RUDIMENTS

## INTRODUCTION

Challenges to sustainability are aggravated by climate change, population growth, urbanisation, and aspirations to better living standards. Urbanisation offers countless opportunities to develop adaption and mitigation strategies to combat climate change through effective environmental governance. Buildings contribute to 30% of the global greenhouse gas emissions and account for the consumption of one-third of the global raw materials, energy and water. It is estimated that in 2021, electricity consumption due to space cooling and heating appliances will grow by 180% (compared to 2011 levels). This calls for immediate action towards sustainable buildings. For curbing the environmental impact of buildings, electrical demand reduction needs to be supported by electricity generation from green sources. This reduces grid power dependency, especially in remote areas wherein grid supply is scarce and expensive. In this context, innovations like solar tiles, around the Net Zero Energy concept (the total annual energy usage by buildings is roughly equal to the amount of renewable energy created on-site), are becoming popular. Existing rooftops have a large (untapped) potential for solar energy generation and this complements the National Solar Mission's

goal of generating 40 GW out of the proposed 100 GW target through solar rooftops.

In India, access to affordable housing is vital for achieving various social objectives, including poverty reduction. In 2012, urban housing shortage stood at 18.8 million units and is expected to grow at 6.6% to 34.1 million units by 2022. In the recent past, various state governments and real estate developers have focused on the sustainability and affordability of the housing sector. Unfortunately, popular perception associates sustainability with expensive technological advances. The global green building movement that started about two decades back was triggered by the need to curb extravagant resource consumption in modern buildings. However, affordability lies at the core of sustainability. Common sense entails that if something cannot be reduced, reused, repaired, rebuilt, refurbished or recycled, it should be restricted or removed from production. Thus, sustainability is not an option but is the only way forward for local low-cost innovations.

Investment in clean and efficient infrastructure can contribute to decarbonisation and rational resource usage. For instance, improved day lighting can reduce energy demand for artificial lighting and hence electricity bills. Double-glazed windows are costly but provide insulation from heat, dust and sound and are cheaper to maintain in the long run. Consumers must create market demands for sustainable housing by objectively considering sustainability as "the right thing to do." Unfortunately, lack of understanding sparks suspicion around proposed solutions being truly green or not.

Linking sustainability with quality rather than pricing can create opportunities for upcoming housing projects, especially since India's socio-economic milieu warrants different perceptions of affordability. The underlying idea is that people should be able to maintain comfortable living standards within affordable sustainable housing.

It is expected that 40% of India's population will be urban by 2030, as against 30% currently. This is going to create a huge demand for infrastructure including housing. The shortage of urban housing stood at 18.8 million units in 2012 and is expected to grow with a CAGR of 6.6% to 34.1 million units by 2022. The Government of India has taken several steps to address this demand, one among many being the Housing for All' or Pradhan Mantri Awas Yojana (PMAY) scheme which aims to bring pukka houses to every family in urban cities by 2022. The Mission provides Central Assistance to the implementing agencies through States/Union Territories (UTs) and Central Nodal Agencies (CNAs) for providing houses to all eligible families/ beneficiaries against the validated demand for houses for about 1.12 cr. As per PMAY(U) guidelines, the size of a house for the Economically Weaker Section (EWS) could be up to 30 sq.m carpet area, however States/UTs have the flexibility to enhance the size of houses in consultation and approval of the Ministry.

In line with its scheme and with the purpose of taking sustainability to the masses, GRIHA Council has developed a rating variant called "GRIHA for Affordable Housing" which is aligned to the PMAY launched in the year 2015. With the help of GRIHA AH rating, many low-income households shall be able to reduce the operational costs and GHG emissions by improving their resource efficiency. The rating evaluates the environmental performance of residences holistically over its entire life cycle and provides a definitive standard for what constitutes a 'green building' as it is a dedicated assessment cum rating tool, and a pre-fed calculator-based system.

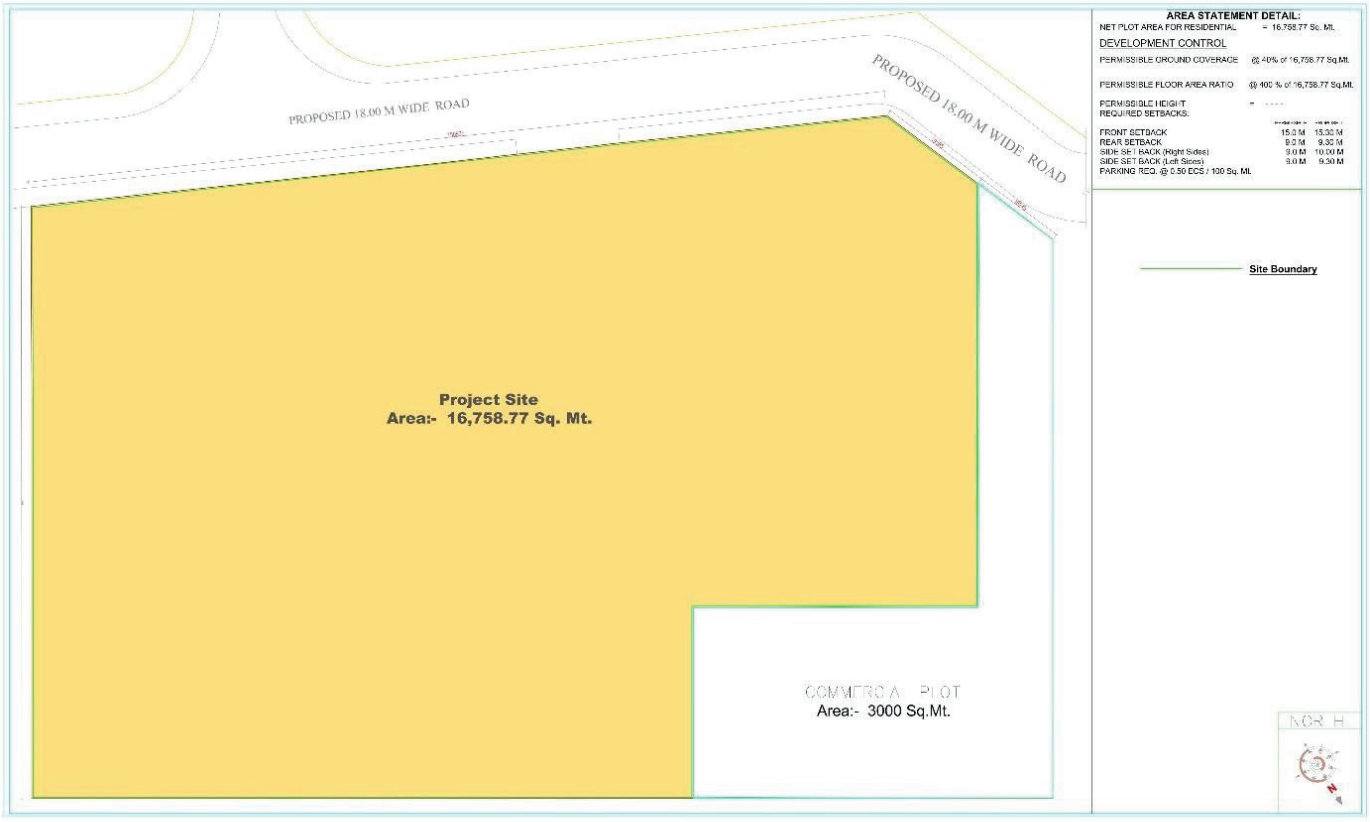


## THE DESIGN BRIEF

Affordable housing for EWS group is intended for households having an annual income up to Rs. 3, 00, 000 (Rupees Three Lakhs). The design for a EWS dwelling typically comprises an all-weather single unit or a unit in a multi-storeyed super structure having a carpet area of up to 30 square meters per dwelling unit.

The site is located in Jailorala Bagh, Ashok Vihar, New Delhi and has a net plot area of 16,758.77 sq.m. For project viability, the design must accommodate a minimum of 1600 dwelling units within the plot in addition to three basic amenities – a milk booth, an ATM and a grocery shop.

The Google location of the site can be accessed through the link:
https://goo.gl/maps/NzTd3fXJiMDxxMXK6




The design must be in accordance with the GRIHA Affordable Housing Rating system and ensure that a hundred percent of the construction is done with alternative and low-impact materials.

Sustainable spaces may be built with concrete as a key building material; however preference must be given to alternative building materials that have a lesser negative impact on the environment during their production and life cycle. A material that has the potential to be salvaged and reused can reduce the demand for fresh resource

extraction and pave the way for a circular economy, wherein the idea of waste is eliminated and materials are continuously cycled back into the system. Discouraging the linear model of production, which is endless resource expenditure, the United Nations' SDG 12 focuses on responsible consumption and production while seeking a sustainable balance between the two. To avoid sending useful materials to the landfill, conserve natural resources, and reduce a project's carbon footprint, sustainable concrete can be manufactured using supplementary cementing materials, such as by-products of coal-fired power plants.

The following materials would be considered as low-environmental impact

- Stones from India
- Composite wood-based products
- FSC Chain of Custody certified products
- Manufactured products with at least 5% recycled content
- Products with EPD (cradle to gate) analysed and published as per ISO 14025 / ISO 21930
- Products with water footprint (cradle to gate) analysed and published as per ISO 14046
- Refurbished products.
- Rapidly renewable material
- Material made from waste
- Use of post/pre industrial waste
- Native technology and Material
- Products that minimise or set aside use of natural resources.

## SITE PARAMETERS

- Net plot area (multi-dwelling units): 16,758.77 sq.m
- Permissible ground coverage: 40% of net plot area
- Permissible floor area ratio: 400% of net plot area
- Permissible front setback: 15 m
- Permissible setback on other sides: 9 m
- Parking requirements @ 0.50 ECS / 100 sq.m

## SUBMISSION REQUIREMENTS

1. The project should be expressed within a maximum of 12 A2 size sheets.
2. A presentation (PowerPoint/pdf/any other audio-visual format) of NOT more than 15 slides or running time of 5 minutes.

## EVALUATION FORMAT

The evaluation shall be done in 2 stages, in the following manner:

- Stage 1: Closed jury of all valid entries, declaration of the shortlisted entries.
- Stage 2: Open jury with online presentation of already submitted sheets and presentation by the shortlisted entries.

## JUDGEMENT CRITERIA

The entries will be evaluated on the basis of

- Innovation in architectural design
- Resource management and sustainability
- Contextual and aesthetic impact

- Presentation of the scheme
- Delivery of the scheme

**PRIZE MONEY**

Prize money of One lakh Rupees is allotted by the GRIHA Council to the trophy and it will be divided according to the number of the Citations and Special Mentions.

**IMPORTANT DATES**

- Release of Brief: ***10th November 2020, Friday***
- Registration Deadline: ***6th January 2021 1800 hours, Wednesday***
- Queries Deadline: ***23rd December 2020 1800 hours, Wednesday***
- Stage 1 Submission Deadline: ***27th January 2021 1800 hours, Wednesday***
- Stage 2 Date: ***Will be Announced along with Shortlisting***

**GENERAL SUBMISSION GUIDELINES**

*Failing to comply with any of the guidelines may lead to disqualification at the discretion of the executive council.*

- The format of the sheets should clearly mention the name of the trophy followed by the year i.e. "**GRIHA Trophy 2020-21**"
- All text should be in English
- Sheets file size should not exceed **25Mb** and the **file name should strictly be the entry code itself.**
- Presentation submission should be a google drive link, with permission set to anyone with the link.

- The format of the sheet should contain a square box of 25mm*25mm at the bottom right hand corner, next to the NASA INDIA logo which should have the unique registration number allotted to the participants after registrations.
- The scale is left to the discretion of the participant(s) to the condition that the scale should be in the metric system and all the drawings should be clear and legible.
- Manually rendered entry should be scanned at least in **300*300dpi** (dots per Inch) resolution.
- The soft copy (non-editable format) of the sheets, and if any, report/video link, along with authentication letter, declaration letter and any other required documents prescribed in the submission requirements should be uploaded on the website by the submission deadline.
- The soft copy file of the sheets should not be corrupted or incomplete or in low resolution.
- It is mandatory to produce the original copy of the Authentication Letter for each entry(entry code should be mentioned if allotted) with the name of participant(s) and stating the unit will abide by whatever may be the final results and also agree that this entry is a property of both the institute and NASA India.
- The Authentication Letter should be signed by the Appointed Unit Secretary of the college for the year 2020-21 on behalf of the HOD/Principal/Director in lieu of the Covid-19 pandemic.
- It is mandatory for the colleges to produce the original copy of the Declaration Letter for each entry (entry code should be mentioned if allotted) signed by the participants stating the work submitted is genuine and they have endorsed copy- rights for the same and to adhere by all the rules and regulations, jury process and the results.

- The Prize Money Authenticating Letter signed by the Director/ Principal / HOD in the college letter-head specifying the account details ( Account Name ,Account Number, Bank Name, IFSC Code) in which the money is to be credited for each entry (entry code should be mentioned if allotted) shall be collected at a later stage.
- The working files in editable formats of the Shortlisted Entries should be submitted to the Council, failing which, the submission requirements would be deemed incomplete leading to the prize money being withheld.
- Shortlisted Entries with manual hand-done sheets should submit high quality scans(min. 300*300 dpi) along with the content in a word document of the shortlisted entries should be submitted to the Council, failing which, the submission requirements would be deemed incomplete leading to the prize money being withheld.
- Any misconduct such as exposing identity through college name/ stamp participant(s) name or college code on the sheets or the video will be disqualified.

**NASA INDIA LOGO GUIDELINES**

*Failing to comply with any of the guidelines may lead to disqualification at the discretion of the executive council.*

- NASA India Internal Logo shall always be placed on the right-hand bottom corner of the sheet.
- NASA India logo should not be merged, overlapped etc. with any sort of text, graphic, image, etc.
- NASA India logo should be in true black with a perfectly white background.

- FOR A2 SHEET NASA INDIA LOGO SIZE SHOULD BE 43.75MM X 25MM WITH 10MM CLEAR BORDER ON ALL 4 SIDES.
- The logos are available at www.nasaindia.co/download.

**CHECKLIST FOR SUBMISSION**

1. Online Submission
2. Original Copy of Authentication Letter
3. Original Copy of Declaration Letter
4. Editable Format of the Sheets (Applicable if shortlisted).

**OTHER INFORMATION**

- **Maximum One (01) Number of Entries Will Be Accepted Per College.**
- Queries can be put forward through the google form https://forms.gle/c1VNem4VCzPKUeYT7
- Registration should be done by the Unit secretary through the google form https://forms.gle/4m1N3d9AU8UAoyys5
- Registration of the trophies will be final and cannot be changed or withdrawn henceforth.
- All the entries should be uploaded separately during the time of online submission.
- Late Registration and submission will not be entertained and henceforth the defaulters shall be disqualified.