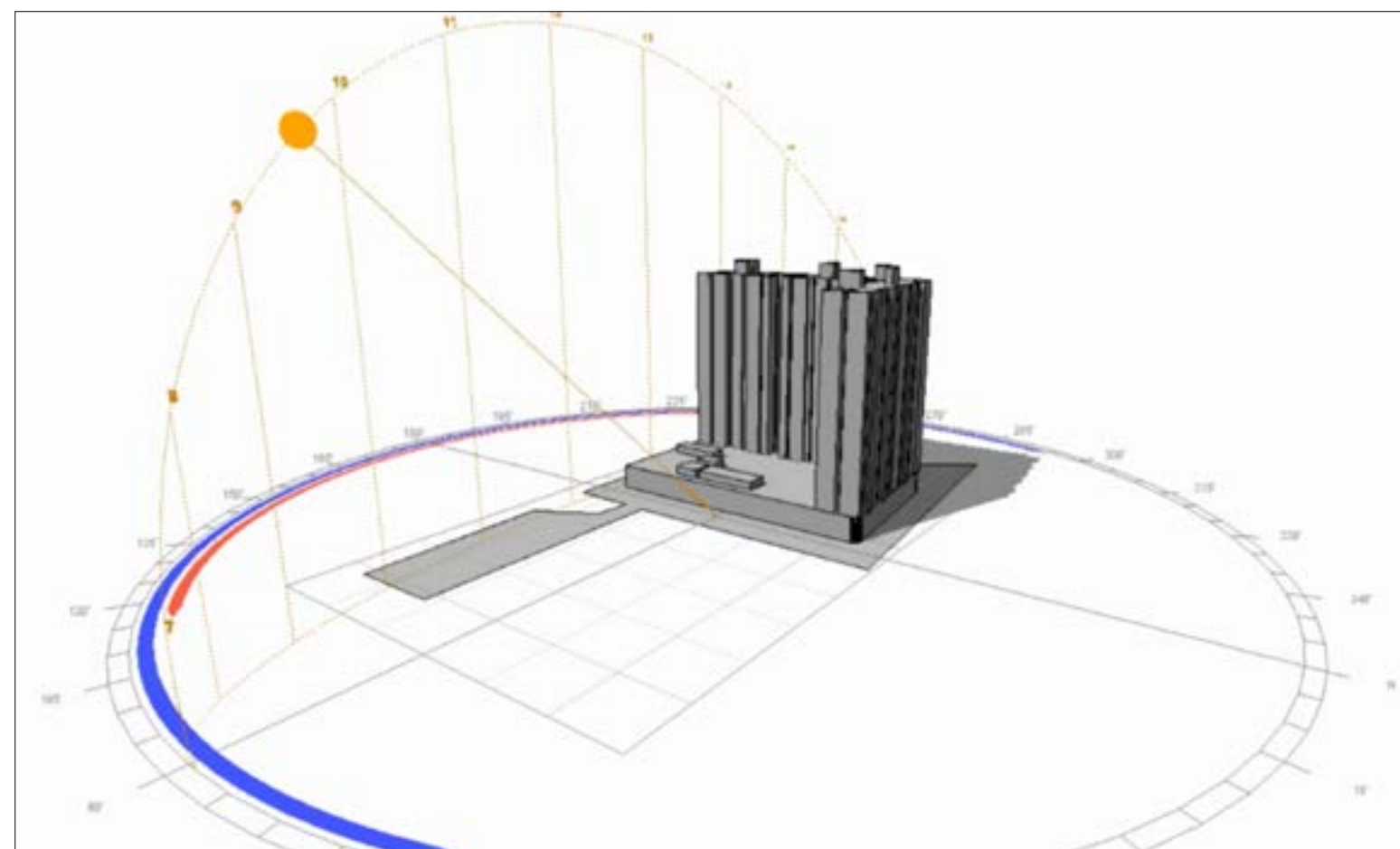


Shadow Range May 21

Solar radiations range

Monsoon
150 to 500 wh/m²

Summer
Above 500 wh/m²



LUX simulation studies

Healthy and safe homes

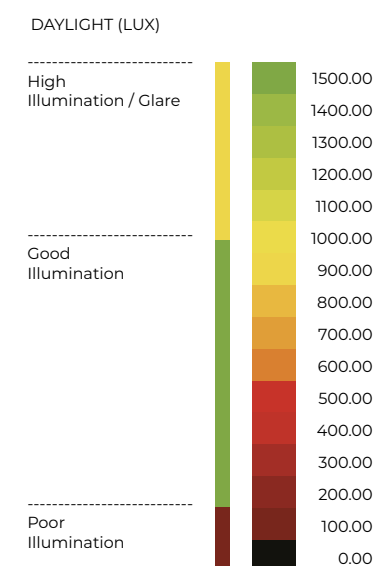
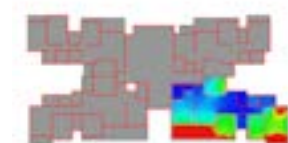
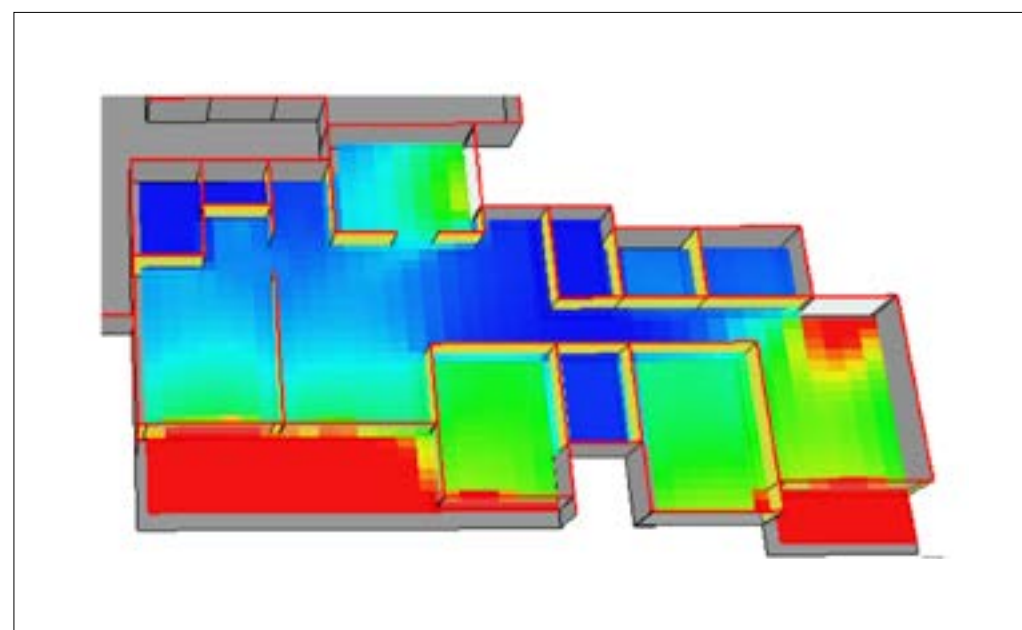
Studies conclusively establish that homes at Skyi enjoy more than the prescribed natural lighting and therefore its residents enjoy better health and well being.

More light
less heat

Lux is the measure of the intensity of light within a place, as perceived by the human eye. Homes at Skyi exceed the pre-requisite standards of illumination as prescribed by the national building code

Brighter homes

Zones	Required LUX levels, as per national building code	Achieved LUX levels at Skyi
Living - Dining	100-150 LUX	220-1200 LUX
Bedrooms	60-100 LUX	110-1000 LUX
Kitchen	150-200 LUX	440-900 LUX



WIND



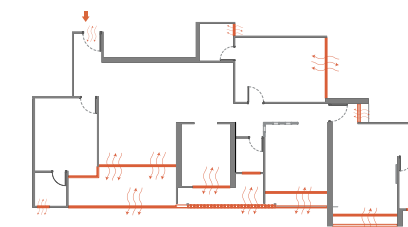
air tech™

by SKYi®

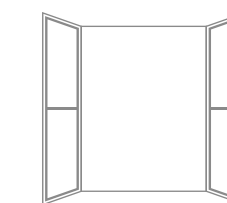
a proprietary technique of SKYi.
air tech by SKYi is a registered
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Wind Path
Oriented Homes



More Air Changes
Per Hour (ACH)

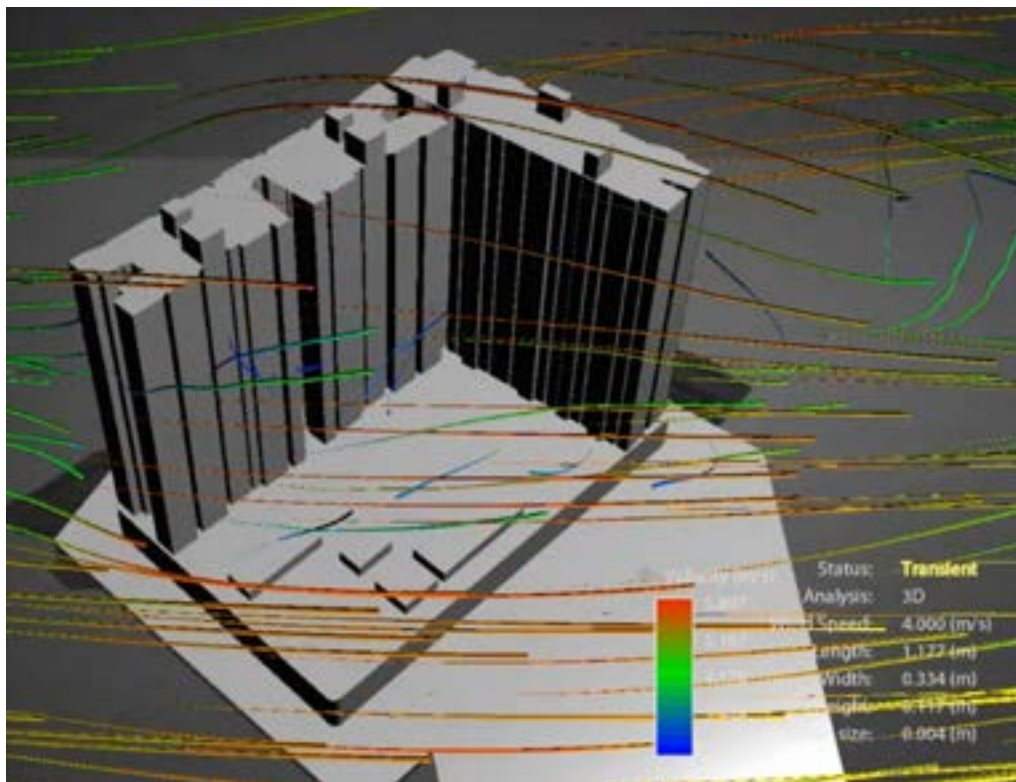


Large Windows
& Balconies

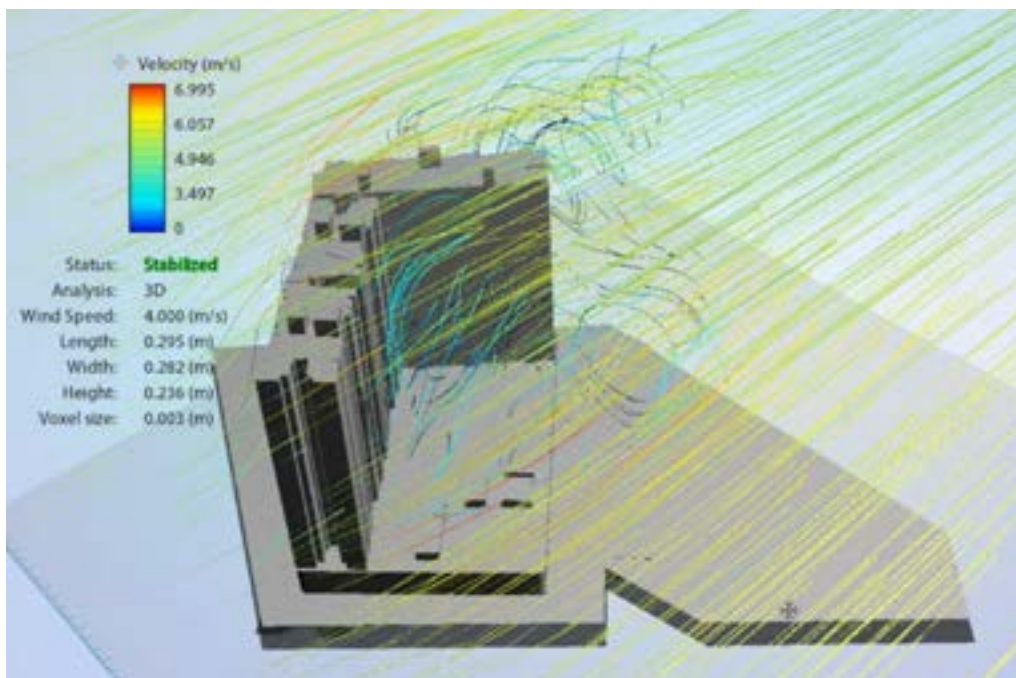
Wind path analysis

Homes at Skyi are designed to ensure there is optimum flow of natural and cool air in all rooms.

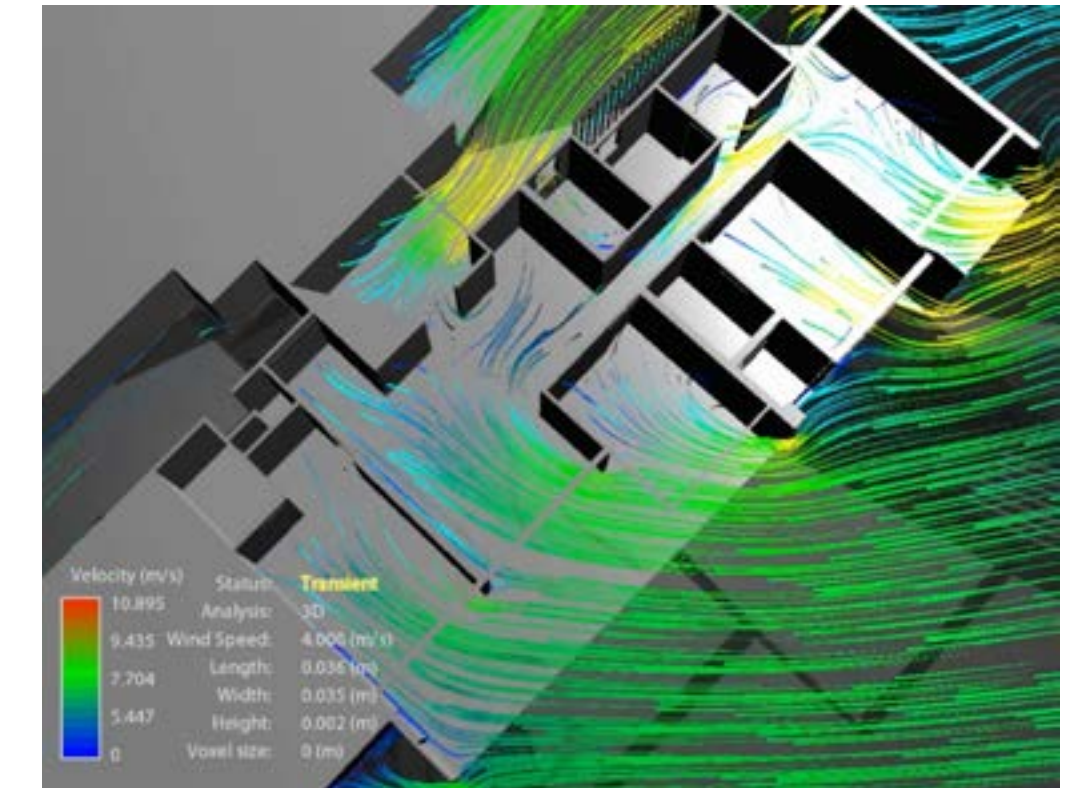
ACH simulation studies



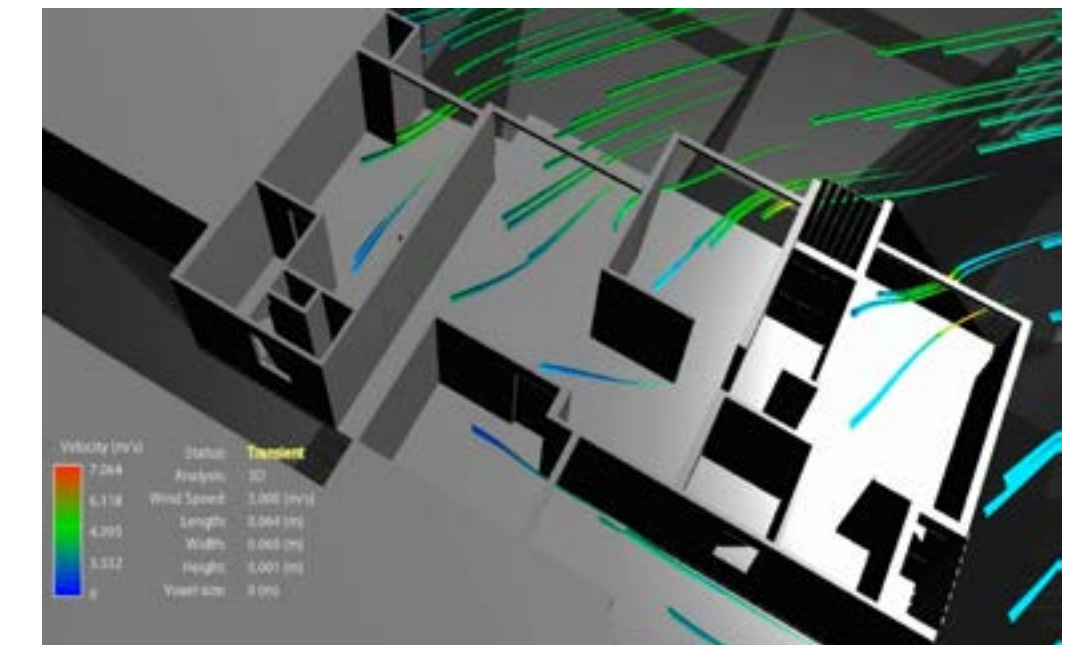
The building is well ventilated from all the sides. The wind speed in outdoor areas ranges from 3 m/s to 8 m/s



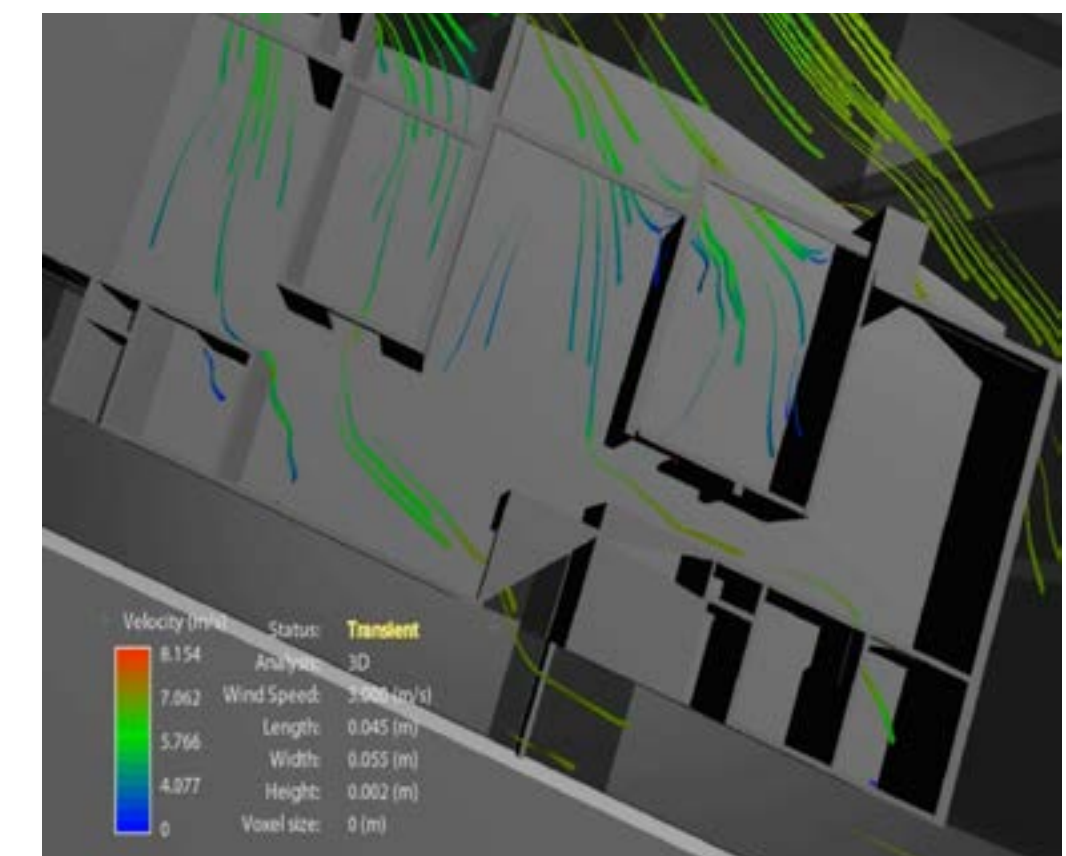
A wing



B wing



C wing



Average wind velocity in homes at Skyi is 3m/s to 5m/s

* Metres per second (m/s)

ACH simulation study findings

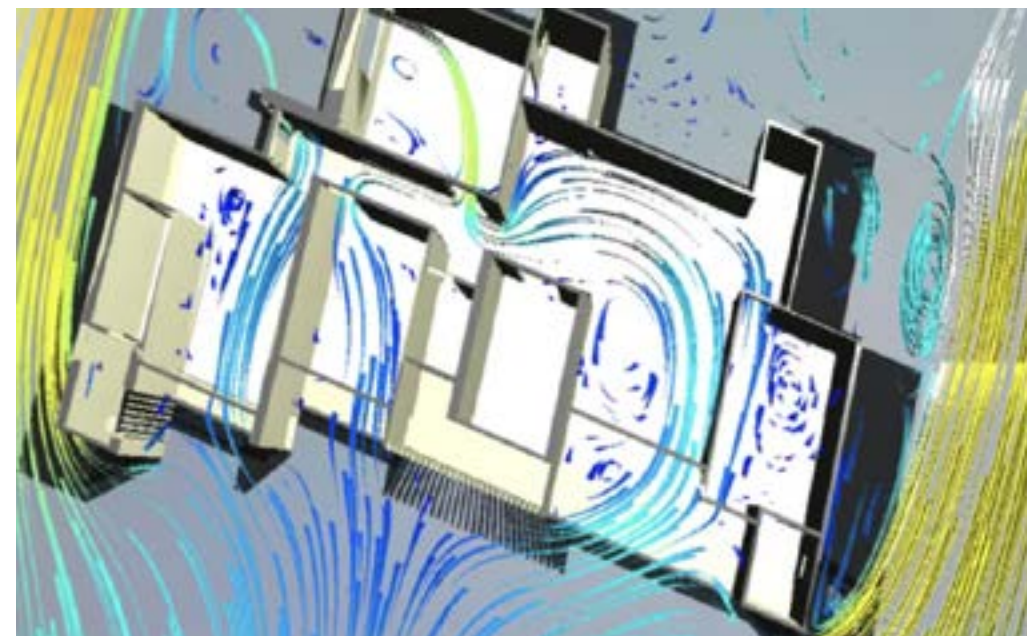
Healthy and safe homes

Studies conclusively establish that homes at Skyi enjoy more than the prescribed air changes per hour and therefore its residents enjoy better health and well being.

Better windflow
less heat

Air Changes per Hour (ACH) is a measure of the number of times the air within a defined space (a room or the house) is replaced by ventilation.

Zones	Required ACH levels, as per national building code	Achieved ACH levels at Skyi
Living - Dining	3 to 6 ACH	9+ ACH
Bedrooms	2 to 4 ACH	10+ ACH
Kitchen	8 to 12 ACH	7.5+ ACH



air quality

by SKYi®

Air Quality Index at
Skyi projects



Improved IAQ

Plantations in wide balconies
improve indoor air quality

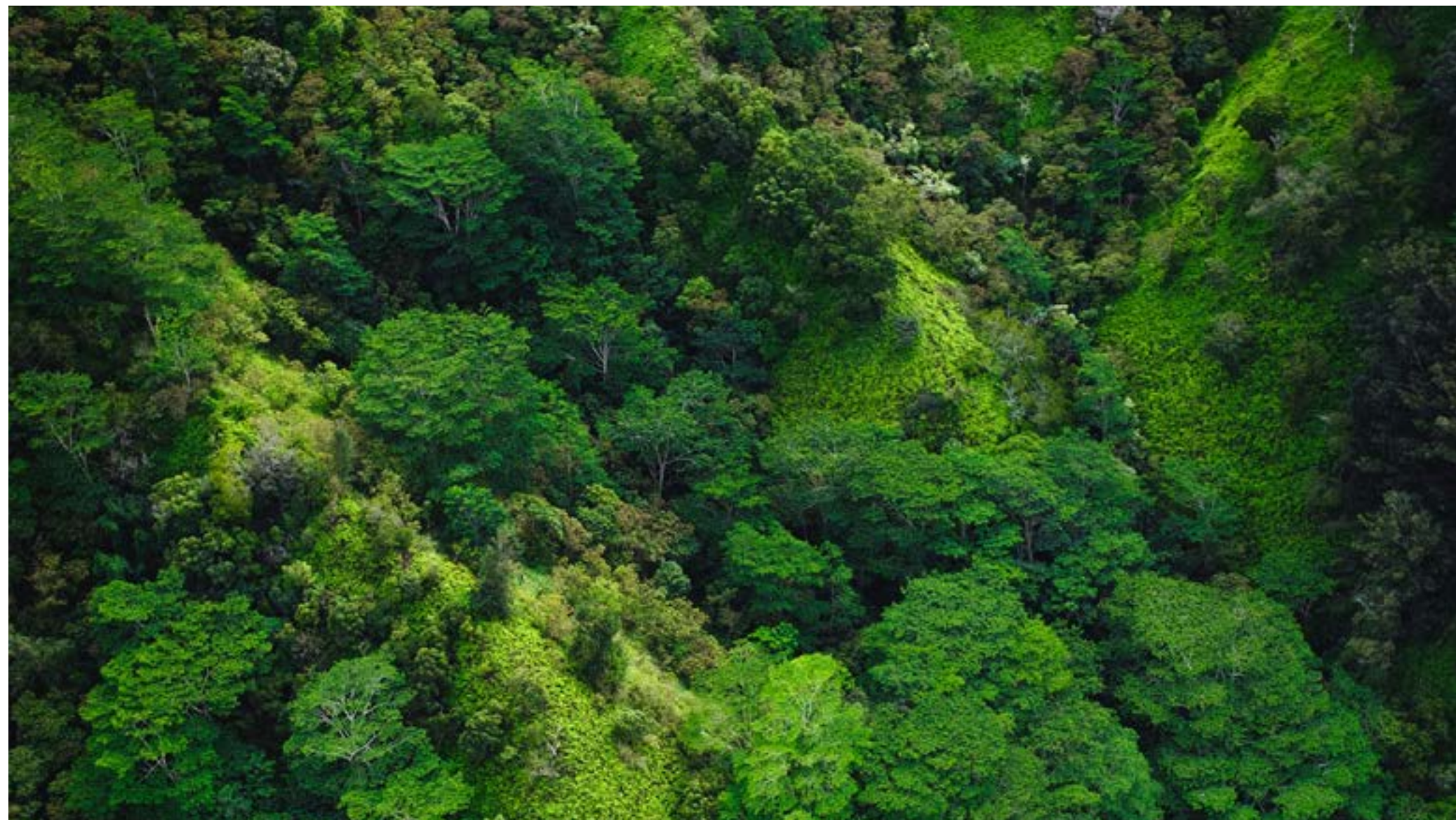
Provision for mist maker
reduces indoor temperatures

Better tree cover

Native plants around the project

Low density development

Adjacent to acres of green and
open spaces



WATER

aqua tech

by SKYi®

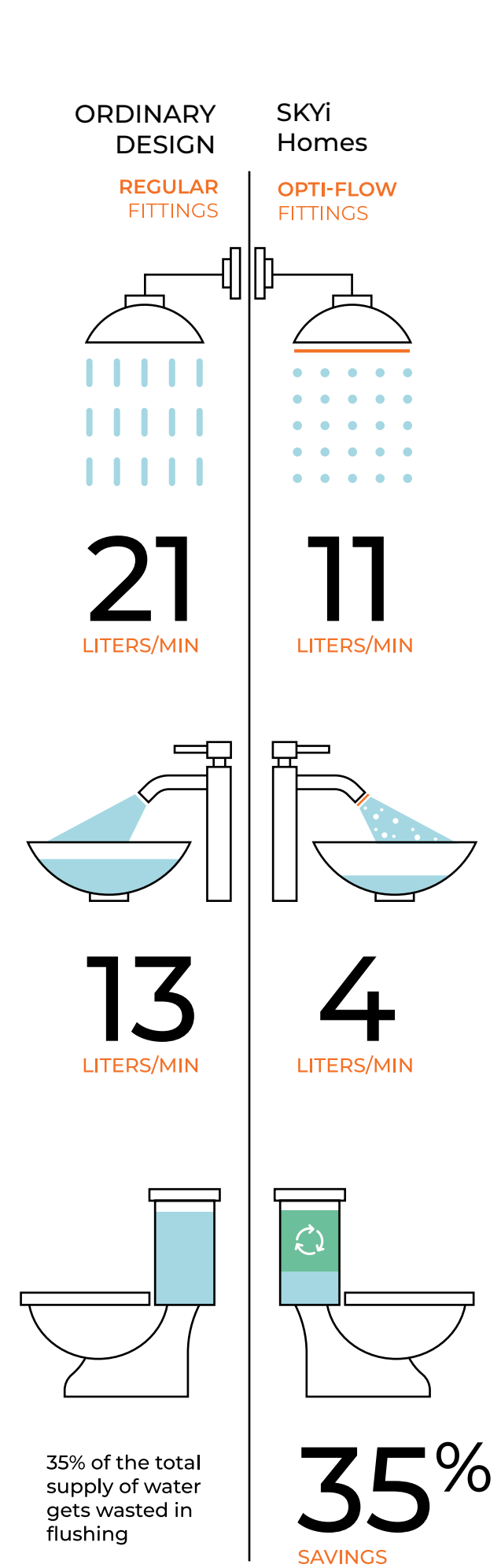
a proprietary technique of SKYi.
SKYi is a registered trade mark.



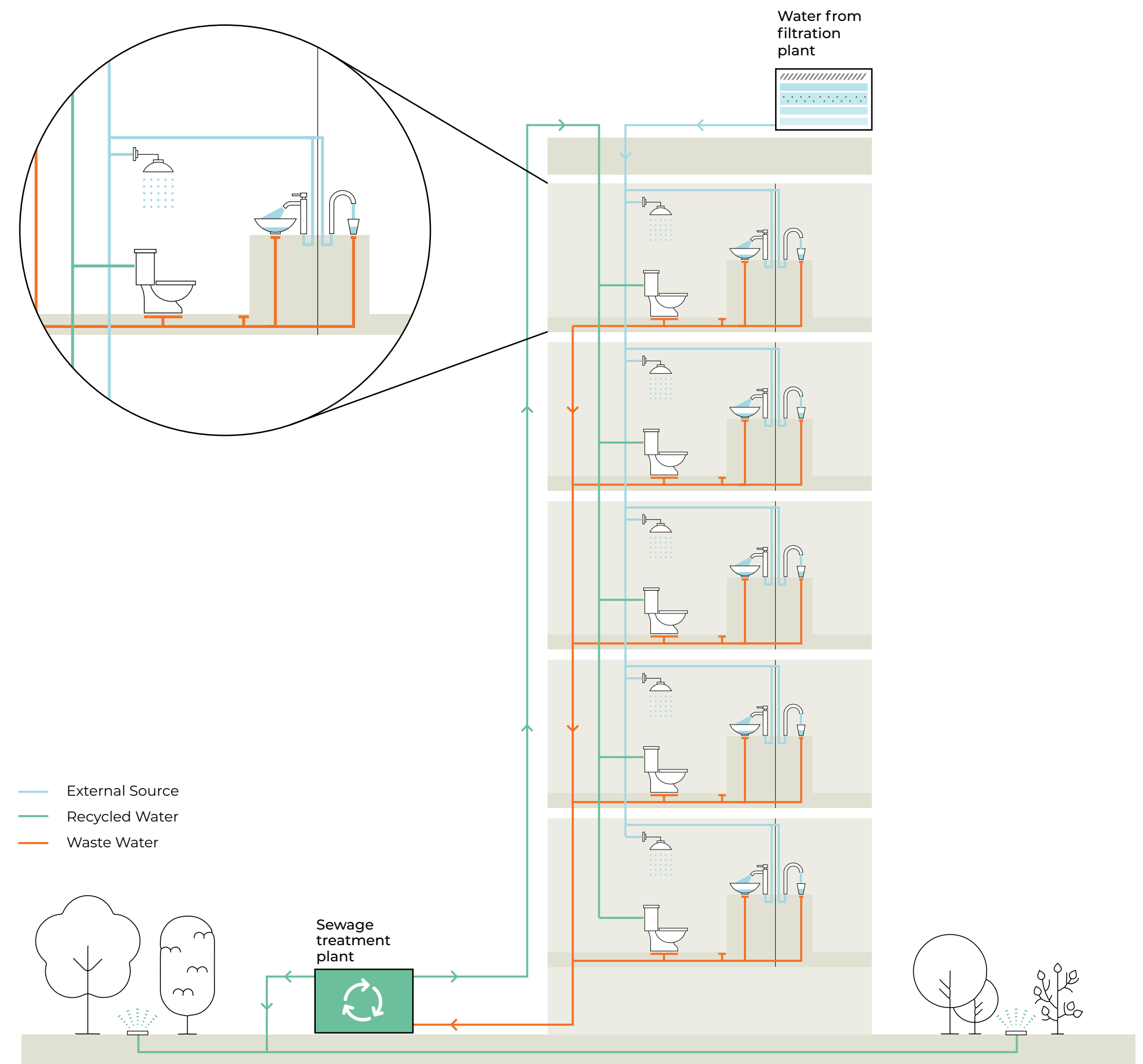
Efficient water usage

Fittings that infuse air into the flow of water to maintain voluminous flow but-consuming much lesser water in actual

Water used for flushing at SKYi Homes is recycled from the STP and reused. This results in approximate savings of 35% of the fresh water usage



Recycled water utility





green homes

by SKYi®

IGBC Green Homes® Rating System is a voluntary and consensus based programme. The objective of IGBC Green Homes® is to facilitate the effective use of site resources, water conservation, energy efficiency, handling of house-hold waste, optimum material utilisation and design for healthy, comfortable & environmentally friendly homes.

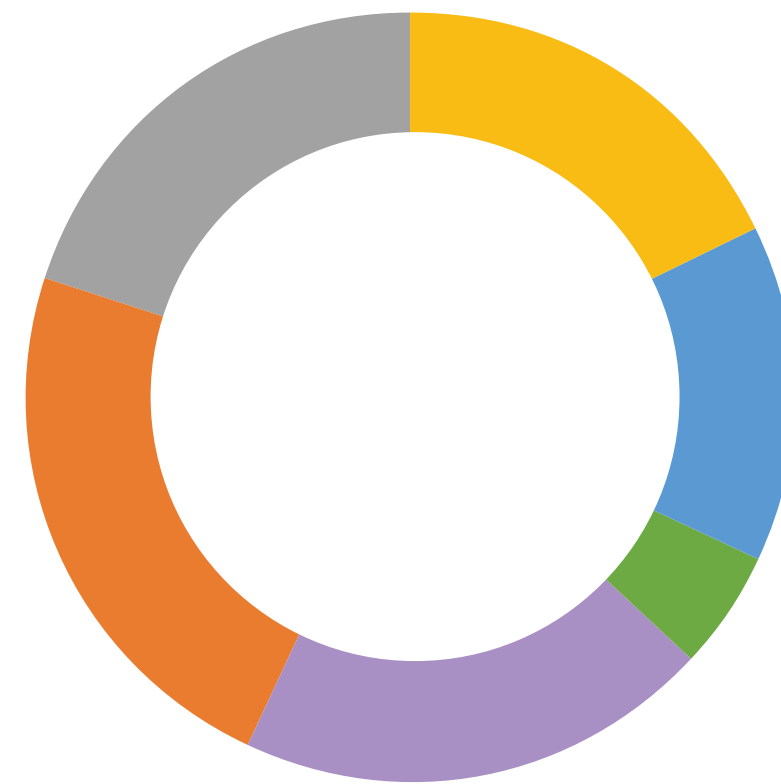
The rating system evaluates certain mandatory requirements & credit points using a prescriptive approach and others on a performance-based approach. The rating system is evolved so as to be comprehensive and at the same time user-friendly. The programme is fundamentally designed to address national priorities and the quality of life for occupants.

The rating programme uses well accepted National standards and wherever local or National standards are not available, appropriate international benchmarks have been considered.

IGBC Green Homes® Certification

IGBC Green Homes is the first rating programme developed in India, exclusively for the residential sector. It is based on accepted energy and environmental principles and strikes a balance between known established practices and emerging concepts. The system is designed to be comprehensive in scope, yet simple in operation.

Green homes can have tremendous benefits, both tangible and intangible. The most tangible benefits are the reduction in water and energy consumption right from day one of occupancy. The energy savings could range from 20 - 30 % and water savings around 30 - 50%. Intangible benefits of green homes include enhanced air quality, excellent daylighting, health & wellbeing of the occupants, lower energy bills and conservation of scarce national resources.



Green homes - Points distribution

- 14% Resident Health & Wellbeing
- 18% Materials & Resources
- 20% Energy Efficiency
- 23% Water Conservation
- 20% Sustainable Design
- 5% Innovation & Design

GOLD

Targeting IGBC Green Homes® Gold Certification

Certification	Level	Points Recognition
Certified	50-59	Best Practices
Silver	60-69	Outstanding Performance
Gold	70-79	National Excellence
Platinum	80-100	Global Leadership

Threshold criteria for certification levels

Sustainable Design	Possible Points	20
SD Mandatory Requirement 1	Local Building Regulations	Required
SD Mandatory Requirement 2	Soil Erosion Control	Required
SD Credit 1	Natural Topography & Vegetation	4
SD Credit 2	Heat Island Effect, Roof & Non-roof Passive	4
SD Credit 3	Architecture	2
SD Credit 4	Universal Design	2
SD Credit 5	Green Parking Facility	4
SD Credit 6	Access to Amenities	2
SD Credit 7	Basic Facilities for Construction Workforce	1
SD Credit 8	Green Education & Awareness	1
Water Conservation	Possible Points	23
WC Mandatory Requirement 1	Water Efficient Plumbing Fixtures	Required
WC Mandatory Requirement 2	Rainwater Harvesting	Required
WC Credit 1	Water Efficient Plumbing Fixtures	6
WC Credit 2	Landscape Design	3
WC Credit 3	Management of Irrigation System	2
WC Credit 4	Recycle & Reuse of Waste water	4
WC Credit 5	Water Quality	1
WC Credit 6	Enhanced Rainwater Harvesting	4
WC Credit 7	Water Metering	3
Energy Efficiency	Possible Points	20
EE Mandatory Requirement 1	CFC Free Equipment	Required
EE Mandatory Requirement 2	Minimum Energy Performance	Required
EE Credit 1	Enhanced Energy Performance	10
EE Credit 2	Alternate Water Heating system	3
EE Credit 3	Renewable Energy - Common area Lighting	4
EE Credit 4	Energy efficiency in common area equipment	1
EE Credit 5	Integrated Energy Monitoring System	2
Materials & Resources	Possible Points	18
MR Mandatory Requirement 1	Separation of House-hold Waste	Required
MR Credit 1	Green Procurement Policy	1
MR Credit 2	Optimisation on Structural Design	1
MR Credit 3	Certified Green Products	5
MR Credit 4	Local Materials	2
MR Credit 5	Eco friendly wood based materials	2
MR Credit 6	Alternative Construction Material	2
MR Credit 7	Handling of Construction & Demolition Waste	2
MR Credit 8	Organic Waste treatment Post Occupancy	3
Resident Health & Wellbeing	Possible Points	14
RHW Mandatory Requirement 1	Minimum Daylighting, 50%	Required
RHW Mandatory Requirement 2	Ventilation Design	Required
RHW Mandatory Requirement 3	No Smoking Policy	Required
RHW Credit 1	Enhanced Daylighting	2
RHW Credit 2	Enhanced Ventilation Design	2
RHW Credit 3	Cross Ventilation	4
RHW Credit 4	Connectivity to Exteriors	2
RHW Credit 5	Low VOC Materials, Paints & Adhesives	2
RHW Credit 6	Facility for Physical Wellbeing	2
Innovation & Design	Possible Points	5
ID Credit 1.1-1.2	innovation	2
ID Credit 2.1-2.2	Exemplary Performance	2
ID Credit 3	IGBC Accredited Professional	1
Total Available Points		100



Connect With Us

The Developer
Skyi Developers

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Targeting IGBC Green Homes®
Gold Certification