



Confederation of Indian Industry



# IGBC Green Resorts Rating System

Reference Guide - Version 2.0  
September 2022



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## **Foreword from the Indian Green Building Council (IGBC)**

India is witnessing tremendous growth in infrastructure and construction development. The construction industry in India is one of the largest economic activities and is growing at a rapid rate in the past two decades. As the sector is growing rapidly, preserving the environment poses a host of challenges. To enable the construction industry to become environmentally sensitive, CII has established the Indian Green Building Council (IGBC) in 2001. IGBC, is a consensus driven not-for-profit Council, represents the building industry, consisting of more than 189 founding member organisations & 1,700 committed member organisations. The Council encourages, builders, developers, owners, architects, and consultants to design & construct green buildings, thereby enhancing the economic and environmental performance of buildings. Thus far, the Council has been instrumental in enabling 8,000+ projects equivalent to 8.32+ Billion sq.ft of green building projects in the country. The Council's activities have enabled a market transformation with regard to green building materials and technologies. IGBC continuously works to provide tools that facilitate the adoption of green building practices in India. The development of IGBC® Rating system for Green Resorts rating system is to promote sustainable tourism and reduce the negative impacts associated with tourism.

### **IGBC Membership**

IGBC draws its strength from its members who have been partners in facilitating the Green Building Movement in India. The local chapters led by individual champions and committed members have been instrumental in reaching out the vision of the IGBC at the regional levels. IGBC is today seen as a leader in spearheading the Indian Green Building Movement. The Council is member driven and consensus based.

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The Abridged Reference Guide was developed under the leadership of Ar B R Ajit Chairman, IGBC Green Resorts Rating System and with the support of Technical Committee members.

IGBC would specially like to thank Ar B R Ajit, Chairman - IGBC Green Resorts Rating System and all the technical committee members for their continuous support and encouragement.

IGBC would also like to thank the following Organisations for their contribution in developing the rating programme:

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- ❖ Mr. G V K Rao, Pragati Resorts, Hyderabad, Telangana
- ❖ Mr. Burhanuddin Sayyed, Corporate Chief Engineer, Club Mahindra Holiday Resorts – PAN India
- ❖ COL. S S MINHAS, Pema Wellness Health Resort, Vizag, AP
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## 1. Introduction

The Indian tourism and hospitality industry has emerged as one of the key drivers of growth among the service sectors by contributing about 9.6 % GDP and 8% of the total employment in India. Hospitality in India has significant potential considering the rich cultural and historical heritage, variety in ecology, terrains and places of natural beauty spread across the country. The challenges in this sector lie in successfully preserving these in their original form, and making them accessible to domestic and international travellers, together with safeguarding the economic interest and heritage of local communities. Increased footfall of tourists and the explosive growth of the industry over the past decade have produced significant impacts on natural resources, consumption patterns, pollution and social systems.



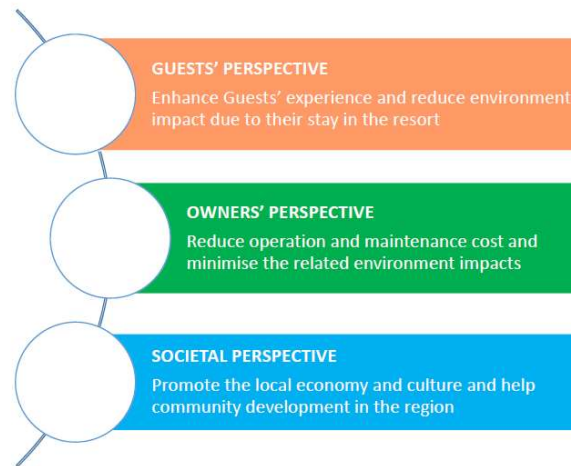
This has reiterated the need for a more responsible planning and management of this industry in order to minimize its negative impacts by addressing issues like water conservation, energy efficiency and handling of waste. Also maximise its potential for a sustainable development along with enhancing the guests' experience and well- being.

Against this background, the Indian Green Building Council (IGBC) has launched 'IGBC Green Resorts rating system® to address the need of sustainable development in hospitality sector. This rating programme is a tool which enables the designer to apply green concepts and reduce environmental impacts that are measurable. The rating programme covers methodologies to cover diverse climatic zones and variety in ecology.

IGBC has set up the Green Resorts Technical Committee under the leadership of Ar. B R Ajit, to develop the rating programme. This committee comprised of key stakeholders, including architects, builders, consultants, developers, owners, manufacturers, and industry representatives. The committee, with a diverse background and knowledge has enriched the rating system, both in its content and process.

## 2. Stakeholders' Perspective

The IGBC Green Resorts Rating System adds value to all the stakeholders of resort including resort owner, guests', and the society.



A fundamental trait of the Indian hospitality sector is its ability to link the economic, social, cultural and environmental aspects of sustainability and to act as a driving force for their mutual enhancement. The IGBC Green Resorts rating system follows the triple bottom line approach by popularising the concept of “People, Planet and Profit”. A holistic approach has been followed where guests’ experience and wellbeing is given due importance along with promoting the local economy & culture and preservation of natural heritage.

The framework also enables the resort owners and facility team to implement the green measures thereby reducing their resource consumption and hence the operating cost. This in turn enhances the profitability of the resorts. Apart from addressing the economic and environmental aspects the rating system promotes the local economy and culture.

## 3. Benefits of Green Resorts

With the global emphasis on sustainability and combating climate change, the IGBC Green Resorts rating system creates a major opportunity to position the hospitality sector experience as a unique guests’ takeaway in a low-impact way. The IGBC Green Resorts Rating System creates awareness amongst guests’ about the emissions caused due to their travel and its impact on environment. The rating is sensitising the guests on adopting green lifestyle making their experience during stay create an eternal impression.

The rating offers the following tangible and intangible benefits to the resort owner:

1. The tangible benefit is reduction in water and energy consumption right from day one of operation. The energy and water savings could range from 20 – 30 %.
2. The intangible benefits of green resorts include enhanced brand image and attracting environmentally conscious national and international guests.
3. Improved guest experience
4. Promotion of local culture and economy.
5. Promoting the production of local food.

The IGBC Green Resorts rating system creates a win-win situation for all the stakeholders of a resort - Guest, Owner and Society.

#### **4. National Priorities addressed in Green Resorts**

The IGBC Green Resorts rating system addresses the most important national priorities which include water conservation, handling waste, energy efficiency, reduced use of fossil fuels, lesser dependence on usage of virgin materials and health & well-being of people. The rating system requires the application of National standards and codes such as the NBC, ECBC, MoEF guidelines, CPCB guidelines and all local regulations. The overarching objective is to be better than the national standards so as to create new benchmarks.

##### **❖ Water Conservation:**

IGBC Green Resorts rating system encourages use of water in a self-sustainable manner through reduce, recycle, and reuse strategies. By adopting this rating programme, green resorts can save potable water to an extent of 20 - 30%.

##### **❖ Handling of Construction Waste:**

Handling of waste in resorts is a challenge as most of the waste generated is not segregated at source and has a high probability of going to landfills or incinerators. The rating system intends to address this by encouraging buildings to segregate the building waste.

##### **❖ Energy Efficiency:**

The hospitality sector is a large consumer of electrical energy. By adopting this rating programme, green resorts can save energy to an extent of 20 - 30%.

##### **❖ Reduced Use of Fossil Fuel:**

Fossil fuel is a slowly depleting resource, the world over. The use of fossil fuel for transportation has been a major contributor of GHG emissions and also the rating system encourages the use of alternate fuel vehicles within the resorts.

##### **❖ Reduced Dependency on Virgin Materials:**

The rating system encourages projects to use recycled & reused material and discourages the use of virgin materials, thereby, addressing environmental impacts associated with extraction and processing of scarce natural resources.

### ❖ **Health and Well – being:**

Health and well-being of guests are the most important aspect of IGBC Green Resorts rating system. The rating system ensures comfort, adequate ventilation, daylight, and well-being amenities.

## **IGBC Green Resorts Rating System**

### **A. Features**

IGBC Green Resorts rating system® is a voluntary and consensus-based programme. The rating system has been developed based on materials and technologies that are presently available. The objective of IGBC Green Resorts rating system is to facilitate a holistic approach to create environment friendly resorts, through architectural design, water efficiency, effective handling of waste, energy efficiency, sustainable buildings, and focus on guests' comfort & well-being.

The rating system evaluates 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 enhancing the guest experience during his stay in the resort.

Some of the unique aspects addressed in this rating system are as follows:

- Promotion of triple bottom line – Environment, economy, and social aspects
- Recognition to the environment friendly travel options provided by the resort.
- Recognition to the guest education promoting green lifestyle.
- Importance to sustainable landscape in the rating system.
- Recognition to green procurement of consumables in day-to-day operations.
- Based on the feedback from green building proponents, use of certified green products will be encouraged. IGBC has launched a new initiative GreenPro – Green product certification to certify green products to transform markets.
- A site visit and audit are proposed before award of the rating.
- Projects are encouraged to report energy and water consumption data on an annual basis, to facilitate research in this area.

### **B. Definition of Green Resort**

A Green Resort is one which conserves natural resources, uses less water, optimizes energy efficiency, enhanced biodiversity, enhanced indoor environmental quality, guest comfort & delight, generates less waste, provides healthier spaces, addresses heat island effect, and contributes to local economy.



## C. Scope

IGBC Green Resorts rating system® is designed for resorts, both existing and newly constructed of any size and typology. The newly constructed resorts should be operational for at least three months before applying for rating.

## D. The Future of IGBC Green Resorts Rating System

Many new green building materials, equipment and technologies are being introduced in the market. With continuous up-gradation and introduction of new green technologies and products, it is important that the rating programme also keeps pace with current standards and technologies.

Therefore, the rating programme will undergo periodic revisions to incorporate the latest advancement and changes. It is important to note that project teams applying for IGBC Green Resorts rating system® should register their projects with the latest version of the rating system. During the course of implementation, projects have an option to transit to the latest version of the rating system. IGBC will highlight new developments on its website ([www.igbc.in](http://www.igbc.in)).

## E. Overview and Process:

IGBC Green Resorts rating system® addresses green features under the following categories:

- ❖ Guest Experience
- ❖ Resort Design and Infrastructure
- ❖ Sustainable Landscape
- ❖ Resort Facility Management
- ❖ Societal Contribution
- ❖ Innovation and Development

The guidelines detailed under each credit enables the design and operation of resorts of all sizes. Different levels of green building certification are awarded based on the total credits earned. However, every green resort should meet mandatory requirements, which are non-negotiable.

The various levels of rating awarded are as below:

Certification Level	Recognition
Certified	Best Practices
Silver	Outstanding Performance
Gold	National Excellence
Platinum	Global Leadership

## **F. Registration**

Organisations interested in registering their projects under IGBC Green Resorts rating system certification are advised to download the rating system, fee structure and registration form from IGBC website ([www.igbc.in](http://www.igbc.in)).

## **G. Certification**

To achieve the IGBC Green Resorts rating, the project must satisfy all the mandatory requirements and the minimum number of credit points.

The project team is expected to provide supporting documents at preliminary and final stage of submission, for all the mandatory requirements and the credits attempted.

The project needs to submit the following:

1. General information about project, including
  - a) Project brief, different type of spaces, occupancy, number of floors, area statement, etc.
  - b) General drawings (in PDF format only):
    - i. Master/ Site plan
    - ii. Parking plans
    - iii. Floor plans
    - iv. Elevations
    - v. Sections
  - c) Photographs / Rendered images
2. Filled-in templates
3. Narratives and supporting documentation such as drawings, calculations (in excel sheets), declarations/ contract documents, purchase invoices, manufacturer cut-sheets / letters / material test reports, etc., for each mandatory requirement and credit.

The project documentation is submitted in two phases - Preliminary submittal and Final submittal:

- ❖ Preliminary phase involves submission of all documents, which shall include the mandatory requirements and the minimum number of credits. After the preliminary submission, review is done by third party assessors and review comments would be provided within 30 days.
- ❖ The next phase involves submission of clarifications to preliminary review queries and final submittal. This review will also be provided within 30 days, after which the rating is awarded.

It is important to note that the mandatory requirements and credits earned at the preliminary review are only considered as expected. These mandatory requirements and credits are not awarded until the final

documents are submitted, along with additional documents showing implementation of design features. If there are changes in any 'expected credits' after preliminary review, these changes need to be documented and resubmitted during the final review.

The threshold criteria for certification levels are as under:

<b>Certification Level</b>	<b>Credit Points</b>	<b>Recognition</b>
Certified	40 - 49	Best Practices
Silver	50 - 64	Outstanding Performance
Gold	65 - 79	National Excellence
Platinum	80 - 100	Global Leadership

IGBC will recognize Green Resorts that achieve one of the rating levels with a formal letter of certification and a mountable plaque.

## **H. Credit Interpretation Ruling (CIR)**

In some instances, there is a possibility that the design team may encounter certain challenges in applying or interpreting a mandatory requirement or a credit. It can also happen in cases where the project can opt to achieve the same intent through a different compliance route.

To address this, IGBC uses the process of Credit Interpretation Ruling (CIR) to ensure that interpretations are consistent and applicable to other projects as well.

The following are the steps to be followed in case the project team encounters any difficulty:

- Refer the Abridged Reference Guide for description of the credit intent and compliance options.
- Review the intent of the mandatory requirement / credit and self-evaluate whether the project satisfies the intent.
- Review the Credit Interpretation Ruling web page for previous CIRs on the relevant mandatory requirement or credit. All projects registered under IGBC Green Resorts rating system will have access to this page.
- If a similar CIR has not been addressed or does not answer the question sufficiently, submit a credit interpretation request. Only registered projects are eligible to post credit interpretation request. Two CIRs are answered without levying any fee, and for any CIR beyond the first two CIRs, a fee is levied.

## **I. Appeal**

In rare cases, mandatory requirements / credits get denied due to misinterpretation of the intent. On receipt of the final review and if the project team feels that sufficient grounds exist to appeal a credit

denied in the final review, the project has an option to appeal to IGBC for reassessment of denying mandatory requirements / credits. The documentation of the mandatory requirements / credits seeking appeal may be resubmitted to IGBC along with necessary fees. IGBC will take 30 days to review such documentation. If an appeal is pursued, please note that a different review team will be assessing the appeal documentation. The following documentation should be submitted:

1. General information about project, including
  - a) Project brief stating project type, different type of spaces, occupancy, number of floors, area statement, etc.
  - b) General drawings (in PDF format only):
    - i. Master/ Site plan
    - ii. Parking plans
    - iii. Floor plans
    - iv. Elevations
    - v. Sections
  - c) Photographs / Rendered views
2. Filled-in templates for respective mandatory requirement / credit.
3. Resubmittal and appeal submittal documentation for only those mandatory requirements / credits that the project is appealing for. Also, include a narrative for each appealed mandatory requirement/ credit to describe how the documents address the reviewer's comments and concerns.

## **J. Fee**

Registration, Certification and CIR fee details are available on the IGBC website ([www.igbc.in](http://www.igbc.in)) or can be obtained from IGBC ([igbc@cii.in](mailto:igbc@cii.in)).

## **K. Updates and Addenda**

As the rating system continues to improve and evolve, updates, addenda, and errata to the abridged reference guide will be made available through IGBC website. The additions thereof will be suitably incorporated in the next version of the rating system.

## Checklist for IGBC Green Resorts Rating System:

Checklist		Points Distribution
<b>Mandatory Credits</b>		
MR 1	Local Regulations	Mandatory
MR 2	Minimum Green Cover	Mandatory
MR 3	Green Facility Management Policy	Mandatory
MR 4	No Smoking	Mandatory
MR 5	Discharge of Untreated water	Mandatory
MR 6	Site Preservation	Mandatory

<b>Guests' Experience</b>		<b>10</b>
GE Credit 1	Environment Friendly Travel Options	2
GE Credit 2	Green Education	2
GE Credit 3	Guest Comfort	2
GE Credit 4	Health & Well-being	4

<b>Resort Design &amp; Infrastructure</b>		<b>24</b>
RDI Credit 1	Heat Island Effect	4
RDI Credit 2	Universal Design	2
RDI Credit 3	Resort envelope	4
RDI Credit 4	Fresh Air Ventilation	2
RDI Credit 5	Daylighting	4
RDI Credit 6	Outdoor views	2
RDI Credit 7	Green Procurement	5
RDI Credit 8	Eco-friendly Commuting, within the premises	1

<b>Sustainable Landscape</b>		<b>18</b>
SL Credit 1	Tree Cover	2
SL Credit 2	Landscape Design	6
SL Credit 3	Creative Garden Design	2
SL Credit 4	Indoor Landscape	2
SL Credit 5	Local Food Production	2
SL Credit 6	Water Efficient Irrigation Systems	2
SL Credit 7	Use of Organic Fertilizers and Pesticides	2

<b>Resort Facility Management</b>		<b>34</b>
RFM Credit 1	Plastic free environment	1
RFM Credit 2	Quality of Air and Water	2
RFM Credit 3	'Net Zero Energy'	10
RFM Credit 4	'Net Zero Water'	10
RFM Credit 5	Net Zero Waste to Landfill	6
RFM Credit 6	Resource Management System	3
RFM Credit 7	Eco-friendly housekeeping practices	2

<b>Societal Contribution</b>		<b>8</b>
SP Credit 1	Promotion of Local economy	2
SP Credit 2	Promotion of Local Culture	3
SP Credit 3	Beyond the fence green initiatives	3

<b>Innovation &amp; Design</b>		<b>6</b>
ID Credit 1	Innovation & Design	5
ID Credit 2	IGBC Accredited Professional	1
<b>Total Available Points</b>		<b>100</b>

<b>Certification level</b>	<b>Threshold</b>	<b>Recognition</b>
Certified	40 - 49	Best Practices
Silver	50 - 64	Outstanding Performance
Gold	65 - 79	National Excellence
Platinum	80 - 100	Global Leadership

# **Mandatory Requirements**

## Local Regulations

### Mandatory Requirement 1

#### Intent:

Ensure that the building(s) complies with necessary statutory regulatory codes.

#### Compliance:

The project shall comply with following statutory approvals from the Government of India or State government authorities, as applicable:

- ❖ Approved master plan for construction, as applicable
- ❖ Projects falling under eco-sensitive zones should submit clearance from Ministry of Environment and Forests (MoEF)
- ❖ Projects should conduct and submit Environment Impact Assessment.

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## Minimum Green Cover

### Mandatory Requirement 2

#### Intent:

Minimize disturbances to the natural topography of the site, promote local habitat and bio-diversity thereby reduce the related long-term environmental impacts.

#### Compliance:

Case 1:

Ensure at least 33% of the total site area of the resort has green cover.

(OR)

Case 2:

For the resorts located in the hilly regions, arid and semi-arid areas to ensure at least 15% of the total site area of the resort has green cover.



#### Notes:

- Site features such as existing water bodies & heritage structures can be excluded for the site area calculations.
- A vegetative space includes areas with shrubs, trees, ground covers, etc.



## Green Facility Management Policy

### Mandatory Requirement 3

#### Intent:

Develop a green facility management policy covering the vision statement for achieving sustainable development with specific goals.



#### Compliance:

- Project to have a vision statement or a policy covering the sustainable aspects in the resort
- 

## No Smoking

### Mandatory Requirement 4

#### Intent:

Have a No Smoking policy and demonstrate that smoking is prohibited within the resort premises in accordance with the regulations of Ministry of Health & Family Welfare, Government of India. In case complete prohibition is not possible the resort has to assign outdoor smoking areas.

- Locate such areas at a minimum of 7.6 meters from all outdoor air intakes (entrance doors, window openings etc.)
- 

## Discharge of Untreated water

### Mandatory Requirement 5

#### Intent:

Demonstrate that no untreated wastewater from the resort is discharged directly to the nearby water bodies and channels.



## Site Preservation

### Mandatory Requirement 6

#### Intent:

Preserve the site features to minimise the negative environmental impacts associated with the development of New and Existing resorts.

#### Compliance Options:

##### ❖ For Existing Resorts:

Demonstrate that the resort complies with at least one of the following measures

##### **Water Bodies and Channels**

Demonstrate the efforts taken to preserve the nearby water bodies and channels.

##### ➤ **Preservation of land**

Demonstrate that no solid waste generated by the resort is disposed as landfill or incinerated.

##### ➤ **Flora and Fauna**

o Document flora and fauna in the resort premises

o Demonstrate that sufficient efforts are taken to maintain the existing flora and fauna

##### ❖ For New Resorts:

Demonstrate that the resort complies with at least one of the following measures:

##### **Water Bodies and Channels**

Retain 100% of water bodies and channels in the existing site.

##### ➤ **Natural Topography/ Landscape**

Retain at least 75% of existing natural topography (by surface area), excluding building footprint.

##### ➤ **Site Contour**

Retain site contour to an extent of at least 75% of the site, including building footprint.

Applicable for projects with a slope of 25 percent (ie. 4 to 1 slope) or more.

# **Guests' Experience**

## Environment Friendly Travel Options

Points: 1 - 2

### GE Credit 1

#### Intent:

Create awareness amongst guests to choose environment friendly travel options and thereby reduce emissions due to their travel and the related environmental impacts.

#### Compliance Options:

##### ❖ Awareness: (1 Point)

Before and during guests' stay resorts to implement the following:

- Create awareness amongst the guests on GHG emissions produced due to their travel choice - Air/ Rail/ Road and its associated environmental impacts
- Provide information on environment friendly travel options for to & fro visit to the resort and local travel

##### ❖ Offsetting options: (1 Point)

Encourage guests to offset the GHG emissions due to their mode of travel through voluntary contribution for plantation of trees.

#### Notes:

##### Emission factor for different mode of travel:

- a. Domestic Air – 255 grams CO<sub>2</sub>/ Passenger/ km
- b. International
  - Economy: 150 grams CO<sub>2</sub>/ Passenger/ km
  - Business Class: 434 grams CO<sub>2</sub>/ Passenger/ km
- c. National Rail – 41 grams CO<sub>2</sub>/ Passenger/ km
- d. Road -
  - a. Bus: 105 grams CO<sub>2</sub>/ Passenger/ km
  - b. Car (Petrol): 192 grams CO<sub>2</sub>/ Passenger/ km
  - c. Car (Diesel): 171 grams CO<sub>2</sub>/ Passenger/ km
  - d. Car (Hybrid): 109 grams CO<sub>2</sub>/ Passenger/ km
  - e. Ferry Boat: 19 grams CO<sub>2</sub>/ Passenger/ km

The resorts to quantify the GHG emissions produced per person based on his or her travel details using an online tool.

- The utilisation of voluntary contribution from the guest for offsetting the GHG emissions should be audited and certified.
- References1 : [CO2 EMISSIONS CALCULATOR \(niti.gov.in\)](http://niti.gov.in)
- References 2: [Carbon footprint of travel per kilometer, 2018 \(ourworldindata.org\)](http://ourworldindata.org)

**Exemplary Performance:**

This credit is not eligible for exemplary performance.

**Documentation Required:**

1. A detailed narrative on the initiatives taken by the resort to create awareness amongst guests on environment friendly travel options and opportunities to offset the emissions.
2. Photographs of the environment friendly travel options provided by the resort to the guest.
3. Details of online/ offline tool for emission calculation and voluntary contribution for offsetting emissions.
4. Third party audited report on utilisation of voluntary contribution from the guests to offset the GHG emissions.

**GE Credit 2**

**Intent:**

Sensitise guests to adopt green lifestyle through demonstration of green features implemented in the resort.

**Compliance Options:**

❖ **Awareness:** (1 Point for each measure, maximum 2 Points)

- Provide signage highlighting measures implemented for protection of environment
- Provision for nature walk to educate the guest on biodiversity existing in the resort
- Arrangement for guest to experience working in the fields alongside real farmers, fishing with fishermen etc,
- Signage educating the guests about the species planted in the resort
- Arrangement for guests to attend workshops organized by resort on green lifestyles



**Exemplary Performance:**

This credit is not eligible for exemplary performance.

**Documentation Required:**

1. Details of the initiatives taken by the resort for educating the guest along with supporting documents and photographic evidence.
2. Details on the encouraging measures taken by the resort for the guest to adopt green lifestyle along with supporting documents and photographic evidence.

**Guest Comfort**

**Points: 1 - 2**

**GE Credit 3**

**Intent:**

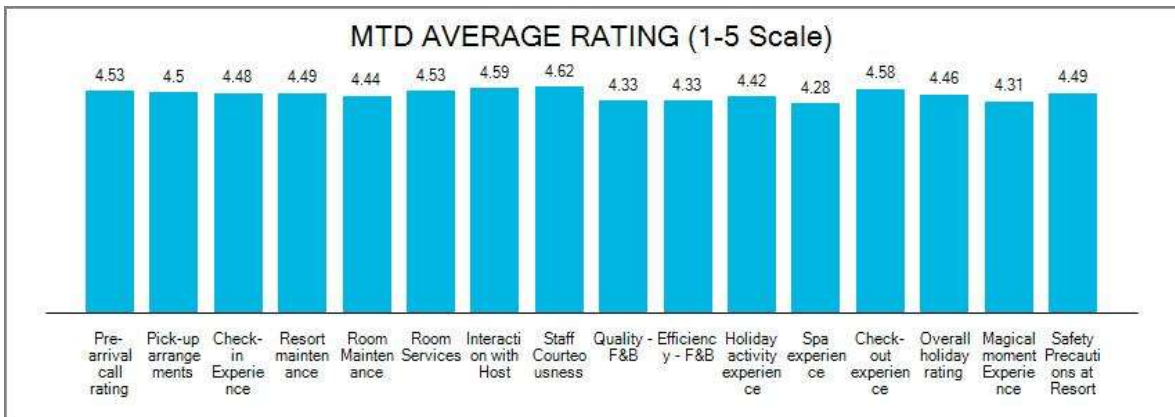
Address guests' comfort in respect of thermal, visual, acoustic and olfactory comfort parameters to demonstrate that green and comfort should co-exist.

**Compliance Option:**

Conduct a guest satisfaction survey for comfort parameters (thermal, olfactory, acoustics and visual comfort) and demonstrate that at least 80% of guests are comfortable and satisfied.

**Alternative compliance path:**

Projects can submit a computer generated/ BMS integrated report measuring the IGBC's criteria of thermal, olfactory, acoustics and visual comfort parameters.



Points are awarded as below:

Percentage of guests that are comfortable	Points
80%	1
90%	2

**Notes:**

- The guest survey shall be conducted by a third-party agency once in a year.
- New resorts should be operational for three months before applying for IGBC Green Resorts rating system.

**Sample Survey Questions:**

1. Please rate your satisfaction with temperature conditions in your room during stay

Unsatisfactory	1	2	3	4	5	Satisfactory
----------------	---	---	---	---	---	--------------

2. Please rate your satisfaction with olfactory conditions of your room during stay

Unsatisfactory	1	2	3	4	5	Satisfactory
----------------	---	---	---	---	---	--------------

3. Please rate your satisfaction with the overall humidity in your room during stay

Unsatisfactory	1	2	3	4	5	Satisfactory
----------------	---	---	---	---	---	--------------

4. Please rate your satisfaction with overall noise in your room during stay

Unsatisfactory	1	2	3	4	5	Satisfactory
----------------	---	---	---	---	---	--------------

5. Please rate your satisfaction with the lighting comfort in your room

Unsatisfactory	1	2	3	4	5	Satisfactory
----------------	---	---	---	---	---	--------------

**Notes:**

- For a detailed survey questionnaire refer Annexure I
- For comfort parameters refer ISHRAE IEQ Standard 10001 – 2016

**Exemplary Performance:**

This credit is not eligible for exemplary performance.

**Documentation Required:**

Third party survey report on guest comfort along with the findings of the survey.



## Health & Well-being

Points: 1 - 4

### GE Credit 4

#### Intent:

Provide an environment to embrace physical and spiritual activities, which can enhance the health and well-being of guests.

#### Compliance Options:

Demonstrate that the resort has following:

##### ❖ Facilities for Physical Well-being: (1 point)

- Provide facilities to promote physical fitness in the resort:
  - Bicycles
  - Jogging / bicycling tracks with proper illumination
  - Gym and indoor games



##### ❖ Facilities for Spiritual Well-being: (1 point)

- Provide designated spaces for relaxation to promote spiritual well-being to the guests'
  - Yoga Area
  - Meditation spaces/ Silence zone
  - Reading Spaces
  - Therapies for healing
- Promote physical environment and activities for facilitating interaction between the guests.



##### ❖ Indoor Air Quality Monitoring: (1 point)

- Monitor and treat the air quality parameters for all the regularly occupied spaces

##### ❖ Outdoor Air Quality Monitoring: (1 point)

- Monitor and treat the outdoor air quality by having a IAQ dashboard.

#### Exemplary Performance:

This credit is not eligible for exemplary performance.

#### Documentation Required:

Submit details for the attempted criteria by the resort along with photographs and narrative

# **Resort Design & Infrastructure**

**Heat Island Effect**  
**RDI Credit 1**

**Points: 1 - 4**

**Intent:**

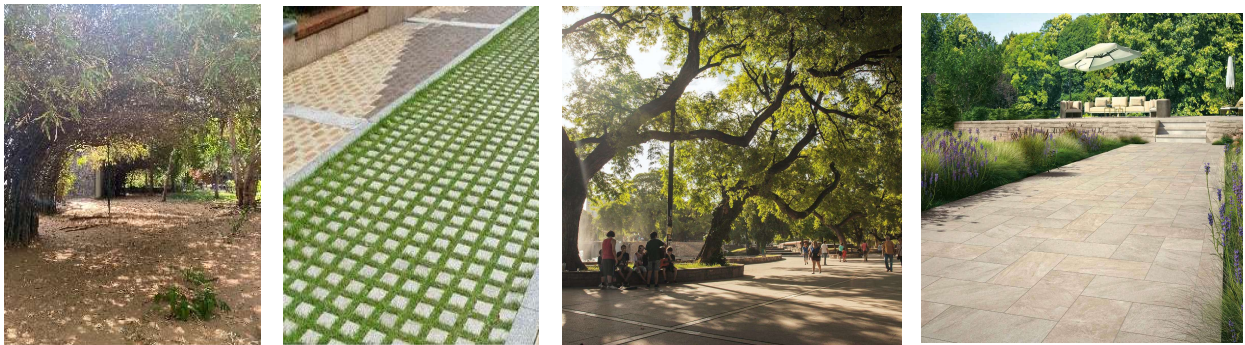
Reduce heat islands to minimise negative impacts on microclimate and local biodiversity.

**Compliance Options:**

**1. Heat Island Effect - Non-Roof areas: (2 points)**

Provide at least 50% of exposed non-roof impervious areas with a combination of the below:

- ❖ Shade from tree cover within 5 years of project completion
- ❖ Open grid pavers or Grass pavers
- ❖ Hardscape materials (including pavers) with SRI of at least 29 (and not higher than 64)



Points are awarded as below:

Percentage of the area covered with trees/ low SRI materials/ grass pavers to the total of total non-roof area	Points
50%	1
75%	2

**Notes:**

- *The non-roof impervious areas include footpaths, pathways, roads, uncovered surface parking and other impervious areas.*
- *Trees/ Saplings should be planted before occupancy.*
- *In case of trees, area of the tree canopy can be considered (estimate over 5 years)*

## 2. Heat Island Effect - Roof Areas: (2 points)

Provide at least 75% of exposed roof areas with a combination of the below:

- ❖ High SRI materials
- ❖ High albedo materials
- ❖ Roof garden/ Vegetation



Minimum Solar Reflective Index (SRI\*) values for different roof types are provided below:

Solar Reflective Index (SRI) values for different roof types

Roof Type	Slope	SRI
Low-sloped roof	$\leq 1:6$	78
Steep-sloped roof	$\geq 1:6$	29

Points are awarded as below:

Percentage of the area covered with high SRI materials/vegetation to the exposed roof area	Points
75%	1
95%	2

Notes:

- For this credit, all roof areas, including podium, covered surface parking and utility blocks, which are exposed to the sky (at and above ground level) should be considered for calculations.
- Exposed roof area need not include equipment platforms, areas with solar photovoltaic &, solar water heaters, skylights, swimming pool, driveways, pathways, roads, play areas etc.,
- The other materials which can be used to show compliance include white/ light coloured china mosaic tiles, high reflective coatings and other high reflective materials/ surfaces.
- Use 'Green Pro' or any other Ecolabel mentioning high SRI values.

- The solar reflective index (SRI) is a measure of the constructed surface's ability to reflect solar heat, as shown by a small temperature rise.

\*SRI - Solar Reflective Index

**Solar Reflective Index (SRI) for some of the standard roofing materials**

Materials	Typical Solar Reflective Index (SRI)
Gray Asphalt Shingle	22
Unpainted Cement tile	25
Light Gravel on Built – Up roof	37
White – Coated gravel on Built-up roof	79
White Cement Tile	90
White Coating – 2 coats, 20 mm	107

**Exemplary Performance:**

The project is eligible for exemplary performance under Innovation & Exemplary Performance, if Tree cover is provided or 100 % of the Non-Roof area (or) 100 % Roof area is covered with Vegetation.

**Documentation Required:**

❖ **Heat Island Effect: Non-Roof**

1. Narrative describing the strategies to reduce heat island effect from Non-roof areas.
2. Site drawing highlighting non-roof impervious (hardscape) areas and areas covered with shade from tree cover within 5 years (and/or) open grid pavers, including grass pavers.
3. Calculations showing the percentage of area shaded by trees (or) covered by low SRI materials.
4. List of existing trees/planted species which are likely to be grown in 5 years for shading.
5. Details of proposed Green Pro Eco labelled SRI materials in the project (product name & manufacture details).
6. Photographs

❖ **Heat Island Effect: Roof**

1. Narrative describing the strategies to reduce heat island effect from roof areas.
2. Roof plans highlighting location and the extent of high reflective roof materials/ vegetation.
3. Calculations highlighting the percentage of area that would be covered with high SRI materials/ Vegetation.
4. Purchase invoice/ payment receipts of 'Green Pro' Eco labelled high SRI materials used in the project.
5. Photographs

## Universal Design

Points: 2

### RDI Credit 2

#### Intent:

Demonstrate sensitiveness towards varied class of guests by addressing needs of differently abled and senior citizens.

#### Compliance Options:

Design the resort to provide the following, as applicable measures, for differently abled and senior citizens in accordance with the guidelines of the National Building Code (NBC) of India 2016. The project should have any four of the following features: (1 Point for two measure, maximum 2 points)

- ❖ Non-slippery ramps for easy access to the main entrance. Such ramps should have with handrails on at least one side.
- ❖ Accessible information at the entrance to the site
- ❖ Important information communicated via two senses or more (tactile, audible, and visual)
- ❖ Dedicated and easily assessable rooms for differently abled
- ❖ Uniformity in floor level for hindrance-free movement in common areas such as washrooms, restaurant, and common assembly area
- ❖ Rest rooms (toilets) in common areas for differently abled people
- ❖ Visual warning signage in common areas & exterior areas



#### Exemplary Performance:

This credit is not eligible for exemplary performance.

#### Documentation Required:

Details on the measures implemented in the resort for differently abled people and senior citizens along with drawings and photographic evidence.



## Resort Envelope

Points: 4

### RDI Credit 3

*Not applicable for Existing Resorts*

#### Intent:

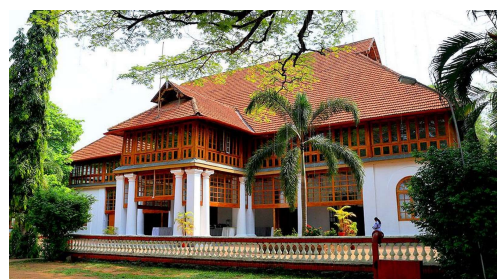
Encourage use of natural and locally sourced materials for building envelope to achieve comfort condition during all climatic conditions in that location.

#### Compliance Options:

Demonstrate that at least 20% (by cost) of the building envelope materials (For e.g., Wall, roof, shading etc.) used are natural and locally sourced. The materials are to be sourced within a distance of 400 km from the resort.

Points are awarded as below:

Percentage of natural and locally sourced building envelope materials	Points
75%	1
95%	2



#### Alternative compliance path – Regional Priority

Projects in tier 3 and tier 4 cities not having access to local materials within 400 km radial distance get relaxation to procure within a radial distance of 800 km from the manufacturing unit to the project location. Example: J & K, Leh, 7 sister states.

#### Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if more than 50% of building envelope materials are natural and locally sourced.

#### Documentation Required:

1. Details of natural and locally sourced materials used in building envelope along with supporting documents.
2. Calculation highlighting the percentage of natural and local materials by cost used in the building envelope.

## Fresh Air Ventilation

Points: 2

### RDI Credit 4

#### Intent:

Ensure adequate fresh air in all occupied spaces, to enhance the guest experience and health & wellbeing of guests and staff.

#### Compliance Options:

##### ❖ Mechanically Ventilated Spaces

- Demonstrate that the resort has installed CO2 sensors in return air ducts of a centralised air conditioning units or 100% of occupied spaces at breathing level.
- Maintain a differential CO2 level of maximum of 530 ppm.

##### ❖ Naturally Ventilated Spaces

- Demonstrate that windows and / or doors in living spaces, bathrooms and common areas are openable to exteriors.

Ensure that each space has the recommended percentage openable area as specified in the table

below:

Space Type	Open Areas as a Percentage of Carpet Area
Living Spaces	10%
Kitchen	8%
Bathroom	5%
Lobbies (< 100 sq.m)	8%
Lobbies (> 100 sq.m)	12%



#### Notes:

- Provide exhaust systems in kitchen as per NBC 2016 requirements.
- Projects with unitary air conditioning system catering less than 10% of the total regularly occupied area can show compliance for fresh air ventilation through the criteria defined for naturally ventilated spaces.
- Windows / doors should not have any obstruction within 2 m from the exterior surface. Shading devices can be excluded.
- For sliding windows / doors, only openable area to the exteriors shall be considered in calculations.



**Exemplary Performance:**

This credit is not eligible for exemplary performance.

**Documentation Required:****Mechanically Ventilated Spaces**

- 1) Narrative describing the strategies implemented to monitor CO2 levels in all occupied spaces
- 2) HVAC ducting layouts showing the location of CO2 sensors in return air ducts or all occupied spaces
- 3) Technical specifications of the installed CO2 sensors.
- 4) Purchase invoice/ Payment receipts of the installed CO2 sensors.

**Naturally Ventilated Spaces**

- 1) Floor plans with window and door schedule
- 2) Building elevations showing operable windows and doors.
- 3) Calculations indicating the openable area of windows and doors to the carpet area, for each of all occupied spaces in percentage.
- 4) Photographs showing the operable windows and doors to the exteriors, in all occupied areas.

## Daylighting

Points: 2 - 4

### RDI Credit 5

#### Intent:

Provide adequate natural lighting to enhance the guests experience reduce energy consumption and also enhance health & well-being of the guests.

#### Compliance Options:

The project can choose any one of the following options or a combination, to show compliance:

##### Option 1 - Simulation Approach

Demonstrate through computer simulation that 75% of the spaces (guest rooms, admin area and meeting rooms) in the resort achieving daylight illuminance level of minimum 110, in a clear sky condition on equinox day (21 September or 20 March) at 12 noon. Areas with 2,200 Lux or more daylight illumination levels should not be considered.

##### Option 2: Measurement Approach

Demonstrate through daylight illuminance measurement that 75% of the regularly occupied spaces in the building achieves daylight illuminance levels for a minimum of 110 Lux. Areas with 2,200 Lux or more daylight illumination levels shall be not considered. To show compliance, consider the average of the measurements taken at 9 am, 12 pm, and 3 pm.



Points are awarded as below:

Percentage of spaces achieving daylight illuminance level of minimum 110 Lux	Points
75%	2
95%	4

#### Exemplary Performance:

This credit is not eligible for exemplary performance.

## **Documentation Required:**

### **Option 1: Simulation Approach**

- Daylight simulation report with sky conditions (such as date & month; time; ambient Lux levels) and wall, floor & roof reflectance properties, for all the occupied spaces in the resort. During simulation, consider shading devices and 'shadow effect' of adjacent buildings.

### **Option 2: Measurement Approach**

- Daylight analysis report indicating daylight illuminance levels measured at work plane height, for all the occupied spaces in the resort.

For both the options provide photographic evidence for daylighting in the interiors of guest room, admin areas and meeting rooms without the artificial lighting.

## Outdoor views

Points: 2

### RDI Credit 6

#### Intent:

Enhance connectivity between the interior and the exterior environment, by providing adequate views to the exterior and enhance guest experience.

#### Compliance Options:

- ❖ Demonstrate the following: (1 Point for each measure, maximum 2 points)
  - 100% of the guest rooms have access to exterior
  - More than 75% of the admin area have access to exteriors
- ❖ Access to exterior can either be to sky or flora & fauna or both.



#### Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1- Innovation in Design Process, if 100% of the guest rooms and more than 95% of the admin areas have access to exteriors.

#### Documentation Required:

Calculations indicating the guest room and admin areas having access to outdoor views to the total occupied space along with the photographic evidence.

## Green Procurement

Points: 5

### RDI Credit 7

#### Intent:

Demonstrate the commitment to purchase products or services with lowest environmental impact and encourage suppliers to pursue environment management systems and processes.

#### Compliance Options:

#### For Existing Resorts:

- ❖ Demonstrate that the resort has promoted green purchasing for the following: (1 Point each criterion, maximum 3 points)
  - Office consumables
    - Purchase only the required quantity of supplies needed, thus reducing the need of disposing the outdated stock
    - Purchase energy efficient (energy star rated) equipment for office purchases like photocopiers, lightings, refrigerators, printers etc., Preferably, purchase duplex (double-sided) printers
    - Adopt, purchasing 100% recycled & chlorine-free papers
    - Consider purchasing products made from recycled contents
    - Consider purchasing printing inks which is biodegradable
  - Toiletries
    - Toilet Paper, Shower caps
  - Food and beverages:
    - Organic and local food
  - Packaging materials
    - Eg. Packaged bottles, refillable soap dispensers
  - Consumables required for the maintenance of the facility
    - Eg. Hydraulic oils

**For New Resorts:**

Procure at least 5 GreenPro or equivalent Ecolabelled products and materials for construction of resorts.

Some of the GreenPro certified products that could be considered for construction or renovation, or annual maintenance of resorts are as below:

S. No.	Product Categories
1	Paints & Coatings
2	Insulation
3	Plasters
4	Furniture
5	Tiles
6	False Ceiling
7	Construction Blocks
8	Panels & Boards
9	High Performance Glass
10	Wood Polymer Composite
11	Cement
12	Construction Chemicals
13	Construction Aggregates
14	IAQ Solutions
15	Innovative Green Building Technologies
16	Ready Mix Concrete
17	Lighting Systems
18	Plumbing Fixtures

**Exemplary Performance:**

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if more than 6 of the GreenPro certified products and materials are used for construction and/ or operations of New resorts.

**Documentation Required:**

Submit the details of GreenPro certified products utilised for construction in new resort or renovation & maintenance in an existing resort along with the purchase orders.

## Eco-friendly Commuting, within the premises

Points: 1

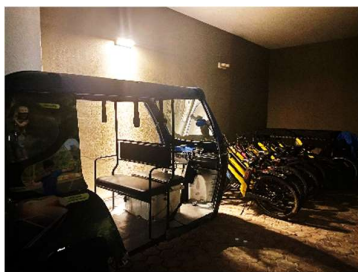
### RDI Credit 8

#### Intent:

Encourage the use of eco-friendly vehicles for connectivity within the resort to maintain good outdoor air quality and also to reduce emissions and associated negative impacts.

#### Compliance Options:

- ❖ Provide internal transportation in the resort through eco-friendly vehicles such as electric vehicles or CNG Powered, or biogas powered for guests & staff
- ❖ Promote walking/ bicycling in the resort through proper walkways/ cycling ways with sufficient illumination.
  - Design walkway/ bicycle lane network to connect to all amenities



#### Exemplary Performance:

This credit is not eligible for exemplary performance.

#### Documentation Required:

1. Details of the eco-friendly internal transportation in the resort along with photographic evidence
2. Site plan highlighting the walkway/ bicycle lane network in the resort along with photographic evidence
3. Details about the illumination levels maintained on the walkway/ bicycle lane

# **Sustainable Landscape**



## Tree Cover

Points: 1-2

### SL Credit 1

#### Intent:

Increase the tree cover in the resort, to mitigate heat island effect and preserve local biodiversity

#### Compliance Options:

Ensure at least 50% of total site area of the resort has tree cover.

Points are awarded as below:

Percentage of site area with tree cover	Points
> 50%	1
> 75%	2



#### Alternative compliance path:

Projects located in hilly areas, arid and semi-arid areas can mitigate heat island effect and preserve local biodiversity by having minimum 15% tree cover (max. 25% for 2 points)

#### Note:

- To increase the tree cover, plant 4 trees for every 100 Sq.m of site area

#### Exemplary Performance:

This credit is not eligible for exemplary performance.

#### Documentation Required:

- 1) Landscape plan showing the area covered with trees.
- 2) List of existing trees in the resort

## Landscape Design

Points: 6

### SL Credit 2

#### Intent:

Encourage species that are native\* or drought tolerant\*\* to reduce water consumption of landscape area.

#### Compliance Options:

Ensure at least 10% of landscape area is planted with native and/ or drought tolerant species. The resort is encouraged not to plant monocultures (single species) or excessive number of same species.

Points are awarded as below:

Percentage of site area with tree cover	Points
≥ 10%	1
≥ 20%	2
≥ 30%	3
≥ 40%	4
≥ 50%	5
≥ 60%	6



#### Notes:

- For landscape area calculations, potted plants should not be taken into consideration
- Turf areas with native grass can be considered.
- Native species are those plants that are indigenous or naturalised to a given area in geologic time.
- \*\* Drought tolerant species are those plants which can adapt to arid and drought conditions

#### Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if more than 80 % of the landscape area is provided with native and drought tolerant species.

#### Documentation Required:

1. Calculations to demonstrate the percentage of landscape area provided with native/ drought tolerant plant species.
2. Landscape plan highlighting the locations of native/ drought tolerant plant species.
3. List of native plant species (including trees, shrubs, herbs, climbers and grass) planted in the resort.

## Creative Garden Design

Points: 2

### SL Credit 3

#### Intent:

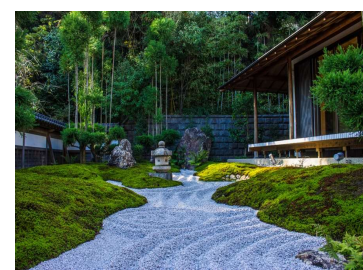
Develop theme gardens to attract various faunal species and enhance biodiversity of the resort.

#### Compliance Options:

Demonstrate at least 2 theme gardens within the resort.

Points are awarded as below:

No. of unique theme gardens in resort	Points
$\leq 2$	1
$\leq 4$	2



#### Notes:

- Theme gardens are part of creative landscapes and encourage use of variety of flora species into the garden.
- Each floral species in theme garden provides habitat for various faunal species like birds, butterflies, bees and insects.
- Some of the theme gardens include: Vertical walls, Butterfly Garden, Fragrance Garden, Herbal Garden, Japanese Garden etc.,
- Annexure II and III describes the concept of theme garden and list of plant species that can be planted to meet the requirement.

**Exemplary Performance:**

This credit is not eligible for exemplary performance.

**Documents Required:**

1. Provide details of the theme gardens developed in the resorts
2. List of flora planted & details of fauna attracted by each theme garden

## Indoor Landscape

Points: 2

### SL Credit 4

#### Intent:

Encourage use of indoor plants that enhance indoor air quality, thereby improving the health and wellbeing of guests.

#### Compliance Options:

Select species suitable for indoor environment. The requirement is to have at least one plant in every 100 sq.ft of carpet area of occupied spaces. These plants can help in absorbing toxins like VOCs, formaldehydes, etc. and improve the indoor air quality, besides enhancing the aesthetics.

Points are awarded as below:

Percentage of indoor area covered with the ratio of 1 plant per 100 sq.ft	Points
$\geq 50\%$	1
$\geq 100\%$	2



#### Notes:

- Indoor plants can be those which absorb VOCs, formaldehydes, hazardous substances etc. and enhance indoor air quality.
- Mosquito repellent plants can also be considered as indoor plants. These plants release odour that is unpleasant to mosquitoes. These plants can be an alternative to chemical-based repellents.

#### Exemplary Performance:

This credit is not eligible for exemplary performance.

#### Documents Required:

Calculations to demonstrate the percentage of indoor area provided with indoor plants  
List of plant species used in the indoor areas.

## Local Food Production

Points: 2

### SL Credit 5

#### Intent:

Grow organic fruits and vegetables within the resorts to reduce the environmental impacts associated with purchasing and make healthier food options available for the guests.

#### Compliance Options:

Replace at least 5% of the fruits and vegetables (by weight) purchased in a year with organically produced fruits and vegetables produced within the resort.

Points are awarded as below:

Percentage of fruits and vegetables replaced with local produce	Points
$\geq 5\%$	1
$\geq 10\%$	2

#### Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if more than 15 % (by weight) of fruits and vegetables purchased are produced organically within the resort.

#### Documentation Required:

1. Total quantity of fruits and vegetables purchased in a year (in kg)
2. Total quantity of fruits and vegetables produced within resort in a year (in kg)
3. Landscape plan showing the area ear marked for fruits and vegetables farming and the list of fruits and vegetables produced



## Water Efficient Irrigation Systems

Points: 2

### SL Credit 6

#### Intent:

Encourage use of water efficient irrigation technologies to reduce water consumption in landscape area.

#### Compliance Options:

Provide highly water efficient irrigation systems for landscape. The resort can adopt the following measures: (1 Point for two measure, maximum 2 points)

- ❖ Provide appropriate planting beds, drip irrigation system and / or sprinklers.
- ❖ Provide moisture-based sensor controllers
- ❖ Install timer-controlled irrigation systems.
- ❖ Water leak detection system
- ❖ Any other innovative methods for watering



#### Exemplary Performance:

This credit is not eligible for exemplary performance.

#### Documentation Required:

1. Provide a detailed description of efficient irrigation systems installed.
2. Provide landscape plans indicating the segregation of planting beds based on irrigation requirements.
3. Provide photographs of irrigation systems installed.

## Use of Organic Fertilizers and Pesticides

Points: 2

### SL Credit 7

#### Intent:

Encourage use of organic fertilisers & pesticides, to minimise negative impact on soil, flora & fauna

#### Compliance Options:

Use organic fertilisers & pesticides for 100% of requirement for landscape area.

#### Notes:

##### Organic Fertilisers include:

1. Vermicompost
2. Leaf mould
3. Bone meal
4. Farmyard manure
5. Deoiled cakes like neem cake, pongamia cake, Castor cake



##### Organic Pesticides include:

1. Neem seed kernel extract
2. Chilli and garlic paste
3. Sitaphal seed powder
4. Chrysanthemum extracts
5. Panchagavya
6. Panchmrutham



#### Exemplary Performance:

This credit is not eligible for exemplary performance.

#### Documentation Required:

Provide details of organic fertilisers & pesticides used in the resort.



# **Resort Facility Management**

## Plastic Free Environment

Points: 1

### RFM Credit 1

#### Intent:

Encourage use of eco-friendly materials in day-to-day to eliminate negative environment impacts due to use of plastics within the resort.

#### Compliance Options:

- ❖ Demonstrate that the facility has replaced plastics with eco-friendly materials for the following requirements such as:
  - Utensils & Cutleries in restaurants
  - Carry bags and Packaging materials
  - Plastic containers for toiletries
  - Water bottles etc



#### Exemplary Performance:

This credit is not eligible for exemplary performance.

#### Documentation Required:

1. Detailed narrative highlighting the measures taken by the resort to replace non - recyclable plastics with eco-friendly materials.
2. Photographs demonstrating the measures taken by the resort.

## Quality of Air and Water

Points: 1-2

### RFM Credit 2

#### Intent:

Create awareness amongst guests on the impacts of the pollutants in air and water by monitoring air and water quality.

#### Compliance Option:

Demonstrate that the guests have access to better quality of air and water

#### Air Quality: (1 Point)

- ❖ Treat and monitor the following air quality parameters daily in at least about 2 – 3 locations within the resort premises:

Parameters	Threshold Values
PM 2.5	< 25 µg/m <sub>3</sub>
PM 10	< 100 µg/m <sub>3</sub>
SO <sub>2</sub>	< 80 µg/m <sub>3</sub>
NO <sub>2</sub>	< 80 µg/m <sub>3</sub>

Inputs from 'IGBC Rating Guidelines and 'Indoor Environmental Quality Standard – ISHRAE 10001 – 2016'

- ❖ Display the above parameters and their impacts on human health at prominent locations such as entrance, reception, etc, to create awareness amongst the guests and visitors.
  - PM 2.5
  - PM 10
  - SO<sub>2</sub>
  - NO<sub>2</sub>

**Water Quality: (1 Point)**

- ❖ Demonstrate that the drinking water is treated to meet the following drinking water specifications as per IS 10500- 2012 'Drinking Water- Specification Standard':

Characteristic	Requirement (Acceptable Limit)
<b>Physical Parameters</b>	
Colour	5 Hazen Units
Odour	Nil
Ph	6.5 – 8.5
Turbidity	1 NTU
TDS	500 mg/l
E.coli	Shall not be detectable in any 100ml sample
<b>General Parameters</b>	
Total Hardness CaCo3	200 mg/l
Chloride	250 mg/l
Iron	0.3 mg/l
<b>Toxic Parameters</b>	
Lead	0.01
Mercury	0.001
Total Arsenic	0.01

**Exemplary Performance:**

This credit is not eligible for exemplary performance.

**Documentation Required:**

1. Details of air quality monitoring system in resort along with the photographic evidences and purchase invoices.
2. Drinking water test certificates to be submitted quarterly.

## 'Net Zero Energy'

Points: 10

### RFM Credit 3

#### Intent:

Encourage the resorts to improve energy efficiency and utilise renewable energy sources to achieve 'Net Zero Energy' status thereby reducing the impacts of excessive energy use.

#### Compliance Options:

Demonstrate the following measures:

#### 1. Energy Performance Index: (1-3 points)

##### ❖ For Existing Resorts

Demonstrate that the annual energy consumption of energy systems in the resort achieves energy performance index (EPI) limits as mentioned in the table below.

Climatic Zone	EPI (kWh/sqm/yr)	Points
Warm & Humid	215	1
	204	2
	194	3
Composite	201	1
	191	2
	181	3
Hot & Dry	167	1
	159	2
	151	3
Moderate	107	1
	102	2
	97	3

❖ **For New Resorts**

Demonstrate that the annual energy consumption of energy systems in the resort achieves the energy performance index (EPI) ratio as per ECBC 2017 mentioned in the table below:

Climatic Zone	EPI (kWh/sqm/yr)	Points
Warm & Humid	1	1
	0.95	2
	0.90	3
Composite	1	1
	0.95	2
	0.90	3
Hot & Dry	1	1
	0.95	2
	0.90	3
Moderate	1	1
	0.95	2
	0.90	3

**Notes:**

- The EPI ratio is the ratio of the EPI of the proposed building to the EPI of the standard building:

$$\text{EPI Ratio} = \frac{\text{EPI of Proposed Building}}{\text{EPI of Standard Building}}$$

Where, proposed Building is consistent with the actual design of the building and complies with all the mandatory requirements of ECBC.

- The EPI of the proposed building shall be established through any one of the following two methods:
  - Prescriptive Method
  - Whole Building Performance Method

## 2. On-site Renewable Energy: (1-5 Points)

Install on-site renewable energy system to meet at least 10% of the total annual energy consumption of the resort. (Interior & Exterior areas)

Renewable Energy as a percentage of total annual energy consumption	Points
10%	1
20%	2
30%	3
40%	4
50%	5



### Notes:

- Renewable energy sources include solar energy, wind power, biomass; etc.
- Solar hot water systems cannot be considered as power generation source and cannot be subtracted from the total annual energy consumption of the proposed case.

(AND/ OR)

## Off-site Renewable Energy: (1-5 Points)

Demonstrate that the resort has invested in off-site renewable energy equivalent to meet at least 10% of the total annual energy consumption. (Interior & Exterior areas)

Percentage of total annual energy consumption	Points
10%	1
20%	2
30%	3
40%	4
50%	5

### Notes:

- Type of renewable energy source shall be in compliance with the Ministry of New and Renewable Energy (MNRE), Government of India and respective State Regulatory Commissions.
- Off-site renewable energy so generated shall be counted only once.
- Hydro power projects with 25 MW or lesser size shall only be considered under this credit.
- For credit calculations, RECs purchased in the last 6 months of building operation can also be considered, to show compliance.
- In case, the Project purchases RECs through an Authorized Agency of exchange, then a legal contract should exist between the Authorized Agency and the Project.

### 3. Solar Heat Pumps/ Solar Hot Water: (1-2 points)

Project shall demonstrate that the resort has invested in solar hot water system equivalent to meet at least 75% of the hot water requirement.

Percentage of installation of total solar heat pump/ solar hot water consumption	Points
75%	1
95%	2



#### Exemplary Performance:

This credit is eligible for exemplary performance under innovation category if 100% of the total annual energy consumption is met through on-site and/ or off-site renewable energy.

#### Documentation Required:

1. EPI Calculations
2. Energy Simulation report showing the annual energy consumption as per ECBC requirements vis –a – vis actual energy consumption
3. Details about the renewable energy generated through on-site renewable energy systems and the total energy consumption of the resort.
4. Details and calculations of the installed solar hot water/ solar heat pump consumption of the resort.
5. Photographs and Purchase invoices of the renewable energy systems installed
6. Copy of power purchase agreement or contract indicating the purchase of off-site renewable energy



## Net Zero Water

Points: 10

### RFM Credit 4

#### Intent:

Encourage best practices in water use, reuse and recycling thereby demonstrating commitment to save potable water.

#### Compliance Options:

Demonstrate 3R approach for water conservation through the following measures:

##### 1. Reduce: (1-2 Points)

Use water efficient plumbing fixtures (as applicable) whose flow rates are 15% less than the baseline criteria (table) in aggregate. The total annual water consumption of the resort should not exceed the total base case water consumption computed.



Points are awarded as below:

Water Efficient Plumbing Fixtures	Points
15% Less than the baseline criteria	1
25% Less than the baseline criteria	2

#### Notes:

- Faucets / Taps installed for hand wash in canteen shall be considered.
- Rain showers (if any) need to be considered in the calculations under Showerhead.
- The baseline flows can be demonstrated at a flowing water pressure of 3 bar. Flowing water pressure of 3 bar does not mean that the water supply in the building is at 3 bar. The building fixtures can operate at lower pressures, however, to show compliance under this credit, the design flow rates are to be submitted at 3 bar.
- Plumbing fixtures that are certified by CII under Green Product Certification Programme GreenPro to show compliance

The Baseline criteria is as below:

Fixture Type	Maximum Flow Rate / Capacity	Duration	Daily Uses per Person/ Day
Water Closets	6 LPM (High flush)	1 Flush	1
	3 LPM (Low flush)	1 Flush	4
Health Faucet/ Bidet, Hand-held spray*	8 LPM	15 Seconds	1
Faucet*	8 LPM	15 Seconds	8
Kitchen Sink*	8 LPM	15 Seconds	6
Showerhead* / Hand-held Spray*	10 LPM	8 Minutes	1

Source: Uniform Plumbing Code – India, 2018

## 2. Recycle and Reuse

### ❖ Recycle - Wastewater Treatment: (2 Points)

Provide an on-site treatment system to treat 100% of wastewater generated in the resort to the quality standards suitable for reuse as prescribed by Central (or) State Pollution Control Board, as applicable.

Recycled Water as per CPCB 2015	
Parameters	Threshold Limits
pH (mg/l)	6.5 - 9
BOD (mg/l)	Not more than 10
COD (mg/l)	Not more than 50
TSS (mg/l)	Not more than 20
NH4N (mg/l)	Not more than 5
N-Total (mg/l)	Not more than 10
Characteristics	Requirement
Physical Parameters as per IS 10500: 2012	
Colour	5
Odour	Nil
Turbidity	1

### ❖ Reuse - Wastewater: (2 Point)

Use treated wastewater or captured rainwater for at least 50% of landscaping & flushing water requirements.



**Notes:**

- Wastewater here refers to both grey and black water.
- The credit point(s) can be claimed only if the wastewater is treated in-situ and reused in-situ. In case the local authorities insist the project to divert wastewater to a centralised / common wastewater treatment plant, then the project can show 3q compliance with 'Case-2' given above, by reusing
- Treated wastewater from the centralised / common / any other wastewater treatment plant.
- Treated wastewater sourced from other sites / local authorities through permanent piped connections or other means can also be considered to show compliance for 'wastewater reuse'.
- Natural wastewater treatment systems can be used for treating wastewater generated
  - Root Zone treatment
  - Phytoremediation
  - Phytoid
- Water from sources such as bore wells, natural wells, municipal water systems are considered as potable water.



**3. Recharge - Rainwater Harvesting, Roof & Non-Roof: (2-4 Points)**

**Case A**

- ❖ Design rainwater harvesting system to capture at least 'one-day rainfall\*' runoff volume from roof and non-roof areas.

\* One-day rainfall can be derived from 'percentage of average peak month rainfall' given in Table

To arrive at average peak month rainfall, consider an average of at least last 5 years peak month rainfall (of the respective year).

Criteria to arrive at one day rainfall:

Sr. No.	Average peak month rainfall (mm)	One day rainfall		
		2 points	3 points	4 points
1	Upto 250	12%	15%	18%
2	251 – 350	10%	12.5%	15%
3	351 – 500	8%	10%	12%
4	501 – 700	6%	7.5%	9%
5	700 & above	4%	5%	6%

### **Case B: High Ground Water Table**

- ❖ In areas where the Central / State Ground Water Board does not recommend artificial rainwater recharge (or) if the groundwater table is less than 8 meters, the project is required to provide justification for not implementing rainwater harvesting system

#### **Notes:**

- For rainfall information, refer Indian Meteorological Department data at <http://www.imd.gov.in>  
Runoff volume = Surface area x Runoff Coefficient x Rainfall.
- Consider Rainwater Harvesting Guidelines (as and when available) from the National Building Code (NBC) of India, Part 11 - Approach to Sustainability, Section 7.2 - Rainwater Harvesting Surface Runoff.
- In areas where the water percolation is limited, collection tanks / water bodies may be provided to meet the above requirement.
- Filtering of suspended solids shall be ensured by providing suitable filtering media before letting the water into the collection tanks, water bodies and municipal storm water drains.

#### **4. Water Efficient Appliances: (2 Points)**

*Applicable only for New Resorts*

Use water efficient appliances in the facility to reduce the amount of water consumption. (1 point for each measure)

- ❖ RO Plant
- ❖ Washing Machines
- ❖ Dish Washer

#### **Exemplary Performance:**

This credit is not eligible for exemplary performance.

#### **Documentation Required:**

1. Daily and annual water balance of the project.

##### **Note:**

The water balance shall include calculations (approximate) showing the water demand for landscaping, flushing and air-conditioning cooling tower make-up water (if the project uses water cooled chillers), and quantity of wastewater reused for such applications.

2. Manufacturer cut sheets/ brochures/ letters indicating the flow rates of the plumbing fixtures (flow and flush) at 3 bar flowing water pressure.

##### **Note:**

The manufacturer letters should be project specific.

3. Narrative describing the strategies proposed to capture/ harvest rainwater from roof & non-roof areas.

4. Narrative describing the installed on-site wastewater treatment system, along with the capacity & efficiency of treatment plant and the quality standards of wastewater treated.
5. Site plan highlighting the location of installed on-site wastewater treatment system
6. Photographs showing the on-site wastewater treatment system installed.
7. Schematic drawing showing dual plumbing lines, if treated wastewater is reused for flushing.
8. Purchase order and cut sheet of the STP if installed in the resort
9. Treated water test reports
10. Calculations indicating the run-off volume captured/ harvested from roof and non-roof.

**Notes:**

- If bore well(s) are installed in the project to harvest rainwater, submit soil test report indicating the percolation rate(s).
  - If rainwater harvesting pit(s) are installed, then submit percolation rate(s).
11. External storm water drain layout highlighting the location of rainwater harvesting - ponds, pits, storage tanks, etc., as applicable, including cross-sectional drawings of rainwater harvesting systems.
  12. If project's water table is less than 4 meters, submit hydrology report (approved by third-party) indicating the level of water table, at different locations within the project site.

## Net Zero Waste to Landfill

Points: 1-6

### RFM Credit 5

#### Intent:

Facilitate segregation of wastes at source so as to facilitate better handling of waste and prevent waste being sent to landfills.

#### Compliance Options:

##### Demonstrate the following measures:

##### 1. Waste Segregation: (1 Point)

Provide color coded bins to collect bio-degradable & non-biodegradable waste at all the floors and common areas of the building, as per the different categories of waste.



##### ❖ Unit Level:

Provide two bins at each guest room (wet and dry waste) and one bin at the bathroom to collect the sanitary waste.



##### ❖ Kitchen & Dining area:

Provide enough bins in the kitchen and dining area to collect the wet waste. (Include food wastes, fruit and vegetable peelings, leftovers (including meat and fish), egg and nutshells, coffee grounds, tea leaves, husks and seeds,)

##### ❖ Site Level:

- Provide bins within the facility at different places to dispose the dry- waste
- Provide a E- waste bin within the facility
- Collect landscaping waste at different places within the facility (straw, leaves grass cuttings, flowers or trimmings from bushes and hedges)

**Table – Type of Waste at Building Level**

Color Bin	Name of the bin	Examples of Waste
	Paper Recycling	Office paper, clean cardboard, newspaper, milk & juice cartons, disposable coffee cup-lids only
	Organic Recycling	Food, pruning's, fruit & vegetables, plate scrapings including meat, fish & leftovers, coffee grounds, flowers
	Hazardous waste	Sanitary napkins, diapers, used syringes blades, bandages, expired medicine
	Mixed recycling	Glass bottles, aluminum cans
	Soft plastic recycling	Bread bags, pasta & rice bags, cling wrap, plastic bags, biscuit packets, frozen food bags, bubble wrap
	E-waste	CFL, tube light, printer cartridges, batteries

**2. Waste Monitoring: (1 point)**

- ❖ The project team should allocate a centralized facility to store waste and a dedicated team to segregate collected waste.
- ❖ Project should maintain a dashboard showing the quantities of the waste generated and implement strategies and measures for reducing waste generation during operation phase.
- ❖ Ensure that the waste generation is within the specified baseline.

**3. Recycling Industry: (1 point)**

Facilitate recycling of waste generated during operation and maintenance by handling them responsibly or handing over to the authorized recycler so that the waste to landfill and the related environmental impacts are avoided.

**4. Treatment: (2 Points)**

Install an on-site waste treatment system for handling 100 % of the organic (kitchen & landscape) waste generated in the building.

**Notes:**

- For calculation, food waste can be considered as 0.1 kg per person per day (i.e. 0.1 kg/ person/ day) or as prescribed by the local byelaw, whichever is more stringent.
- If the project is having an organic waste convertor in an enclosed room, then design such area with exhaust system, self-closing door, deck-to-deck partition/ hard ceiling
- Natural treatment methods can be used in the resort for treating organic waste generated using:
  - Vermicomposting
  - Leaf litter
  - Or any other natural methods

**5. Biogas Plant: (1 point)**

Install on-site biogas waste treatment system for handling 100% of the organic (kitchen & landscape) waste generated in the building.

**Exemplary Performance:**

This credit is not eligible for exemplary performance.

**Documentation Required:**

1. Narrative describing the strategies implemented to:
  - a) Segregate and divert dry waste (paper, plastic, metals, glass, etc.,) and wet waste from the building(s) to the easily accessible common facility
  - b) Divert dry & wet waste and other waste such as batteries, e-waste, lamps, and medical waste (if any), from the common facility
2. Site/ floor plan showing the location of the centralized facility for segregation of waste.
3. Narrative describing the strategies to handle kitchen waste, and the on-site organic waste treatment system.
4. Site plan highlighting the location of on-site organic waste treatment system installed in the project.
5. Calculations indicating the quantity of organic waste treated in the project (including tenant occupied areas) to the quantity of organic waste generated, in percentage.
6. Manufacturer brochure/ cut-sheet of the installed organic waste treatment system.
7. Purchase invoice/ payment receipts of the installed organic waste treatment system.
8. Photographs showing the installed organic waste treatment system



**RFM Credit 6****Intent:**

Encourage sub-metering and continuous monitoring to identify improvement opportunities in building's energy performance, thereby optimising the use of resources.

**Compliance Options:****1. Energy Metering:** (1 Point for three energy meters)

Provide at least three energy meters for the following applications:

- ❖ Interior & Common area lighting
- ❖ Exterior area lighting
- ❖ Municipal water pumping
- ❖ Ground water pumping
- ❖ Treated wastewater pumping
- ❖ Renewable energy generation
- ❖ Power backup systems (Generators sets, Gas turbines, etc.,)
- ❖ BTU meter for chilled water consumption
- ❖ Any other energy consuming equipment and systems

**2. Water Metering:** (1 Point for three energy meters)

Provide at least three water meters for the following applications:

- ❖ Kitchen water consumption
- ❖ Laundry water consumption
- ❖ Landscape water consumption
- ❖ Domestic water consumption

**3. Building Management System:** (1 Point for 3 systems)

Demonstrate that the building and water management system are in place to monitor and control at least three of the following systems:

- ❖ Landscape water management system
- ❖ Laundry water management system
- ❖ Kitchen water management system
- ❖ Air-conditioning management system
- ❖ Lighting management system
- ❖ Renewable energy management system
- ❖ Elevator management system

- ❖ Fresh air monitoring system
- ❖ CO2 control and monitoring system

Also, commit to provide the annual total building energy consumption data to IGBC. The energy data shall be provided for all the major energy consuming equipment and systems.

**Note:** This credit can be achieved only if the BMS requirement is met.

**Exemplary Performance:**

This credit is not eligible for exemplary performance.

**Documentation Required:**

- 1) Single line diagram (SLD) highlighting the location of the water and energy meters
- 2) Purchase order and cut sheets of the water meters and energy meters
- 3) Narrative describing the building management system installed in the project, to control and monitor equipment and systems.
- 4) Declaration letter from the project owner/ developer stating that the project will provide the annual total building energy consumption data to IGBC.

## Eco-friendly housekeeping practices

Points: 2

### RFM Credit 7

#### Intent:

Adopt housekeeping practices that do not affect the health and well-being of guests and occupants.

#### Compliance Options:

Demonstrate that the resort has implemented the following housekeeping practices: *(1 Point each measure, maximum 2 points)*

- ❖ Housekeeping protocol or standard operating procedures for cleaning according to NBC 2016 (NBC Volume II, Annex J, Typical Template for Housekeeping of Hotels)
- ❖ Use of eco-friendly housekeeping chemicals that are certified by GreenPro or another equivalent standards
- ❖ Integrated Pest Management Plan as per National Building Code - 2016



#### Exemplary Performance:

This credit is not eligible for exemplary performance.

#### Documentation Required:

- 1) Provide details on the housekeeping protocols or systems in place for monitoring the house keeping measures
- 2) Manufacturer cut sheet and purchase invoices for eco-friendly housekeeping chemicals
- 3) Pest management plan

# **Societal Contribution**

## Promotion of Local Economy

Points: 2

### SC Credit 1

#### Intent:

Promote local economy by purchasing local products and hiring local people.

#### Compliance Options:

Demonstrate the following initiatives: (1 Point each measure, maximum 2 points)

- ❖ 75% of employees working in the resort are locals
- ❖ Purchase of at least 40% of food products within 50 kms radius from the resort.
- ❖ Purchase of consumables produced within 400 km radius from the resort.

#### Alternative compliance path:

Projects located in hilly areas, arid and semi-arid areas shall demonstrate the following initiatives: (1 Point each measure, maximum 2 points)

- ❖ 75% of employees working in the resort are locals within a distance of 150 km from the resort.
- ❖ Purchase at least 40% of food products within 200 kms radius from the resort.
- ❖ Purchase consumables produced within 800 km radius from the resort

#### Note:

People may be employed within a distance of 100 km from the resort.

#### Documentation Required:

- 1) Provide details of the job opportunities generated for the local population and submit calculations to demonstrate the requirements.
- 2) Provide details of the food products and consumables.

## Promotion of Local Culture

Point: 1-3

### SC Credit 2

#### Intent:

Promote local culture by encouraging local art and craft of the region

#### Compliance Options:

Demonstrate the following measures: (1 Point each measure, maximum 3 points)

- ❖ Promotion of folk dance and music for cultural events and local sports for recreation within the resort.
- ❖ Sale of local artifacts, souvenirs, and handicrafts in the resort.
- ❖ Adoption of vernacular architecture



#### Documentation Required:

- 1) Narrative about the folk dance, music and local sports promoted by the resort
- 2) Provide details about the vernacular architecture implemented by the resort.

## Beyond the fence green initiatives

Point: 1-3

SC Credit 3

Intent:

Support implementation of sustainable development initiatives for the benefit of local community.

### Compliance Options:

Demonstrate support for at least three of the following measures: (1 Point each measure, maximum 3 points)

- ❖ Infrastructure Development
- ❖ Potable water supply for local community
- ❖ Restoration of water bodies
- ❖ Rainwater Harvesting Systems for local areas
- ❖ Medical camps for local community
- ❖ Preservation of local floral and faunal species
  - ❖ Eg. Restoring of water bodies for aquatic species, Protection of mangroves, adaptable habitat for endangered species etc,



### Documentation Required:

Narrative and photographs on the community development activities taken up by the resort.

# Innovation & Design



**ID Credit 1****Intent:**

Provide design teams and projects an opportunity to be awarded points for innovative design & performance in resorts not specifically addressed by the IGBC Green Resorts rating system and / or exemplary performance above the requirements

**Compliance Options:****Credit 1.1 – 1.5: Innovation & Design****❖ Option 1: Innovation**

Identify the intent of proposed innovation credit proposed requirement for compliance, and proposed documentation to demonstrate compliance and the design approach used to meet the required measures.

**(Or)**

**❖ Option 2: Exemplary Performance**

The project is eligible for exemplary performance if the construction and/ or renovation measures greatly exceed the credit requirement of the IGBC Green Resorts rating system.

**Note:**

Eligibility criteria for various credits in the IGBC Green Resorts Rating system are defined in respective credits and Exhibit A.

**Documentation Required:****Innovation:**

- 1) Narrative describing intent, requirements, strategies and technologies implemented to achieve the innovation credit. Strategies adopted must be significantly better than standard sustainable design practices.
- 2) Table indicating quantitative performance improvements, comparing baseline and design case.
- 3) Other supporting documents such as drawings, illustrations, cut-sheets, test reports, etc., as applicable.

**Notes:**

- Measures addressed in the rating system are not eligible for Innovation.
- Measures must be voluntary and should not be mandated by the local bye-laws.

**Exemplary Performance:**

Narrative describing the strategies implemented to achieve exemplary performance in the respective base credit.

<b>Exhibit A – List of Base Credits eligible for Exemplary Performance</b>	
<b>Resort Design and Infrastructure</b>	
RDI Credit 3 - Resort Envelope	If more than 50% of building envelope materials are natural and locally sourced
RDI Credit 6 – Outdoor Views	If 100% of the guest rooms and more than 95% of the admin areas have access to exteriors.
RDI Credit 7 - Green Products & Materials	If more than 12.5 % of the GreenPro certified products and materials are used for construction and/ or operations of resorts
<b>Sustainable Landscape</b>	
SL Credit 2 – Landscape Design	If more than 80 % of the landscape area is provided with native and drought tolerant species
SL Credit 4 – Local Food Production	If more than 15 % (by weight) of fruits and vegetables purchased are produced organically within the resort
<b>Resort Facility Management</b>	
RFM Credit 3 – Net Zero Energy	If 100% of the total annual energy consumption is met through on-site and/ or off-site renewable energy.

**IGBC Accredited Professional**

**Points: 1**

**ID Credit 2**

**Intent:**

Support and encourage involvement of IGBC Accredited Professional in societies, so as to integrate appropriate design measures and streamline certification process.

**Compliance Options:**

At least one principal participant of the project team shall be an IGBC Accredited Professional.

**Documentation Required:**

IGBC Accredited Professional certificate of the principal participant involved in the project.

# Annexures

## ANNEXTURES

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### **Annexure – I: Guest Survey:**

#### **1. Thermal Comfort**

##### **1.1. Were you comfortable with the temperature and humidity in the resort?**

###### **Temperature**

- a. Hot
- b. Warm
- c. Comfortable
- d. Cool
- e. Cold

###### **Humidity**

- a. Humid
- b. Slightly Humid
- c. Comfortable
- d. Slightly dry
- e. Dry

#### **2. Acoustic Comfort**

##### **2.1. How was the overall noise level at your room?**

- a. Too Noisy
- b. Noisy but acceptable
- c. Comfortable
- d. Quieter than comfortable
- e. Too quiet

##### **2.2. Do you agree that the resort offers relaxing atmosphere during stay?**

- a. Agree
- b. Disagree

## ANNEXTURES

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### **If you disagree, the what kind of noise distracted you?**

- a. Noise from external surroundings
- b. Noise from internal equipment
- c. Noise from internal surroundings
- d. Noise from the neighbour

### **3. Olfactory Comfort**

#### **3.1. Do you experience any odour at your room?**

- a. I always experience foul smell at my facility (eg: strong smell of food, printer, housekeeping chemicals, chewing tobacco, outdoor smell etc)
- b. I occasionally experience foul smell at my facility
- c. My facility smells pleasant throughout the year

### Annexure II – Creative Design:

#### Butterfly Garden

- ❖ Butterfly gardening is designed to create an environment that attracts butterflies, as well as certain moths. Butterfly garden is a type of theme garden designed to enhance the biodiversity of a site.
- ❖ Grouping more than one plant of each type together will help to unify the look of the garden than a single plant of each species.
- ❖ Choosing plants of different types, such as shrubs, trees, perennials, and even vines will be creating a garden that is attractive to a wide range of butterflies.
- ❖ Nectar-producing plants will attract butterflies to the garden. Many nectar-producing plants are native species which require less maintenance, as they are naturally adapted to the region.
- ❖ Adult butterflies have a very short lifespan. Planting a variety of nectar sources will encourage more butterflies to visit the garden.

#### The general requirements for butterfly gardening are:

1. **Full sun:** Plants, especially flowering plants, need sun to make food for themselves and nectar for butterflies. Butterflies also need sun to warm their bodies for flight.
2. **Nectar source plants:** Butterflies are attracted to flowers with strong scents and bright colours where they drink sweet, energy-rich nectar.
3. **Larval host plants:** Butterflies lay their eggs on host plants that the emerging caterpillars will eat. Butterflies see more colors than humans do. They seem to prefer red, orange, yellow, purple and dark pink. A large, colorful garden is easy for butterflies to find and encourages them to stay longer.
4. **Pesticide-free environment:** Pesticides kill butterflies, caterpillars and other useful insects. Each butterfly has a favourite nectar plant and needs a specific host plant where it will lay eggs.

## ANNEXTURES

### Annexure III – List of plant species to promote Butterfly Garden

Butterfly Garden				
S No.	Botanical Name	Common name	Family	Habit
1	<i>Abrus precatorius</i>	Coral bead vine	Fabaceae	Climber
2	<i>Abutilon indicum</i>	Indian Abutilon	Malvaceae	Shrub
3	<i>Achyranthes aspera</i>	Prickly Chaff Flower	Amaranthaceae	Herb
4	<i>Althernathera ficoidea</i>	Sanguinarea	Amaranthaceae	Herb
5	<i>Althernathera sessilis</i>	Sessile Joy Weed	Amaranthaceae	Herb
6	<i>Alysicarpus monilifer</i>	Necklace-Pod Alyce Cover	Leguminosae	Herb
7	<i>Amaranthus viridis</i>	Green Amaranth	Amaranthaceae	Herb
8	<i>Ammania baccifera</i>	Monarch redstem	Lythraceae	Herb
9	<i>Argemone mexicana</i>	Mexican Prickly Poppy	Papaveraceae	Herb
10	<i>Asclepias curassavica</i>	Scarlet Milkweed	Apocynaceae	Herb
11	<i>Asclepias tuberosa</i>	Butterfly Weed	Apocynaceae	Herb
12	<i>Barleria cristata</i>	Philippian Violet	Acanthaceae	Shrub
13	<i>Barleria longifolia</i>	Long flowered barleria	Acanthaceae	Shrub
14	<i>Barleria prionitis</i>	Porcupine flower	Acanthaceae	Shrub
15	<i>Bidens pilosa</i>	Beggar tick	Asteraceae	Herb
16	<i>Blumea mollis</i>	Soft Blumea	Asteraceae	Herb
17	<i>Boerhavia chinensis</i>	Hog weed	Nyctaginaceae	Herb
18	<i>Boerhavia repens</i>	Red Spiderling	Nyctaginaceae	Herb
19	<i>Boerhavia diffusa</i>	Spreading Hogweed	Nyctaginaceae	Herb
20	<i>Brassica nigra</i>	Black mustard	Brassicaceae	Shrub
21	<i>Byttneria herbacea</i>	Herbaceous Byttneria	Malvaceae	Herb
22	<i>Buddleja asiatica</i>	White butterfly bush	Buddlajaceae	Shrub
23	<i>Cadaba fruticosa</i>	Indian cadaba	Capparaceae	Shrub
24	<i>Caesalpinia sappan</i>	Brazil wood	Caesalpinaceae	Small Tree
25	<i>Calamus rotang</i>	Common Rattan	Aracaceae	Climber
26	<i>Calotropis gigantea</i>	Crown flower	Asclepiadaceae	Shrub
27	<i>Calotropis procera</i>	Rubber Bush	Asclepiadaceae	Shrub
28	<i>Capparis zeylanica</i>	Ceylon caper	Capparaceae	Shrub
29	<i>Capparis sepiaria</i>	Wild caper bush	Capparaceae	Shrub
30	<i>Cassia occidentalis</i>	Coffee senna	Caesalpinaceae	Shrub
31	<i>Cassia biflora</i>	Desert Cassia	Caesalpinaceae	Shrub



## ANNEXTURES

32	<i>Celosia argentea</i>	Cocks comb	Amaranthaceae	Shrub
33	<i>Cleome viscosa</i>	Asian spider flower	Cleomaceae	Herb
34	<i>Clerodendrum serratum</i>	Blue Fountain Bush	Verbanaceae	Shrub
35	<i>Clerodendrum inerme</i>	Glory bower	Verbanaceae	Shrub
36	<i>Combretum albidum</i>	Piluki	Combretaceae	Climber
37	<i>Crotalaria juncea</i>	Sunn hemp	Fabaceae	Herb
38	<i>Crotalaria verricosa</i>	Blue Rattle pod	Fabaceae	Herb
39	<i>Crotalaria hirsuta</i>	Hairy Rattlepod	Fabaceae	Shrub
40	<i>Croton bonplandianus</i>	Ban ntulasi	Euphorbiaceae	Herb
41	<i>Cryptolepis buchananii</i>	Wax leaved climber	Asclepiadaceae	Climber
42	<i>Cyanotis cristata</i>	Nabhali	Commelinacaeae	Herb
43	<i>Derris scandens</i>	Jewel vine	Fabaceae	Climber
44	<i>Desmodium gangeticum</i>	Sal leaved desmodium	Fabaceae	Herb
45	<i>Desmodium triflorum</i>	Creeping tick trefoil	Fabaceae	Herb
46	<i>Duranta repens</i>	Sky flower	Verbanaceae	Shrub
47	<i>Evolvulus alsinoides</i>	Dwarf morning glory	Convolvulaceae	Herb
48	<i>Flacourtia indica</i>	Governor's plum	Salicaceae	Small Tree
49	<i>Heliotropium indicum</i>	Indian Heliotrope	Boraginaceae	Herb
50	<i>Heliotropium curassavicum</i>	Sea side Heliotrope	Boraginaceae	Herb
51	<i>Hemidesmus indicus</i>	Indian Sarasaparilla	Asclepiadaceae	Climber
52	<i>Hibiscus hirtus</i>	Lesser Mallow	Malvaceae	Herb
53	<i>Hibiscus rosa-sinensis</i>	China Rose	Malvaceae	Shrub
54	<i>Hibiscus mutabilis</i>	Changeable Rose	Malvaceae	Small Tree
55	<i>Hybanthus enneasperums</i>	Spade flower	Violaceae	Herb
56	<i>Hyptis suaveolens</i>	Knob weed	Lamiaceae	Herb
57	<i>Ichnocarpus frutescens</i>	Black creeper	Apocynaceae	Climber
58	<i>Impatiens balsam</i>	Garden balsam	Balsaminaceae	Herb
59	<i>Indigofera tinctoria</i>	True indigo	Fabaceae	Shrub
60	<i>Ixora arborea</i>	Trochwood tree	Rubiaceae	Small Tree
61	<i>Jasminum auriculatum</i>	Juhi	Oleaceae	Climber
62	<i>Jatropha curcas</i>	Physic nut	Euphorbiaceae	Small Tree
63	<i>Justicia glauca</i>	Glauculous justicia	Acanthaceae	Herb
64	<i>Kalanchoe pinnata</i>	Airplant	Crassulaceae	Herb
65	<i>Lantana camara</i>	Lantana	Verbenaceae	Shrub

## ANNEXTURES

66	<i>Leucas aspera</i>	Common Leucas	Lamiaceae	Herb
67	<i>Tagetes erecta</i>	Marigold	Asteraceae	Shrub
68	<i>Naringi crenulata</i>	Naringi	Rutaceae	Small Tree
69	<i>Nerium Oleander</i>	Oleander	Apocynaceae	Shrub
70	<i>Oxalis corniculata</i>	Creeping wood sorrel	Oxalidaceae	Herb
71	<i>Parthenium hysterophorus</i>	Carrot grass	Asteraceae	Shrub
72	<i>Passiflora foetida</i>	Love in a mist	Passifloraceae	Climber
73	<i>Phyla nodiflora</i>	Frog fruit	Verbanaceae	Herb
74	<i>Plumbago rosea</i>	Scarlet leadwort	Plumbaginaceae	Herb
75	<i>Plumago auriculatum</i>	Cape leadwort	Plumbaginaceae	Shrub
76	<i>Portulaca oleracea</i>	Purslane	Portulacaceae	Herb
77	<i>Quisqualis indica</i>	Rangoon Creeper	Combretaceae	Climber
78	<i>Rhynchosia minima</i>	Jumby bean	Fabaceae	Herb
79	<i>Ricinus cummiuns</i>	Castor bean	Euphorbiaceae	Small Tree
80	<i>Sesbania bispinosa</i>	Prickly Sesban	Fabaceae	Herb
81	<i>Sida cordifolia</i>	Heart-leaf Sida	Malvaceae	Herb
82	<i>Sida rhombifolia</i>	Jelly leaf	Malvaceae	Herb
83	<i>Streblus aspera</i>	Sand Paper Tree	Moraceae	Tree
84	<i>Synedrella nodiflora</i>	Cinderella weed	Asteraceae	Herb
85	<i>Tephrosia purpurea</i>	Wild indigo	Fabaceae	Herb
86	<i>Tephrosia villosa</i>	Hoary Tephrosia	Fabaceae	Herb
87	<i>Tinospora cordifolia</i>	Indian Tinospora/ Gulbel	Menispermaceae	Climber
88	<i>Toddalia asiatica</i>	Orange Climber	Rutaceae	Climber
89	<i>Tragia involucrata</i>	Indian Stinging Nettle	Euphorbiaceae	Herb
90	<i>Trichodesma indicum</i>	Indian Borage	Boraginaceae	Herb
91	<i>Tridax procumbens</i>	Tridax daisy	Asteraceae	Herb
92	<i>Triumfetta rhomboidea</i>	Burr Bush	Tiliaceae	Herb
93	<i>Tylophora indica</i>	Indian Ipecac	Asclepidiaceae	Climber
94	<i>Urena lobata</i>	Caesar weed	Malvaceae	Shrub
95	<i>Catharanthus roseus</i> (Syn- : <i>Vinca rosea</i> )	Periwinkle	Apocynaceae	Shrub
96	<i>Vitex negundo</i>	Chaste Tree	Verbenaceae	Tree
97	<i>Waltheria indica</i>	Sleepy Morning	Sterculiaceae	Shrub
98	<i>Ziziphus mauritiana</i>	Indian Jujube	Rhamnaceae	Tree
99	<i>Zornia gibbosa</i>	Grass like Zornia	Fabaceae	Herb

## ANNEXTURES

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### Annexure IV – List of Trees which should be planted away from Building

Trees away from Building			
S No.	Botanical Name	Common name	Family
1	<i>Adansonia digitata</i>	Baobab	Bombacaceae
2	<i>Azadirachta indica</i>	Neem	Meliaceae
3	<i>Bombax ceiba</i>	Silk cotton tree	Bombacaceae
4	<i>Delonix regia</i>	Gulmohar	Caesalpiniaceae
5	<i>Ficus</i> spp.		Moraceae
6	<i>Mangifera indica</i>	Mango	Anacardiaceae
7	<i>Neolamarckia cadamba</i>	Kadam	Rubiaceae
8	<i>Peltophorum pterocarpum</i>	Copper pod	Caesalpiniaceae
9	<i>Pongamia pinnata</i>	Pongam oil tree	Fabaceae
10	<i>Tamarindus indica</i>	Tamarind	Caesalpinaceae

# Case Studies



## CASE STUDY 1: KESVILLE RESORT, GUJARAT

Kensville Golf and Country Club, Ahmedabad is India's First Platinum rated IGBC Green Resort. The resort has implemented a unique approach in guest education by releasing a book on the flora & fauna of the resort. The interesting element introduced is all the pictures captured in the book is taken by the guests inclined towards photography.



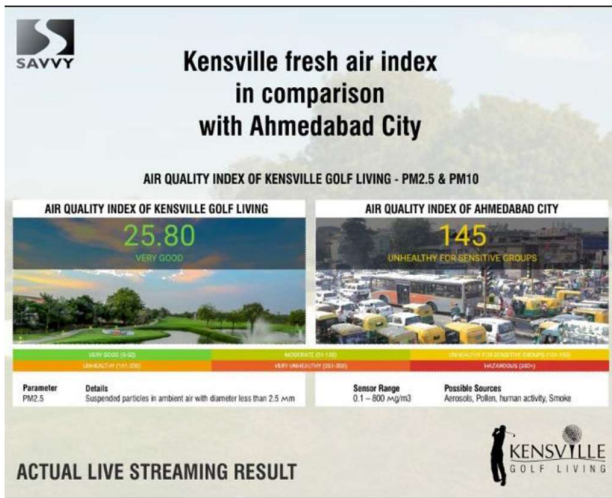
- ❖ Kensville has published a book – Flora & Fauna @ Kensville
  - Flora: It covers details like botanical name, location of the plant and few details
  - Fauna: Name and few details about the species



- ❖ Interesting part is all the pictures taken are from the resort premises and by the members as art of a competition
- ❖ As part of Member engagement Kensville organises : Series of workshops
  - “Khet se plate”: Organic farming
  - Wheat and seeds distribution
  - Yoga sessions for staff
  - Fauna: Name and few details about the species



Gazebo/ Tea Stall for enhanced guest experience



Air quality monitoring within the resort





**100% Outdoor Views**



**Harvesting daylight through central courtyard**



**Enhanced tree cover within the golf course**



**Resort Envelope – Exposed Masonry**



**Use of salvaged material within the project**



**Enhanced tree cover within the golf course**



**Plastic Free Environment**



**Health & Well-being of occupants**



**Preservation of trees and restoration of flora & fauna**



**Eco-friendly commuting, within premises**



- ❖ Energy: The project falls in Hot & Dry climatic zone and EPI calculated is 163.86 KWh/ sq m/ year
- ❖ Water: Total consumption: 85,000 litres/ day
  - Reduce: Use of efficient appliances and water fixtures
  - Recycle: 100% water treated using STP
  - Reuse: water reused for irrigation
  - Recharge: 100% of rainwater harvested using recharge pits and storage pond



**Waste Management On-site**

**Training on Horticulture to locals**



**Swachh Bharat Abhiyaan within the premises**

**Hutments to local farmers with basic amenities**



## CASE STUDY 2: CLUB MAHINDRA ASHTAMUDI RESORT, KERALA

Club Mahindra Ashtamudi Resort in Kerala is awarded with Platinum certification under IGBC Green Resorts Rating. The project has adopted Vernacular architectural elements and reflects the characteristics of the local environment, culture and materials.



### Few of the key green measures in this project include:

- Integrated BMS (HVAC, treated water, electrical monitoring)
- LPD lower than 50% of ECBC requirement
- CFC and HCFC free HVAC systems
- Promotion of local economy through purchase of consumables
- Zero To Landfill
- E-vehicles for in-premises movements
- Hariyali project and organic garden undertaken
- Solar panels, as a non-conventional energy source
- Wastewater treatment procedure implemented
- Systematic reduction of carbon foot-prints
- Sensor operated water faucets and lights
- Wastage minimization through effective yield management
- Bio-degradable laundry bags



**Environment friendly travel options for to & fro visit to the resort and local travel**



**Green facility management policy covering the vision statement for achieving sustainable development with specific goals**



**Facilities for physical well-being**

- Bicycles
- Jogging/ bicycling tracks with proper illumination
- Gym and indoor games

**Facilities for spiritual well-being**

- Yoga area
- Meditation spaces/ silence zone Reading spaces
- Therapies for healing



**100% of the guest rooms and restaurant areas have natural daylight**

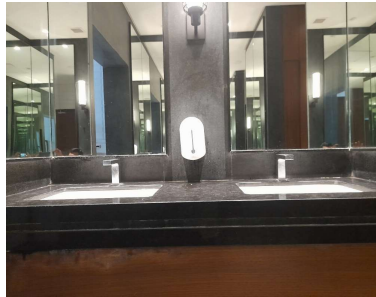


**100% of the guest rooms have access to exterior**

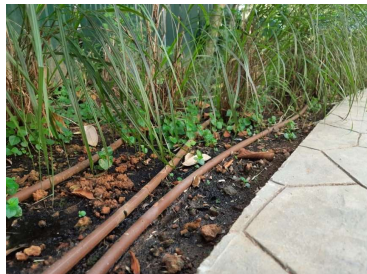




**More than 30% on-site renewable energy of 148.18KWp, that will approximately generate 222000 KWh of energy annually and 24% of renewable energy systems off-site against their annual power consumption.**



- Automatic Urinal Flushing system provided in public area like Restaurant Toilet, Staff Toilets, swimming pool changing room etc.
- Sensor Taps are used in all Guest and Staff public area hand washing units
- All Guest rooms Bath basin taps ,Sink taps, Health Faucet and Shower, water flow restricted with flow restrictors



**Resort Land scape is equipped with most advanced water efficient Rain –BIRD watering system with ESP – LDX micro process control, PGA Valves Flow control system, 5000&5000 plus PRS Series Rotors and R-VAN Rotary Nozzles Series Driplines**

- Rain water in S Block Terrace & Central Facility Blocks are collected and stored in UG tank capacity of 86 KI
- From UG RWH tank water treated in WTP of capacity of 6000liter Hr
- Treated water shifting with pump to MEP block main raw water collection tank capacity of 63 kL







**Outdoor plants such as Croton, Hibiscus, Jungle Geranium, Bougainvillea, Spider Lily Broad Leaf, Lady Palm, Silver Streak, Chenille Plant, Dracaena Plant, Ficus Panda, Cigar Plant, Purple Fountain Plant, Salt Bush**



**Traditional roofing Clay tiled walls Oars pond Vasthu shasthra based ceiling**

**Vernacular features visible at everything displayed around**

Mahindra Holidays and Resorts India Limited (MHRIL) is an IGBC Founding member. IGBC appreciates the holistic sustainability initiatives undertaken by MHRIL. IGBC would continue to handhold multiple Club Mahindra resorts across the country to become GREEN. This rating creates a win-win-win situation for all the stakeholders of a resort – Guest, Owner, and Society.



### CASE STUDY 3: VIVEDA WELLNESS RESORT, NASHIK, MAHARASHTRA

Viveda is an Integrated Wellness Village located in Trimbakeshwar in Nashik city of Maharashtra. This wellness center is infused with Indian values of hospitality and helps you practice healthy living with ancient knowledge of wellness and health. Get into the habit of a healthy mindset and self-care to nourish the body, mind, and soul.



Rolling green fields, herds of cattle, a background of majestic hills and the distant waters of a placid lake—the sight that greets one after a pull off after the Nashik highway; is a respite for sore urban eyes. The Resort is in the vicinity of Beze, a hamlet close to the spiritual town of Trimbak and just a few hours away from Mumbai. Here in the midst of a historic land blessed with nature’s bounties lies Viveda, a wellness retreat that brings together humble architecture and holistic healing practices.

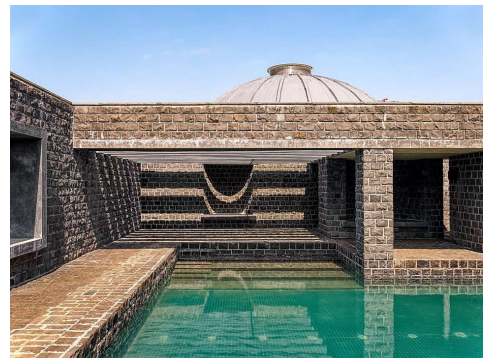
**Few of the key green measures in this project include:**

- Passive ventilation, which helps to reduce the energy usage.
- The cutout between the blocks is shading the site by mutual shading process, which reduces upon heat gain
- LPD lower than 50% of ECBC requirement
- 84% Green cover
- High-rate transpiration Reed Beds system to treat black water
- Energy performance index of 50.52 KWh/sqm/yr resulting in 70% energy savings
- 55% on-site RE meeting the total annual energy consumption of the resort
- Harvested 100% of rainfall on-site
- Eco-friendly recycled products
- Promotion of local economy through purchase of consumables



Envisioned structures that would be inspired by the geographical context, employ locally available materials and historic methods of building to create spaces that would prompt guests to introspect and discover a sense of tranquility for themselves.

Meticulously built-in basalt, the pool is undoubtedly inspired by the kunds (reservoir or tank) found in the region. Changing rooms are cleverly incorporated within the monolithic architecture as are niches and benches, inviting one to pause and reflect by the waterbody. On the other side of the pool rises an amphitheater, also built in the same stone, and this culminates at a terraced restaurant where wholesome sattvic food is served to guests.



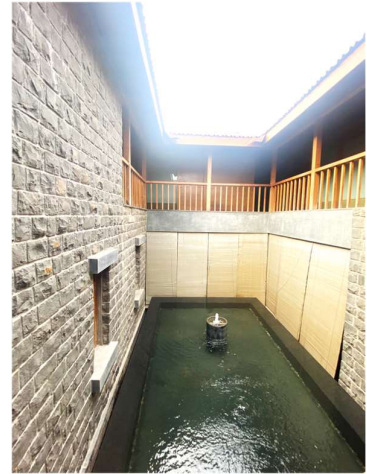
**The design of the pool is based on the structure of traditional kunds or small tanks found in the region**

Basalt has been used for load-bearing walls (which form a majority of the structure) as well as for cladding the courtyards, the pool, the many stepped areas, and parts of the landscape. This minimized debris created on site and also provides thermal insulation to the buildings, keeping the internal temperature a few degrees cooler even during the harsh summers.





The steps were retraced leading to a courtyard surrounded by massage rooms. Each of these rooms have their own private internal courts bringing a bit of nature indoors. Further, a winding passage in between high basalt walls—reminiscent of pathways within a fort—brings us to the other end of the amenity block.

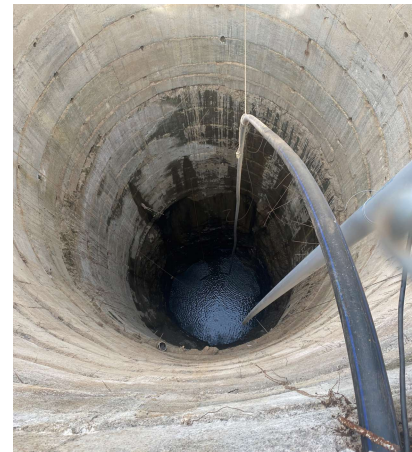


**The naturopathy rooms are tucked away by a waterbody and connected by a staircase of basalt stone**

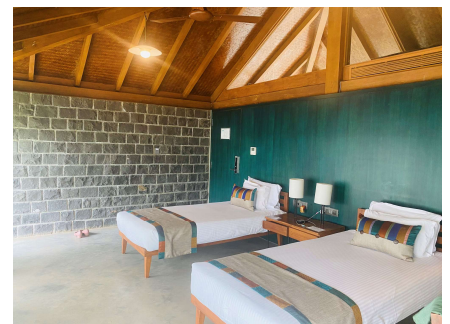


- EPI of 50.52 KWh/sqm/yr resulting in almost 70% energy savings for the project.
- Installation of 15kWp solar power plant meeting 55% of the total annual energy consumption of the resort.
- Energy sub-metering for lighting, HVAC and solar.
- Reduction in heat island effect with temperature difference of 5 to 6 deg Celsius due to self-shaded pathways.

- Installation of reed bed systems to treat all the black water for landscaping purposes.
- Provision of water pond at the main entrance of the resort to cool the breeze through cross ventilation.
- Provision of rainwater harvesting pits to harvest 100% of rainfall on-site.
- Water efficient fixtures in washrooms.



**Availability of natural well in the resort campus that collects and stores the rainwater**



Green Procurement adopted by resort facility to reduce the effect on human health and the environment when compared with competing products or services that serve the same purpose.

- Use of dining table mats made up of jute
- Food is served in copper vessels for health benefits such as for great immune system, digestion and it also reduces the risk of cancer.
- Use of Upcycled Wood salvaged from 100 to 150 old, dilapidated buildings for making utensil stands.
- Use of stone soap dispensers for all the toilet areas.
- Use of Upcycled salvaged Wood for making baskets to serve Indian breads.



- Reuse of Dharwad Hirka, traditional Maharashtrian cloth for pillow covers, menu card covers and curtain tie backs.
- Nakshatra astro-themed garden, which has a large variety of plants and trees linked to zodiac signs.
- Provision of glass cutlery by eliminating the use of plastic.



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- Reflexology Track giving pressure to specific points and areas on the feet having a beneficial effect on the organs and person's general health.
- Yoga Dome - Meditation centre is based on Sacred Geometry, which amplifies the spiritual connection to nature and yoga practice with acoustic echoing & meditation.
- Provision of walking track and open spaces for yoga.





**Other few green features include:**

- Use of local materials such as Basalt Stone, Timber frame and pot-tile roof.
- Haladu (yellow toned timber) primarily used for the roofing system and columns
- Clay pot tiles for roofing using the traditional methods.
- Different functions and a corresponding spatial quality: Naturopathy cluster as Wada; Massage rooms as courtyard houses; yoga and meditation dome as Chaityas; Swimming pool as Kund; and the amphitheater and restaurant as ghats.





## About CII

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry managed organization, playing a proactive role in India's development process. Founded over 125 years ago, India's premier business association has around 9000 members, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 300,000 enterprises from around 276 national and regional sectoral industry bodies.

CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with over 120 NGOs across the country carry forward corporate initiatives for integrated and inclusive development, in affirmative action, healthcare, education, livelihood, diversity management, skill development, empowerment of women, and water, to name a few.

The CII theme for 2020-21 is 'Building India for a New World Competitiveness, Growth, Sustainability, Technology'. As India marches towards its 75th year of Independence in 2022, CII rededicates itself to meeting the aspirations of citizens under its mission of India@75TM for a morally, economically and technologically advanced country in partnership with the Government, Industry and all stakeholders. All parts of the economic ecosystem must work in partnership to ensure the fastest possible progress under these metrics and CII as a synergistic organization is a strong connect between the various parts.

With 62 offices, including 10 Centres of Excellence, in India, and 8 overseas offices in Australia, China, Egypt, France, Germany, Indonesia, Singapore, South Africa, UAE, UK, and USA, as well as institutional partnerships with 394 counterpart organizations in 133 countries, CII serves as a reference point for Indian industry and the international business community.

## About Indian Green Building Council (IGBC)

The Indian Green Building Council (IGBC), part of the Confederation of Indian Industry (CII) was formed in the year 2001. The vision of the council is, "To enable a sustainable built environment for all and facilitate India to be one of the global leaders in the sustainable built environment by 2025".

IGBC is strong with membership base of more than 2000 members which is progressively increasing over the years. Members comprise of all stakeholders of the construction industry viz. Architects, Interior Designers, Landscape Consultants, MEP Consultants, Builders, Developers, Product and Equipment Manufacturers, Corporate, Institutions and Government agencies.

The Council presently has 29 Chapters spread all over the country to cater to the aspirations of various states and regions. These chapters are headed by eminent Architects and Developers.

To seed the ideas of green building concepts in the minds of young people, IGBC has started Student chapters in various architectural and engineering colleges.

The council has in the past 20 years facilitated more than 8230 Green Buildings in the country with a footprint of 8.32 Billion sq.ft. covering the varied building types viz. commercial, residential, hospitals, resorts, airports, retail, factory buildings and SEZs.

The council closely works with State and Central Governments, World Green Building Council, bilateral and multi-lateral agencies in promoting green building concepts.

### Vision of IGBC Green Resorts

A fundamental trait of the Indian hospitality sector is its ability to link the economic, social, cultural and environmental aspects of sustainability and to act as a driving force for their mutual enhancement. The IGBC Green Resorts rating system follows the triple bottom line approach by popularizing the concept of "People, Planet and Profit".

A holistic approach is followed where guests' experience and wellbeing is given due importance along with promoting the local economy & culture and preservation of natural heritage.

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For more information on Green Resorts, please contact



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