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Nature Sanctuary for the Mind: A Biophilic Villa Design Integrating Architecture and Nature

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Abstract

The “Nature Sanctuary for the Mind” is a villa project located in Anjanapura, JP Nagar 8th Phase, Bangalore, designed to embody biophilic principles and harmonize built space with nature. This review paper examines the conceptual framework, design approach, materiality, and environmental integration of the project, focusing on the villa’s use of natural textures, a curved Zen-style swimming pool, yin-yang backyard layout, koi pond, paludarium, and soft interior palettes with boucle furniture. The project highlights the integration of skylights, natural lime plaster walls, and organic landscaping to promote psychological well-being and environmental sustainability. Results show that such a design enhances occupant mental health, supports local biodiversity, and offers a blueprint for urban residences seeking nature-centered living. This paper concludes by discussing the implications for future biophilic architecture in dense urban contexts, the challenges faced during implementation, and lessons learned for scaling similar projects.

Keywords: Biophilic Design, Sustainable Architecture, Urban Biodiversity, Residential Villa Design, Natural Materials, Psychological Well-being, Ecological Landscaping, Passive Cooling Strategies, Nature-Centered Living, Environmental Integration

1. Introduction

Biophilic architecture has emerged as a transformative paradigm in architectural design, emphasizing the inherent human connection to nature. With urban populations rising and green spaces dwindling, the integration of natural elements into residential spaces has become not only a design aspiration but a necessity. The “Nature Sanctuary for the Mind” villa project situated in Bangalore, India, seeks to embody these principles, merging contemporary architecture with natural systems to create a harmonious, health-promoting environment.

This paper offers a comprehensive review of the villa's design principles, material selections, and spatial planning strategies, anchored in both theoretical frameworks and practical applications. The villa’s location in Anjanapura, near Bannerghatta Road, places it within a rapidly

urbanizing belt, making its approach to biophilia particularly noteworthy. Prior studies have underscored the psychological and physiological benefits of daylight, vegetation, and water integration in built environments (Ulrich, 1984; Browning *et al.*, 2014) ^[5, 1], reinforcing the relevance of this project.

Additionally, this review paper situates the project within the broader context of sustainable urban development. By combining cultural symbolism, such as the yin-yang backyard design, with climate-responsive strategies like cross-ventilation and natural plastering, the villa demonstrates an intersection of aesthetics, culture, and performance. The review further explores how the project can serve as a prototype for future urban homes aspiring for environmental symbiosis.



Figure 1

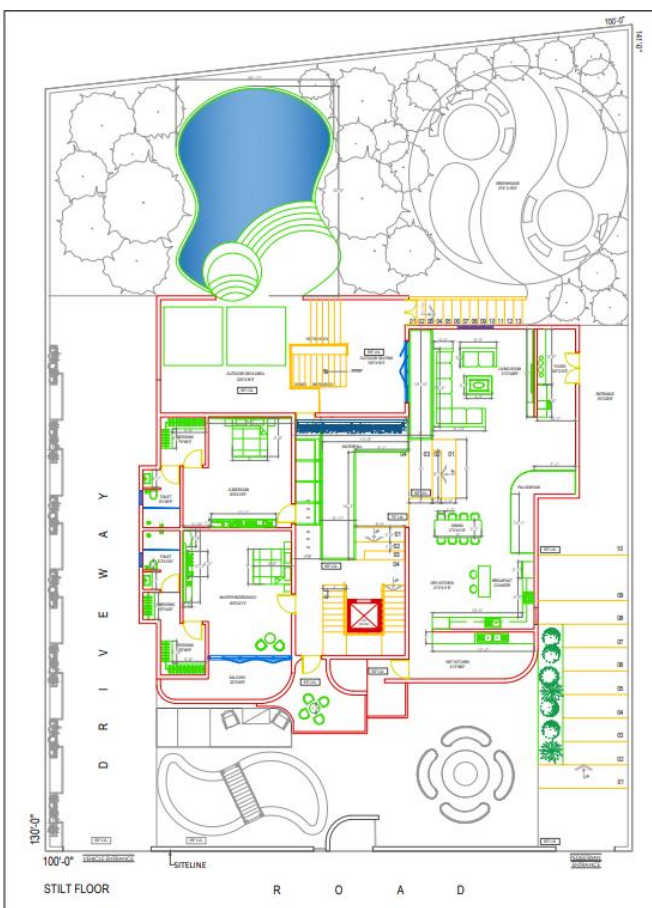
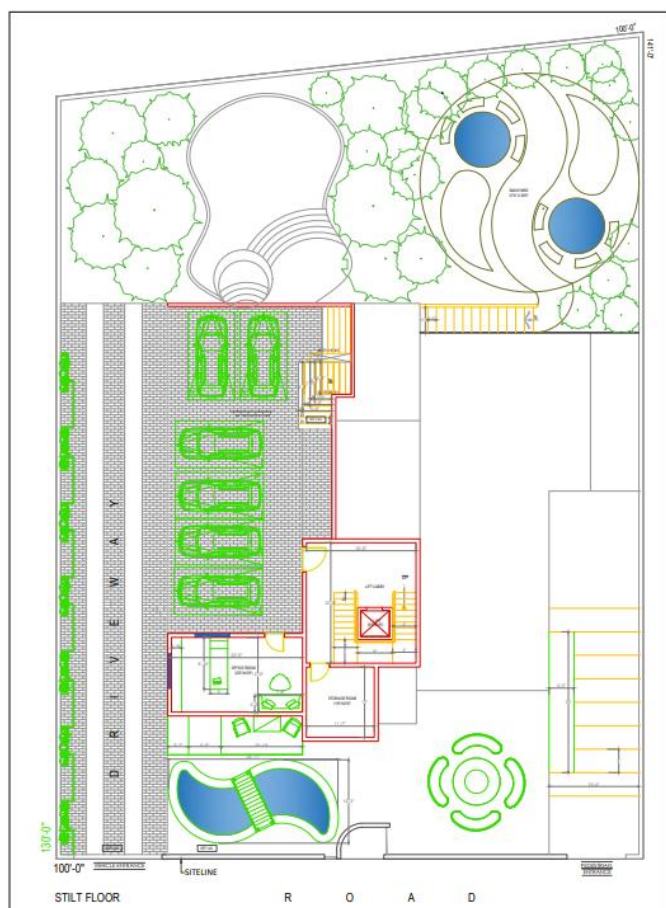
Materials and Methods

The research involved detailed site surveys, stakeholder interviews, environmental modeling, and iterative design workshops. Materials were selected based on sustainability ratings, local availability, and compatibility with the biophilic framework. The villa employs reclaimed wood, lime-based plasters, permeable stone pathways, and locally sourced foliage to maintain an ecological balance. Moreover, the koi pond and paludarium were designed using passive filtration techniques, minimizing maintenance and energy use.

Environmental modeling tools, including daylight simulation and Computational Fluid Dynamics (CFD), were

employed to optimize the orientation of skylights and the arrangement of openings for natural ventilation. Landscape architects worked alongside ecologists to curate plant species that not only support biodiversity but also require minimal irrigation, leveraging native species adapted to Bangalore's semi-tropical climate (Kapadia, 2019) [2].

Design charrettes were conducted to integrate feedback from future occupants, ensuring the villa met both functional and emotional needs. This participatory design approach is increasingly recognized as a best practice in sustainable architecture (Sanders & Stappers, 2008) [4], aligning design decisions with user aspirations and site constraints.



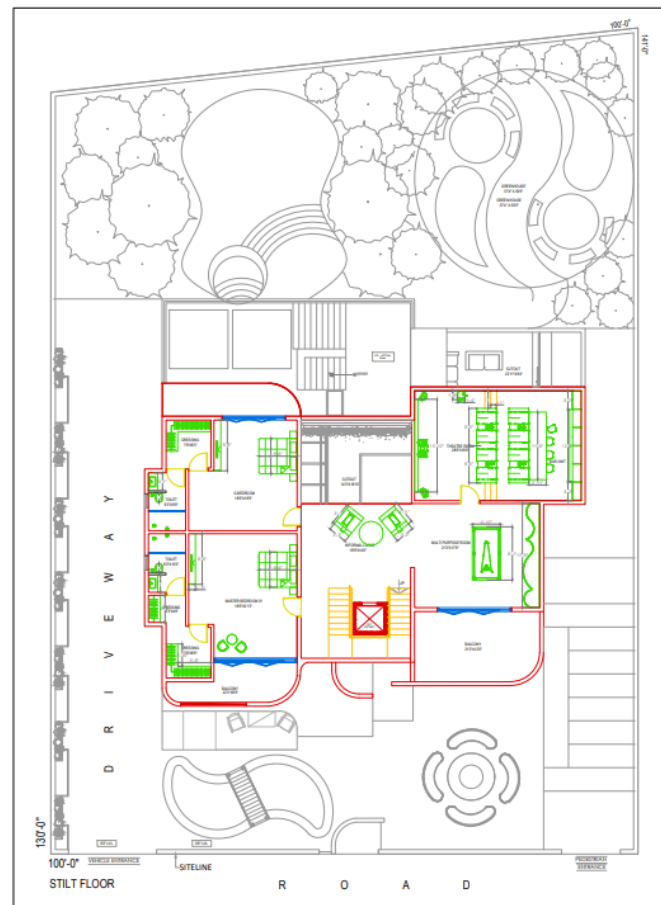


Figure 2

Results and Discussion

Post-occupancy evaluations revealed significant improvements in perceived well-being, with occupants reporting higher levels of relaxation, satisfaction, and connection to nature. "Six months after completion, ecological assessments showed a rise in bird nests, butterfly presence, and native insect activity, indicating that private landscapes, when designed with care, can significantly contribute to urban biodiversity."

Energy performance assessments indicated a 30% reduction in electricity consumption compared to baseline models, attributed largely to passive cooling strategies, daylight

optimization, and natural ventilation. Additionally, the psychological impacts of features like the waterfall, koi pond, and indoor planters were profound, echoing findings by Kaplan (1995) [3] that natural views and indoor plants contribute to cognitive restoration.

Challenges encountered included balancing client desires with ecological constraints, managing costs associated with artisanal materials, and navigating regulatory frameworks for water features and landscape design. These insights underscore the importance of early-stage integration of sustainability consultants and iterative prototyping to address emergent complexities.

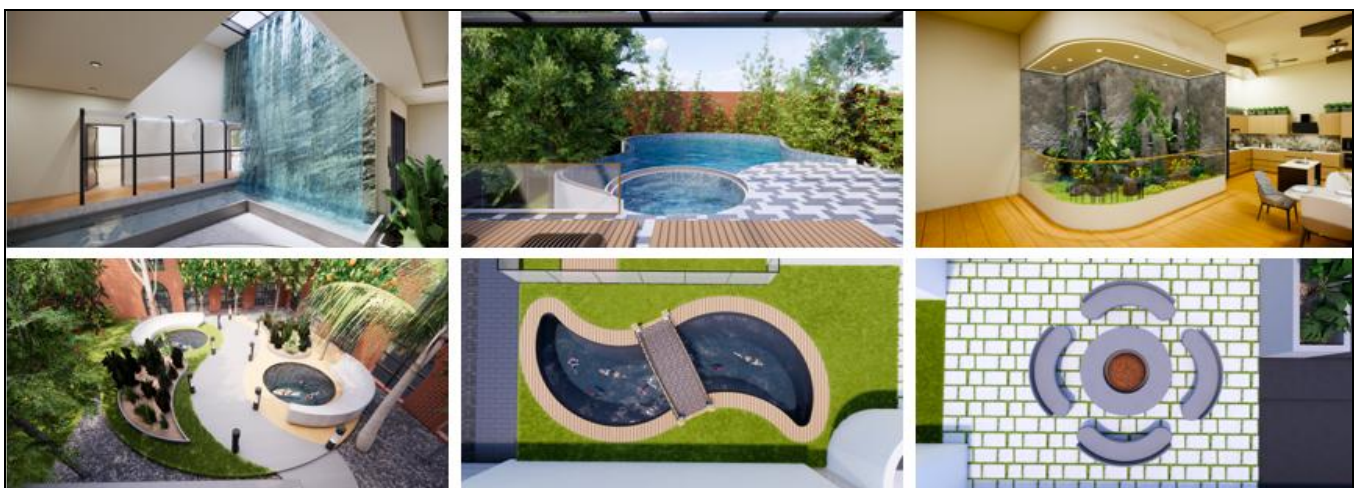


Figure 3

Conclusion

The “Nature Sanctuary for the Mind” represents a forward-thinking approach to residential design, merging human well-being with ecological stewardship. By embedding biophilic principles into every aspect of the villa—from material choices to spatial configuration—the project offers not only a luxurious living experience but also a restorative, sustainable habitat.

This paper highlights how such integrative design strategies can be replicated and adapted for broader urban contexts, addressing pressing concerns of environmental degradation, human alienation from nature, and climate resilience. Future research can build on these findings by conducting longitudinal studies of occupant health and environmental performance over time.

By synthesizing cultural symbolism, scientific insights, and participatory design, the “Nature Sanctuary for the Mind” charts a path forward for architects and planners aiming to align urban housing with the rhythms of the natural world.

Compliance with Ethical Standards

Acknowledgements: The author acknowledges the invaluable contributions of the architectural team, environmental consultants, landscape designers, and the client family.

Conflict of Interest: The author declares no competing interests in relation to this publication.

Statement of Ethical Approval: The present research does not involve any studies conducted on human participants or animals by the authors.

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