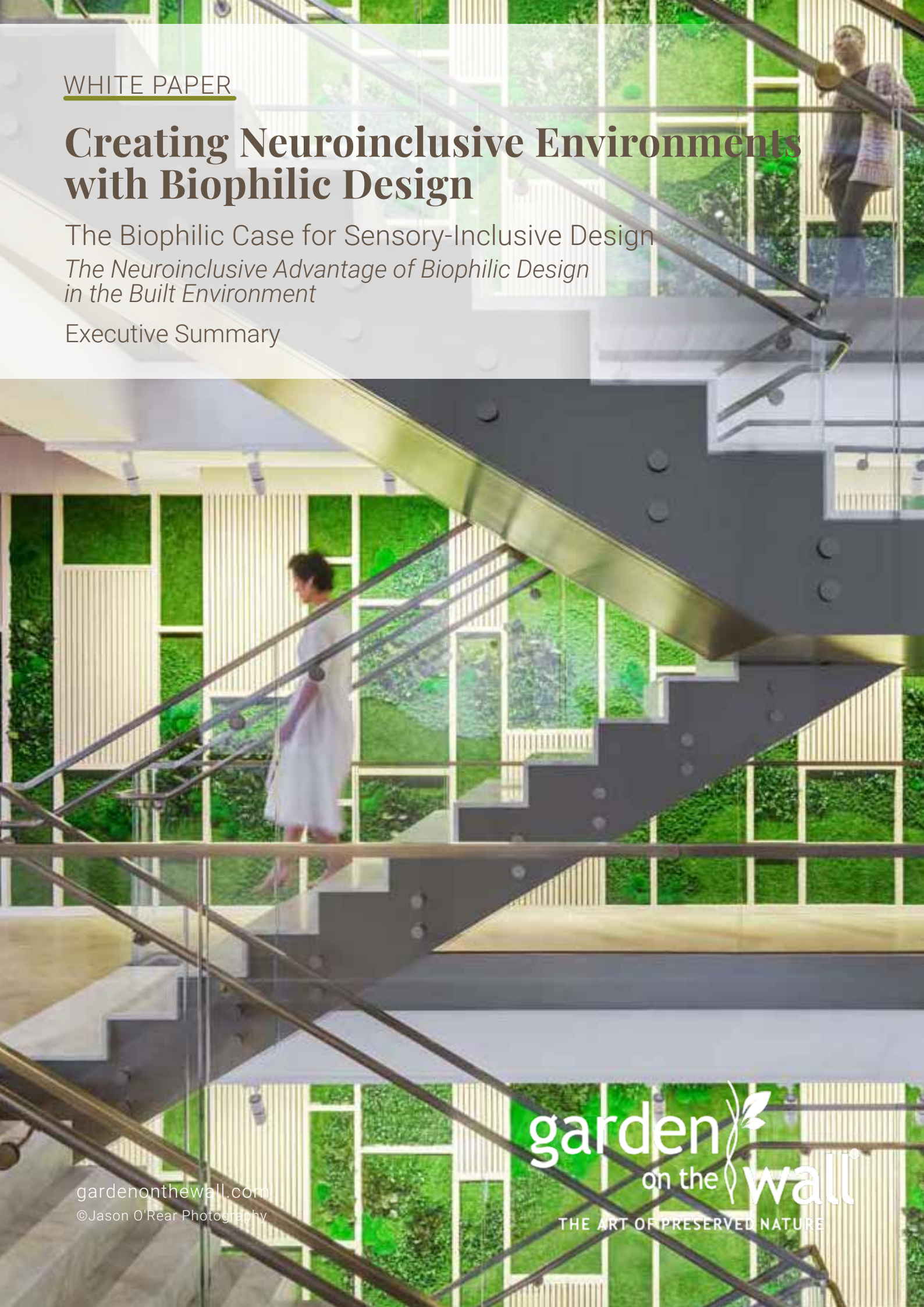
WHITE PAPER

Creating Neuroinclusive Environments with Biophilic Design

The Biophilic Case for Sensory-Inclusive Design

The Neuroinclusive Advantage of Biophilic Design in the Built Environment

Executive Summary



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THE ART OF PRESERVED NATURE

Executive Summary

The Challenge

Between 15 and 20 percent of the population is estimated to be neurodivergent, encompassing autism, ADHD, dyslexia, dyspraxia, and related profiles. In any workplace, school, healthcare facility, or public building, roughly one in five occupants processes sensory information in ways the standard environment was not designed to accommodate. For many, the built environment is a source of chronic sensory strain rather than a neutral backdrop.

The evidence is specific. In a survey of 202 neurodivergent employees by HOK and Tarkett, 77 percent reported hypersensitivity to noise and sound, and 62 percent reported being overwhelmed by visual distraction, including movement, color, and light. A 2026 living-laboratory study of autistic and non-autistic adults reported greater discomfort under controlled conditions, consistent with these self-reports, with the largest differences in the acoustic domain. The design profession has made real progress on physical accessibility; the sensory and cognitive barriers that affect neurodivergent people remain far less addressed, largely because they are less visible.

20%	77%	62%	21%
Estimated neurodivergent population	Report hypersensitivity to noise and sound	Are overwhelmed by visual distractions	Say the workplace environment hurts job performance

The Biophilic Response

A growing body of peer-reviewed research connects biophilic design, the intentional integration of natural elements into the built environment, to documented associations and, in some studies, measured benefits for neurodivergent populations. The evidence is strongest in three areas:

- ADHD and attention: landmark and recent studies find green settings reduce ADHD symptoms and support attention across age, gender, income, and geography, with residential green space in childhood associated with lower risk of diagnosis.
- Autism and sensory design: scoping reviews identify natural patterns, water, natural sound, and daylight as supportive components, and identify sensory quality, intelligibility, and predictability as the core built-environment needs.
- The shared sensory environment: sensory-friendly, naturally lit spaces are preferred by neurodivergent and neurotypical occupants alike, the signature of effective universal design.

Two mechanisms explain why: Attention Restoration Theory (nature's "soft fascination" lets depleted directed attention recover) and Stress Reduction Theory (nature triggers rapid, involuntary reduction in physiological stress). These are precisely the two challenges neurodivergent individuals most report: cognitive overload and elevated baseline stress. The first published built-environment guidance for neurodiversity, PAS 6463 (2022), independently recommends biophilic design and advises against busy artificial patterns.

Why Biophilic Design Is Structurally Different

Most accommodations must be requested: they require an individual to recognize a need, disclose a condition, and navigate approval. Biophilic design works passively. A thoughtfully designed nature-integrated environment offers continuously available restorative opportunities to occupants, without disclosure and without singling anyone out. Because the neurodivergent population is substantially underdiagnosed, this passive quality matters: it can reach occupants whom disclosure-dependent strategies miss.

> *Biophilic design is not an accommodation that must be requested and granted. It is an environmental baseline offering restorative opportunities continuously, without requiring disclosure, reaching occupants who are undiagnosed or have chosen not to disclose.*

The Business Case

The commercial logic is direct. In the CIPD's 2024 Neuroinclusion at Work survey, 21 percent of neurodivergent employees said the work environment hurt their job performance and 19 percent said it affected their intention to stay, the two largest controllable costs in any organization. Widely reported, but not independently verified, corporate program claims at firms including JPMorgan, SAP, and Microsoft cite retention above 90 percent once barriers, including environmental ones, are removed; these figures reflect comprehensive initiatives, not the environment alone, and do not resolve to a published primary methodology. With one in five people neurodivergent and disclosure low, no organization competing for talent can treat this population as marginal. A broader strategy that pairs acoustic and lighting design with natural materiality addresses the two most-cited triggers without requiring disclosure; biophilic design's own role is chiefly the visual and material contribution.

Authentic Greenery, Increasingly Preserved

Two material points underpin this. First, the greenery should be authentic: in a small crossover EEG study, only a living plant, not an artificial one or a photograph, produced a frontal-lobe response the authors linked to attention, suggesting the nervous system may register a difference between genuine botanical material and a representation of it. Second, sustaining authentic greenery across a commercial interior is demanding. Living walls are strong where irrigation, drainage, and horticultural maintenance can be sustained, but those requirements are real, and the visible decline that follows any lapse is a liability. This is where preserved botanical systems offer a practical alternative: authentic plant material stabilized to hold its form without irrigation or routine horticultural maintenance.

For neuroinclusion specifically, preserved systems carry an added advantage. Because they are real plant material, they retain the perceptual cues, form, color, texture, and pattern, that the restoration research identifies as active, making it reasonable to expect they engage the same pathways, though preserved and living vegetation have not been directly compared. Their visual consistency and freedom from watering and the seasonal change of living systems align with the predictability and calm sensory-sensitive occupants need, while reducing the scent and humidity variability that can themselves become triggers. Their documented material-health and emissions testing matter acutely where occupants are sensitive to indoor air quality. Preserved systems work best as one component of a broader strategy also addressing acoustics, lighting, spatial choice, refuge, and wayfinding.

The Universal Design Dividend

Design intended to support neurodivergent occupants can benefit everyone. Sensory-friendly, nature-connected environments are preferred across populations. A biophilic approach does not require sorting occupants into categories or building segregated spaces: it raises the sensory quality of the whole environment while removing the sharpest barriers for those who feel them most acutely.

> *The best neuroinclusive environments are not built by sorting people into categories and designing for each. They are built by raising the sensory quality of the whole space, preserving genuine choice within it, so that those who feel it most acutely have the best chance of benefiting.*

The Takeaway for Design and Real Estate Teams

- Treat neuroinclusion as a dimension of design quality, not a niche accommodation: it can improve the environment for everyone.
- Prioritize the two dominant, evidence-backed triggers first, acoustics and visual calm, using comprehensive acoustic design as the primary lever and biophilic strategy alongside zoning and choice.
- Where natural materiality is specified, preserved botanical systems offer the perceptual characteristics of nature with visual consistency, minimal maintenance disruption, and documented material-health and emissions testing.
- Design for choice: provide a spectrum of sensory environments, and make the restorative end of that spectrum genuinely restorative.

Documented Outcomes

Peer-reviewed research on neuroinclusive design identifies measurable needs and evidence-based strategies:

20% estimated neurodivergent population	**77%** hypersensitivity to noise and sound
62% overwhelmed by visual distraction	**21%** report workplace design reduces job performance
Biophilic Design supports attention restoration and stress reduction	**Preserved botanical systems** provide authentic nature with consistent, low-maintenance performance

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