



# Design for Neurodivergent People

Exploring the latest evolution of inclusive design

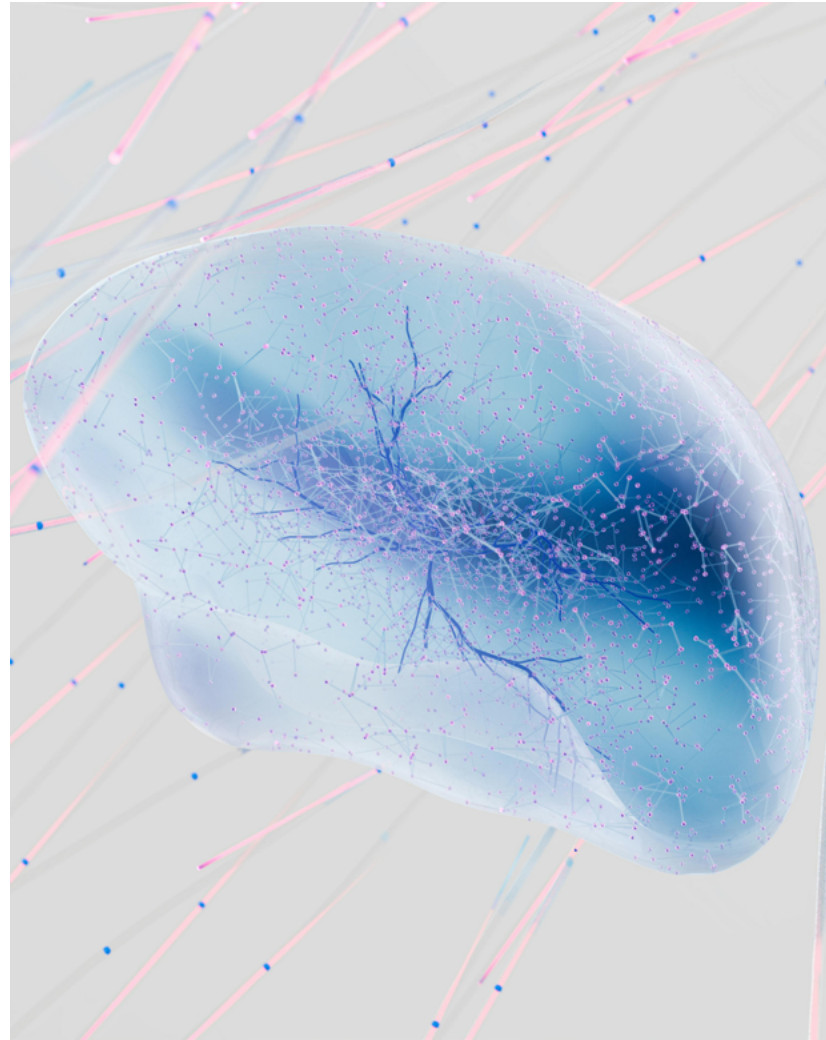


# Introduction

Recent research suggests that an estimated 15-20 percent of the world's population exhibits some form of neurodivergence. This means that up to one in five people has a brain that works differently from the “neurotypical” majority.

Ultrafabrics has commissioned this white paper in order to explore how designers are adapting to the needs of the whole population - whether it be in the workplace, the home or in public spaces. Ultrafabrics wants to engage with this topic, and with the designers who are addressing and developing solutions for those who are neurodivergent and neurodegenerative, to ensure its products meet the needs of current and future environments.

So, what is neurodiversity? And how can design welcome everyone into the workplace, create homes where neurodivergent individuals feel comfortable and adapt our streets and public services to be more inclusive?



# Defining Neurodiversity

In 1998, Australian sociologist Judy Singer coined the term 'neurodiversity' to advocate for a more inclusive and accepting approach to people who are not neurotypical.

Over the course of the last 26 years, the term 'neurodiversity' has evolved to include a wider scope of neurodevelopmental conditions - Autism, ADHD (Attention Deficit Hyperactivity Disorder), dyslexia, Tourette's syndrome, dyspraxia or Developmental Co-ordination Disorder and dyscalculia (difficulty understanding and processing numerical information). It has also been extended to individuals with neurodegenerative conditions whose sensory processing has developed differently over time through dementia, Alzheimer's disease and Parkinson's disease or circumstantial conditions like PTSD (Post-Traumatic Stress Disorder due to injury, trauma or a stroke).

"Neurodiversity is a movement and a community, rather than a diagnosis or a stereotype," explains Savannah Willits from Design Research Collaborative PLP labs. And this movement is gathering momentum.



# Guidelines for Designers

“Design can make society more just and inclusive. If we design for neurodivergent people, everyone benefits,” says Ms. Willits. But finding design solutions in any environment for such a broad spectrum of conditions can prove challenging for any designer.

For example, neurodivergent individuals can be hypersensitive (over-sensitive) to bright lights, sound, crowded places, strong smells or changes in routine. They can also be hyposensitive (under-responsive) to physical touch or their environment. They can be both hypersensitive and hyposensitive, or neither – not everyone is the same. Good design needs to accommodate all these sensitivities.

Fortunately, research is emerging on how to design with, not just for neurodivergent people, resulting in guidelines, recommendations and frameworks that could become official regulations in future.

In October 2022, the British Standards Institution published a PAS (Publicly Available Specification) called Design for the Mind – [Neurodiversity and the Built Environment](#). Aimed at designers, specifiers and planners, it is the first research report of its kind ‘to give guidance on the design of the built environment to include the needs of people who experience sensory or neurological processing differences’.

Advised by a steering group that included BBC Workplace, RIBA (Royal Institute for British Architects), Transport for London and the Helen Hamlyn Centre for Design, it offers detailed and granular recommendations for a number of aspects of design. Here are a few highlights:



## Spatial layout

Clear spatial transitions are needed to reduce disorientation, anxiety and cognitive stress.

- 01 Crowded spaces can be stressful - make it clear when crowds are predicted at regular times.
- 02 Signpost quiet or restorative spaces.
- 03 Introduce a clear wayfinding system with signage hierarchy, consistent symbols and maps showing the way to reception or primary exits.
- 04 Curved walls can be calming as they soften the transition to new spaces.
- 05 Textured walls can offer reassurance and familiarity.
- 06 Access to, or views of, nature or the introduction of biophilic design can be calming.

## Acoustics

Intermittent or continuous sounds (from loud to very quiet) should be avoided, particularly when unexpected.

- 01 A 'quiet space' is critical as it offers relief from stress and sensory overload.
- 02 Enhanced acoustics and double- or triple-glazed windows should be installed to block out noise.
- 03 Ventilation and air-conditioning systems should be fitted with low-frequency components.
- 04 Extractor fans in kitchens should have the option to be switched off.
- 05 Paper towels should be offered in toilets as an alternative to noisy hand dryers as some neurodivergent people may find them over-stimulating.

## Light

People who experience sensory overload often have significantly heightened sensitivity to light (photophobia).

- 01 Although natural light should be encouraged, install blinds or curtains to reduce glare and 'visual noise'.
- 02 Lighting should be designed to avoid any flickering or shadows which can be misinterpreted as barriers, obstacles or even holes in the ground.
- 03 Desk or floor lamps should support task lighting, with an option to dim them to lower levels.
- 04 Avoid highly reflective floor or wall surfaces - stick to matt or low-sheen.

## Colour

Neurodivergent people may perceive colours in a different way.

- 01 Avoid high-contrast, geometric and repetitive patterns.
- 02 Reserve vivid colours and strong visual contrasts for signage and wayfinding.

# Work Spaces

According to the research paper [Neurodiversity at Work](#): “while every neurodivergent person has unique strengths and challenges, more than 70% of them surveyed in this study consider hyperfocus, creativity, innovative thinking and detail processing to be among their strengths – all qualities that are essential for innovation.”

However, half of neurodivergent [employees feel burned out from work](#). Another paper sponsored by the British Council for Offices, [Designing for Neurodiversity](#), attributes this high rate of burnout to a lack of flexibility which ranges from corporate social etiquette and company culture to the infrastructure of the workplace. Handshakes and eye contact during meetings and having lunch in a busy, noisy staff canteen may prove stressful for some neurodivergent people. Commuting to the office during rush hour and arriving to a loud atrium with a front desk and security barriers may leave some of them exhausted at the start of the working day. Choice and options are key to solving these issues, and the same can be applied to the physical workplace.

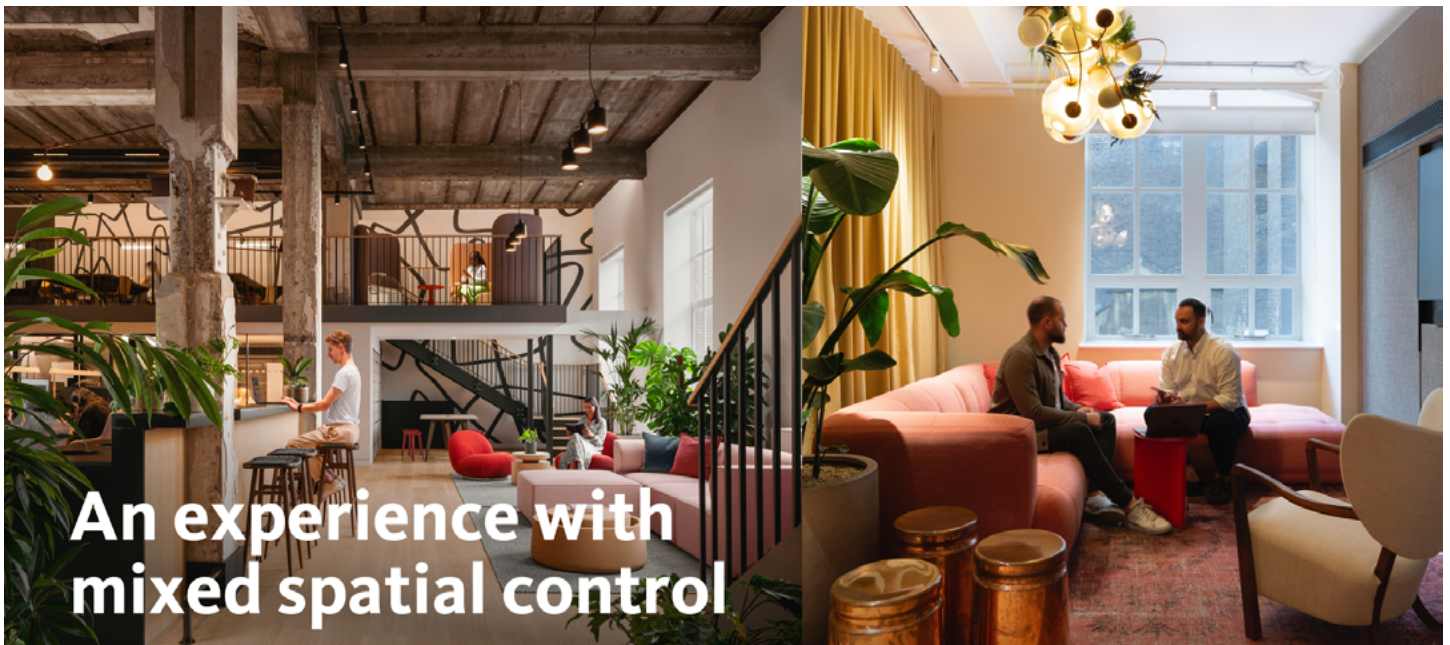
“People need the opportunity to experience different spaces in different ways,” says Guy Kornetzki, Associate Lighting Designer at Nulty. “Not everyone wants to work in large, open-plan and characterless offices today, so we need spatial flexibility with a mix of lighting elements across those spaces. We also need to allow for levels of personalisation as people do benefit from having more control over the light levels in their immediate environment. Similarly, there may be dedicated areas that offer workspaces with varied light levels and directionality. It is difficult to give people complete control over their lighting, but we can allow them to control where they sit.”

“The impact of the environment in which neurodivergent individuals work cannot be underestimated,” says Nina Parson, Chartered Psychologist at PAM Wellness Solutions, a proactive health solutions company. “A great deal of our work involves supporting neurodivergent employees including assessing the work environment and making recommendations to employers about how the workspace can be adapted to be neuro-inclusive.”

Large, open-plan spaces force people to sit with their backs to activity and people moving around which may trigger anxiety and prove incredibly distracting, negatively impacting concentration and focus. An office needs to provide various working zones that are accessible to all staff – high-backed seating and semi-enclosed areas to provide a feeling of control, a quieter independent working area and a more social, collaborative zone. Anyone should be able to select the environment that best suits their needs at any given time.

“There’s a shift in working behaviours,” explains Luke Ward, Experience Strategist at Gensler. “Offices need to allow for different types of working and flexibility. They need to offer control of personal spaces. That doesn’t need to involve hard walls – just a curtain would suffice.”

He cites Francis House, the new headquarters of Edelman PR in Victoria, London, where Gensler designed a mix of spaces that range from open and inviting to private and personal with a variety of colours and acoustics.



## An experience with mixed spatial control

Francis House, London, offers high and low energy zones across five floors offering a flexible workspace for Edelman's 700+ employees. Photo courtesy Vigo Jansons and Gensler.

Applied research by PLP Labs found biophilic design to be important and valuable in the workplace. This applies to colour – vivid tones, bold patterns and sudden changes in palette could prove overwhelming for neurodivergent individuals, while muted greens and blues that are found in nature could mitigate sensory overload. “But this is certainly not a catch-all solution,” says Savannah Willits.

“According to Dulux UK, scientific and psychological research has proven that colour can have a direct effect on our mood, behaviour, productivity and communication. The choice of colour has benefits and disadvantages when creating inclusive spaces,” explains Dawn Scott, Senior Colour Designer and Inclusive Design Consultant for Dulux. “Whether a person is hyper or hyposensitive, colour choice is crucial. It is always important to consult with individuals to understand their specific sensory needs,” she adds.

The response to colour can be very different for neurodegenerative individuals, for example. [The Dementia Services Development Centre at the University of Stirling](#) points out that saturated colours or strong, contrasting colours can facilitate independent living for people with ageing eyes.

“Flexibility and the involvement of the neurodiverse community remain the foundation of ‘good’ neurodiversity design,” says Ms. Willits.

This flexibility even extends to design details. Harsh or rough upholstery fabrics should be avoided as they may cause discomfort. Soft textiles like bamboo, cotton or velvet may prove reassuring to neurodivergent people, but some may also dislike smooth, slippery textiles like silk and satin. Just offering a range of chairs for workstations can make a huge difference.

# Residential Spaces

Flexibility and choice are equally applicable when designing residential buildings for neurodivergent individuals.

When it comes to lighting, for example, there needs to be a mix of elements incorporating cosy spaces with dim, ambient lighting to counteract areas with bright overhead illumination.

Guy Kornetzki from Nulty references residential development Orchard Place in London designed by Squire & Partners where he designed a balanced lighting scheme for a range of spaces.

In the main reception area, the lighting is appropriately bright to evoke a sense of arrival and welcome people into the building, but as you move into the secondary circulation areas a softer ambience prevails and light levels are slightly dimmer. In the spa, the lighting is softer still and becomes diffused and more muted. These subtle gradations make the transitions between different spaces much more considered and subtle.



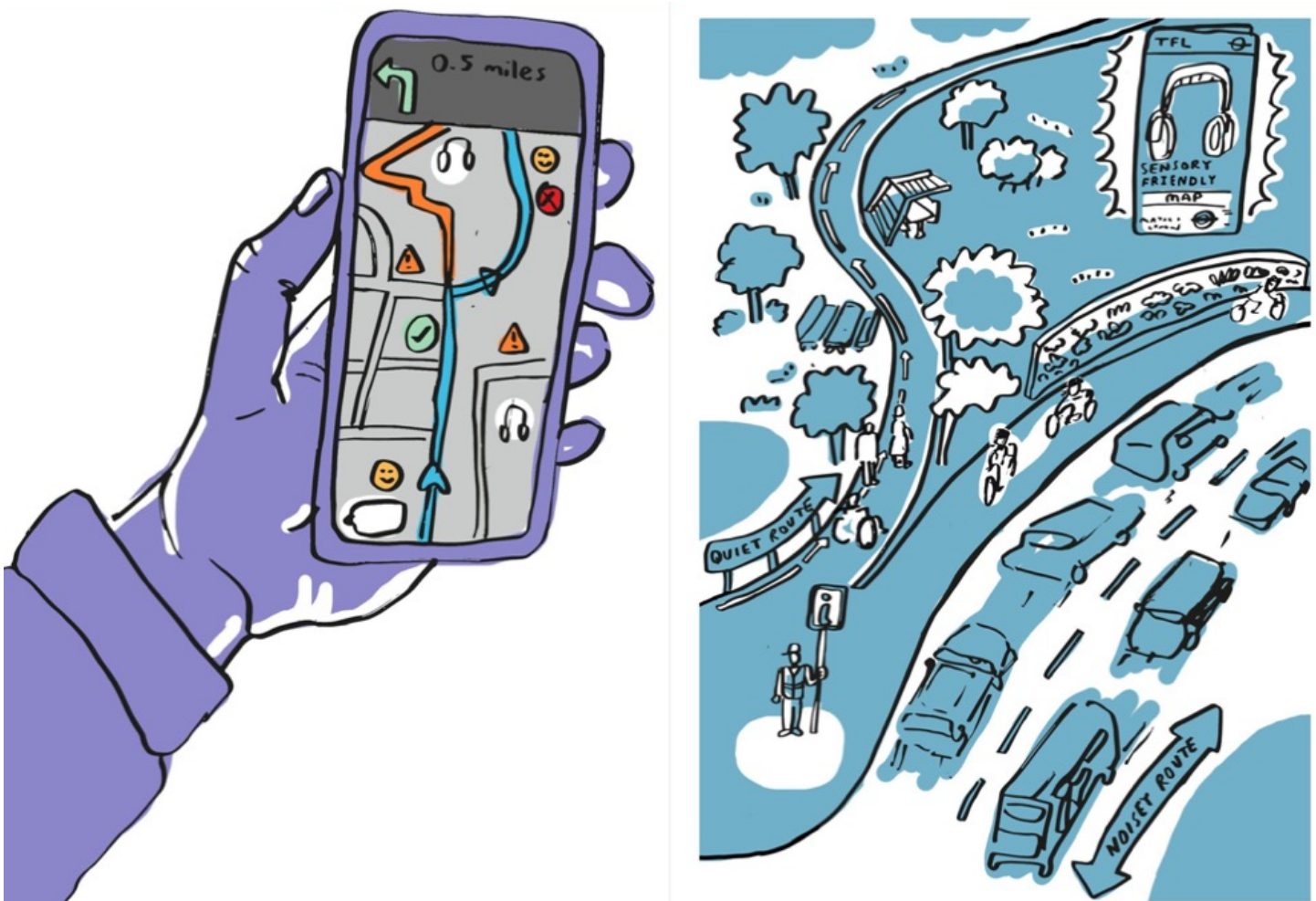
Orchard Place, designed by Squire & Partners with lighting designed by Nulty. Photo: Jack Hobhouse.

"It's also beneficial to give neurodivergent people the ability to adjust the light levels in their own domestic spaces to suit their personal requirements," he points out. "Table lamps and desk lamps are a good option, as are dimmer systems that allow them to soften the lighting."

# Public Spaces

Dr Katie Gaudion, Senior Research Associate at The Helen Hamlyn Centre for Design and founder of consultancy Design for Mind, collaborated with 50 neurodivergent people in and around London to explore their experience of streets and the public realm for a design research project called [Streets for Diversity](#). To accompany the report, an [animation](#) was created to illustrate some of the challenges the participants experience daily on the street.

The research helped to identify 12 design opportunities to improve the public realm for the neurodivergent community, including quiet green spaces, sensory stations with calming water features and textured walls, and comfortable street furniture. A digital tool was also suggested to address unpredictable obstacles like weather, crowds and traffic to plan less stressful routes.



Streets for Diversity: A mobile app could help neurodivergent people navigate streets, improving independence and confidence, illustrated by Ben Connors

Quiet carriages on trains were introduced for passengers who want to avoid noise and loud conversations on mobile phones, so designing more inclusive public spaces and services are just another cultural shift away, Gaudion points out.

# Signs of Change

"Everyone is so different," Dr. Gaudion explains. "More inclusive design research is still needed to understand all of our different lived experiences, in particular the experience of neurodivergent people with learning disabilities and limited speech who are often excluded from research." She would like to explore how less standardisation and more personalisation through more choice and autonomy can be designed into our spaces.

For example, the 'colourful crossings' of the Asphalt Art Initiative were intended to improve street safety and revitalise public space after the pandemic by painting over pedestrian road crossings with brightly coloured, often abstract artistic designs. Whilst well-intentioned, they can create 'visual noise' and trigger sensory overload for some neurodivergent people.

But Dr Gaudion believes that small design nudges that consider the needs of neurodivergent people can make a difference. For example, Transport for London launched its 'Please Offer Me a Seat' badge in 2016. In the last couple of years, supermarkets Tesco and Co-op have assigned weekly 'Quiet Hours' for neurodivergent customers, and an increasing number of cinemas now offer 'relaxed screenings' with low sound, dimmed lights and no ads or trailers.

In 2022, Barclays Bank opened a new campus in central Glasgow designed with advice on the needs of neuro-divergent workers, cutting down on bright lights and background noise.

"Many developers, designers and architects are very interested in designing for neurodiversity, particularly for larger projects," says Luke Ward from Gensler. "There's more access to diagnostics, and more visibility. It's not just about social impact – it's about the balance of function and inclusivity."

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