PAS 6463:2021

PUBLICLY AVAILABLE SPECIFICATION

Design for the mind – Neurodiversity and the built environment – Guide

Contents

Foreword

Publishing information

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- [SG member organization]
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Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g., “organization” rather than “organisation”).

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0 Introduction

0.1 What is neurodiversity?

Neurodiversity is the term used to describe the variation in neurocognitive profiles across the whole population[1)] and the guidance in PAS 6463 is about us all. It is not about one condition, difficulty or difference. The term recognizes the variety in the way we speak, think, move, act and communicate; that human brains are diverse and vary. Each one of us has a unique set of different connections with our billions of nerve cells therefore the way we interact with our environment will vary from person to person, it is dynamic and may change over time, for example, due to an incident such as brain injury, or an age related condition or a change in mental wellness.

Neurological profiles can sometimes be collectively grouped as:

a) neurotypical (the majority, estimated to be up to 80%),

b) neurodivergent, well known examples of which are Autism, ADHD, dyslexia, and

c) neurodegenerative, whereby sensory processing differences develop over time, typically through age related conditions such as dementia or Parkinson's.

However, many people have not had their neurological profile formally assessed, or do not fall tidily into one group, such as sensory processing sensitivity (SPS) trait or highly sensitive person (HSP) condition, and there is a very wide spectrum of how each individual is affected. Even neurotypical people can be regularly or intermittently affected by some elements of the built environment for seemingly unconnected reasons to neurology, for example, where sensory stimulation, such as audible or visual noise, causes dizziness, triggers headaches, or some other form of discomfort or anxiety is experienced for reasons that are not yet fully researched and understood. For this reason, "sensory processing difference" is a term frequently used throughout PAS 6463.

Sensory processing is how information is perceived, processed and organised when received through the senses i.e., hearing, sight, smell, touch, taste and movement. To have a sensory processing difference, is to react through the senses in a different way to the majority – the reaction may be hypersensitive where the neurological reaction is high or overwhelming, or hyposensitive where the reaction is very low or underwhelming. Sensitivity might vary so an individual may be hyposensitive to light but not noise, for example, or might be highly sensitive to a wide range of stimuli.

In some cases, a design intervention to improve the environment for one type of sensory difference might be to the detriment of another – where this might be the case, choice of provision, such as alternative spaces or the ability to adjust the environment is recommended. It is very important, where possible, to engage with stakeholders representing a range of neuro profiles to ensure all needs can be reasonably met.

Diagnosed conditions and labels are generally avoided within PAS 6463, as it is impossible to provide an exhaustive list. The focus of PAS 6463 is to provide design and management guidance which can reduce negative sensory experiences. However, a few examples of conditions are cited for better awareness, where a particular feature is known to adversely affect one specific group. However, this is not to be interpreted as having an effect on everyone within that group, or that it would only be people identifying with these neurological profiles that might be affected..

The majority of features that are generally associated with mental wellbeing can also be beneficial to people with sensory difference, in particular connection with nature through views, biophilic design (many designers will understand the value of applying the golden

[1)] This clarification is made in acknowledgement that the term Neurodiversity has been strongly associated with particular neurodivergent conditions, such as Autism Spectrum Condition (ASC).

ratio or principle, as the proportions are commonly found in nature), or using fractal patterns, the result is cancelling or reducing visual noise from a sensory processing perspective.

Designs that offer visual clarity and simplicity, can be calming and reassuring for people who experience differences with proprioceptive, visual, and vestibular integration.

NOTE People who experience sensory processing differences, including many people with neurodivergent "conditions", often experience worse mental health due to the extra challenges of society and environments that are provided to meet a neurotypical profile.

Whilst the spectrum of conditions and the impact of the environment can vary significantly from one individual to another, there are numerous elements of the built environment that have potential to contribute to sensory overload or "shut down", including:

1) audible sounds, of various types, including intermittent or continuous, from loud to very quiet and particularly when unexpected;
2) visual "noise" which may be caused by lighting, colours, patterns, technology or clutter;
3) spatial and layout considerations; and
4) unwanted or extreme sensory feedback through smell, touch or taste.

This PAS provides the first guidance standards to focus on neurological diversity when designing the built environment. It aims to help professionals with the design, creation or management of mindful, intuitive environments which will readily accommodate the neurological variations in the way people perceive, process and organise sensory information received through hearing, sight, touch, smell, taste or movement.

0.2 Purpose of PAS 6463

The content of PAS 6463 is aimed at buildings and external spaces for public and commercial use, as well as residential accommodation for independent or supported living. The content of PAS 6463 is equally applicable to any organization anywhere in the world, irrespective of location, size, type, or sector.

The guidance is, however, unlikely to cover all of the complex and deeper requirements that might arise in care settings or many specialist SEN facilities. Rooms to provide sensory stimulation have not been included but quiet rooms and restorative spaces are covered comprehensively and their careful design and provision is encouraged in all building types.

A significant number of people find certain aspects of the built environment uncomfortable, distressing or a barrier to their use. Stress and anxiety, often referred to as "sensory overload" results from the bombardment of sensory stimuli experienced without the ability to filter, or from spacial perception difficulties due to proprioception differences. People vary in their required proxemics, due to cultural and/or neurological differences. The increased demand on an individual of the associated increased cognitive load (such as trying to filter out unwanted environmental distractors or noise, maintain focus, perhaps also trying to control impulsive urges to fidget or stop the mind wandering, or to contain internal restlessness) unsurprisingly leads to increased anxiety, fatigue and, in some cases, poor mental health.

However, with awareness of these variations in need, many of the potential negative impacts can be eliminated, reduced or adjusted with thoughtful design or management to create places where everyone can flourish equally, and are provided with an equal opportunity to work, live and socialise comfortably.

Tangible benefits from creating a sensory inclusive environment are:

a) attraction of new customers or tenants;
b) enhanced employee and customer retention;

c) reduced absence due to mental ill health;

d) improved wayfinding;

e) enhanced wellbeing – reduction in fatigue and anxiety; and

f) improved performance of many occupants – increased focus, creativity or productivity.

0.3 Application

For new buildings, it might be beneficial to consider all elements of the guidance from concept stage, with organisations applying recommendations that reflect their circumstances and user needs. For existing buildings, a large proportion of the guidance is practicable when refurbishing, redecorating or renewing.

It can be noted that the impact of the environment on the senses is cumulative and might be compounded by multiple causes so a holistic approach that consider a combination of interventions across the different components of design and management is likely to be more successful than improving one factor in isolation. However, every strand potentially contributes to the sensory load and even individual components can make a difference to some people.

0.4 Management

Whilst there are many measures that can be taken during design development to improve places for people with sensory processing differences, to achieve an inclusive, sensory-friendly environment, management in both the day to day running of the building and interventions around specific activities, roles or practices for staff and visitors will have equal significance.

Many recommendations in PAS 6463 also relate to arrangements that might require long-term monitoring and maintenance; the management of facilities is not be underestimated in meeting the needs of users.

Throughout PAS 6463, design and management measures are often inseparable and are grouped together in the text. Additional management considerations are provided in Annex A.

A primary aim of this guidance is therefore to influence design and management to:

- reduce the potential for sensory overload or distress from features within the built environment;
- to provide flexibility and choice to meet a spectrum of requirements; and
- to offer places for recovery and respite when needed.

Until recently, design standards for the built environment have been developed to accommodate our diversity in form, size and physical ability, alongside motor, visual and auditory impairments but there remains a profound need to also meet our neurological diversity to prevent exclusion or discomfort to a significant section of the population. It is hoped that PAS 6463 can be widely evaluated in use by designers, planners, specifiers, facilities managers and decision-makers. Over time case studies and research can build upon this initial guidance and give opportunities to engage with and design for people with a wide range of cognitive, social, communication and sensory requirements.

0.5 Legal

Whilst the PAS does not include references to any specific law or regulation, organizations can find that following the guidance is relevant to legal and social obligations, such as:

- the fulfilment of duties under the Equality Act [1] relating to disability;
- the preparation of Autism Strategies (which are a requirement for some public bodies under the Autism Act [2]); and

- the adoption of practices to meet Dementia-friendly charters (Greater London has recently introduced)

Attention is also drawn to Article 9 in the UN Convention on the Rights of Persons with Disabilities [3], which states that appropriate measures can be taken to ensure that disabled people have access on an equal basis with others to the physical environment, transportation, information and communications, and to enable them to live independently and participate fully in all aspects of life.

NOTE Where a sensory difference has a profound impact on day to day basis, it is very likely that the individual will meet the definition of Disability as defined under the Equality Act [1].

1 Scope

This PAS gives guidance on the design of the built environment to include the needs of people who experience sensory/neurological processing differences.

NOTE This includes neurodivergent, neurodegenerative, hypersensitive and other neurological conditions which can affect sensory processing and mental wellbeing.

The PAS gives guidance on buildings and external spaces for public and commercial use, and residential accommodation for independent or supported living. The PAS covers:

- lighting;
- acoustics;
- décor;
- flooring;
- layout;
- wayfinding;
- familiarity;
- clarity;
- safety;
- thermal comfort;
- odour;
- preview of an environment; and
- other sensory design considerations.

This PAS does not cover:

- user requirements for special education environments, dementia or complex care settings; and
- guidance on sensory room design.

This PAS is for use by designers, planners, specifiers, facilities managers and decision-makers on design and management considerations to make places more inclusive for everyone, by reducing the potential for sensory overload, anxiety or distress.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 8300-1, *Design of an accessible and inclusive built environment – Part 1: External environment – Code of practice*

BS 8300-2, *Design of an accessible and inclusive built environment – Part 2: Buildings – Code of practice*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this PAS, the following terms and definitions apply.

3.1.1 access audit

assessment of accessibility on an existing building, to provide a status report and identify adjustments to improve access

3.1.2 assistive listening system

technology that enables sound signals to be transmitted to people with impaired hearing, without interference from background noise or excessive reverberation

NOTE Also called hearing enhancement system. Common types include induction loop, infrared, or radio transmission. Sound field systems are also used, especially in educational settings.

3.1.3 assistive technology

electrical and electronic equipment which helps people

3.1.4 attentional bias

tendency to selectively attend to a certain category(ies) of stimuli in the environment while overlooking, ignoring or disregarding others

3.1.5 Braille

tactile system of writing and printing for people with profound vision loss

3.1.6 clerestory window

large window or series of small windows along the top of a structure's wall, usually at or near the roof line

3.1.7 colour vision deficiency

commonly referred to as colour blindness, people with colour vision deficiency find it difficult to identify and distinguish between certain colours.

3.1.8 deterrent paving

high surface profile that acts specifically as a physical and visual deterrent for pedestrians, bicycles or vehicle over-run to a particular area

3.1.9 disability

physical or mental impairment which has a substantial and long-term adverse effect on their ability to carry out normal day to day activities

[SOURCE: Equality Act 2010 [1]]

3.1.10 glare

discomfort or disability of vision due to the presence of obtrusive light which can be artificial or natural daylight, and direct or reflected

NOTE Discomfort glare results in an instinctive desire to look away from a bright light source or difficulty in seeing a task. Disability glare impairs the view of objects without necessarily causing discomfort.

3.1.11 hypersensitivity

heightened response to physical (via sound, sight, touch, or smell) and/or emotional stimuli and the tendency to be easily overwhelmed

NOTE Also known as “highly sensitive person” (HSP) or sensory processing sensitivity (SPS) traits.

3.1.12 hyposensitivity

reduced response to environmental stimuli

NOTE For example, a need to touch things excessively, turning the volume very loud, etc.

3.1.13 light reflectance value (LRV)

measure of visible and usable light that is reflected from a surface when illuminated by a light source

3.1.14 muted (colour)

subtle colours that are not vivid or have been subdued, dulled or greyed

NOTE The opposite of a muted colour is a bright, vivid, saturated colour.

3.1.15 neurodivergent (ND)

brain cognitive profile that functions in ways that diverge significantly from the dominant societal standards (i.e., neurotypical)

NOTE Can also be referred to as atypical sensory processing. Neurodiverse is incorrectly used by some people.

3.1.16 neurodiversity

infinite variation in the human brain regarding sociability, learning, attention, mood and other mental and sensory functions, which can be collectively grouped as neurotypical, neurodivergent or neurodegenerative

3.1.17 neurominority/neurominorities

any group that differs from the majority of a population in terms of behavioural traits and neurocognitive function, which may include people with neurodivergent or neurodegenerative conditions

3.1.18 neurotypical

dominant type of neurocognitive function

3.1.19 node

well-known points between travel or routes

3.1.20 personal emergency evacuation plan (PEEP)

developed to document facilitation, support or assistance arrangements for an individual or anticipated condition in an emergency evacuation

3.1.21 pocket park

small park accessible to the general public

NOTE Pocket parks are frequently created on a single vacant building lot or on small, irregular pieces of land and sometimes in parking spots.

3.1.22 proprioception

sense of self-movement and body position

NOTE It is sometimes described as the "sixth sense" and also referred to as kinaesthesia.

3.1.23 proxemics

study of human use of space and the effects that population density has on behaviour, communication and social interaction

NOTE Proxemics is one among several subcategories in the study of nonverbal communication, including haptics (touch), kinesics (body movement), vocalics (paralanguage) and chronemics (structure of time).

3.1.24 reasonable adjustment

adjustments to remove barriers that prevent disabled persons from integrating fully

NOTE This can include adjustments to tasks, hours of working, accessible formats, assistive technology, or changes to the building itself. People with significant sensory processing differences are likely to meet the definition of a disabled person, under the Equality Act [1].

3.1.25 sensory shut down

the experience a person has when they are so overwhelmed by sensory information that they stop responding

3.1.26 scotopic sensitivity syndrome

visual perceptual disorder which affects a person's ability to read

3.1.27 shared space

urban design approach that minimizes the segregation between modes of road user by removing features such as kerbs, road surface markings, traffic signs and traffic lights

3.1.28 shared use

a footpath or surface which gives access to pedestrians and cyclists with no delineation or definition for separate spaces

3.1.29 stim

self-stimulating behaviours that typically involve repetitive movements or sound

NOTE This is part of the diagnostic criteria for autism.

3.1.30 subdued colours (see muted)

lowered in intensity or strength; reduced in fullness of tone

3.1.31 vestibular

system that includes the parts of the inner ear and brain that process the sensory information involved with controlling balance and eye movements

3.1.32 visual contrast

perception of a difference visually between one surface or element of a building and another by reference to their light reflectance values (LRV)

NOTE See BS 8300-1, Annex B and BS 8300-2, Annex B for further detail on LRVs.

3.1.33 working memory

the part of short-term memory which is concerned with immediate conscious perceptual and linguistic processing.

NOTE Measured by the ability to keep information in mind in the face of distraction.

3.2 Abbreviated terms

For the purposes of this PAS, the following abbreviated terms apply.

LRV	Light Reflectance Value
ND	Neurodivergent (not neurodiverse)
PEEP	Personal Emergency Evacuation Plan
SAD	Seasonal Affected Disorder
SVOC	Semi-Volatile Compounds
VOC	Volatile Organic Compounds

4 Developing the brief

4.1 General

Developers should commit to good practice standards in any development agreements and strategy documents and adopt inclusive design principles from concept stage. This should include design considerations for neurodiversity.

NOTE An inclusive environment recognizes and accommodates differences in the way people use the built environment. It facilitates dignified, equal and intuitive use by everyone. It does not physically or socially separate, discriminate or isolate. It readily accommodates human diversity from childhood to adulthood through to old age, across all neurological profiles, abilities and disabilities, and embraces every background, gender, sexual orientation, ethnicity, religion or belief, and culture (i.e., protected characteristics as defined in the Equality Act [1]). It helps people to live independently and participate fully in all aspects of life.

4.2 Inclusive design strategy and commitment

The initial master planning/outline planning permission stage should provide an opportunity to assess the context of the site, its topography and whether the buildings and their approaches can be arranged in such a way as to maximize the accessibility of the development.

NOTE Refer to BS 8300-2 for further guidance on design strategy and commitment.

4.3 Stakeholder engagement

Consultation and engagement with strategic user representatives should be initiated at an early stage, and should continue throughout the lifecycle of the design process.

Accessibility and inclusive design specialists[2)] should be appointed to support organizations throughout the lifecycle of the project. Appointed consultants should offer good awareness and understanding of a wide range of disabilities and user requirements and are therefore well placed to support organisations with inclusive consultation and engagement from an early stage. This should be followed by a stage by stage review of designs together with their associated future management arrangements. Organizations should designate someone within the organisation to champion neurodiversity and sensory friendly buildings. Established frameworks, such as the RIBA plan of work referenced in Table 1, should assist by providing a framework of considerations to be made at each stage.

Table 1 – RIBA Plan of Work

Stage of project	Inclusive design (ID) activity
Strategic Definition (RIBA Stage 0)	• Establish and document commitment to delivering an accessible, sensory friendly and inclusive environment. • Identify someone on the management team to champion neurodiversity and inclusion. • Provide awareness to the design team about sensory processing differences and the principal areas of interest • Ensure design team has understanding and knowledge of neurodiversity and disability
Preparation and Brief (RIBA Stage 1)	• Integrate the principles of Accessibility and Inclusive Design in the project brief. • Clearly state the requirement to follow PAS 6463 as applicable to the environment • Ensure access and inclusive design technical expertise secured with understanding of neurodiversity and sensory processing differences. • Establish user/consultation group/s for early engagement to include people with lived experience of sensory differences. • For existing buildings, consider a sensory audit to identify what currently works well or needs adjustment

[2)] Identified via the National Register of Access Consultants (https://www.nrac.org.uk/)

Table 1 – RIBA Plan of Work

Stage of project	Inclusive design (ID) activity
Concept Design (RIBA Stage 2)	• Design review of proposals against BS8300 and PAS 6463 – where details are not available yet, ensure that the design team are aware of the range of areas where input will be important. • Review issues of the existing site if being retained
Developed Design (RIBA Stage 3)	• Design review of updated proposals against BS8300 and other good practice depending upon sector and location. • Access section of the Design and Access Statement for planning and start to develop Access Strategy for Building Control approvals (where applicable) to identify approach in line with the BS8300 and AD M/K and other guidance such as PAS6463 and relevant guidance. • Liaise as appropriate with Local Authority for access, conservation and planning.
Technical Design (RIBA Stage 4)	• Review/update maintenance, operation and handover strategies aligned to inclusive design and accessibility principles, to include neurodiversity. • Prepare 'Part M Schedule' for Building Control access strategy submission, alongside any other submissions requiring consent. • Update and finalise Access Strategy.
Construction (RIBA Stage 5)	• Conduct access reviews during the build phase to ensure the implementation of good practice for inclusive sensory design is being carried through correctly. • Review materials and finishes samples and provide recommendations.
Handover and Close Out (RIBA Stage 6)	• Final inspection on completion and occupation to include an access audit to pick up and rectify any outstanding accessibility issues and identify any additional management requirements. This inspection should review installed lighting, fittings and finishes to ensure they are sensory friendly or adjustable. • Produce access management plan if required.
Use (RIBA Stage 7)	• Post occupancy audit to evaluate any issues arising through the design or management of the building once in use. Ensure the methodology for feedback allows for different formats – monitor sources of feedback to ensure representative feedback is received and no one is omitted. • Continuation of handover actions and ongoing evaluation of the building in use. • Update and amend access related policies in response to feedback and monitoring. • Disability and Neurodiversity groups should continue to be consulted periodically during occupation and use.

Table 1 – RIBA Plan of Work

Stage of project	Inclusive design (ID) activity

NOTE RIBA Plan of Work, modified [4].

NOTE 1 Many issues in the built environment which adversely affect people with sensory processing differences only emerge through successful engagement. Consulting early ensures adjustments can be designed and implemented at concept stage rather than applied retrospectively.

NOTE 2 Retrospective adjustments can be more costly, disruptive, and often less successful.

Extra attention should be given to including people with sensory processing conditions when consulting users and stakeholder groups.

NOTE 3 Refer to EHRC "Engaging with disabled people - An event planning guide" [5] for useful checklists for arranging inclusive meetings.

In addition, the following should be taken into account:

a) Providing preview information (see **6.2**) is important for preparing people with sensory processing differences for the environment and the way in which the consultation meeting is run.

b) The venue selected should provide the necessary lighting and acoustics and step-free access, and have an assistive listening system. A local community hall might be the best location for user consultation on a particular scheme, but if the hall is highly reverberant, it might not be suitable for some stakeholders. In this case other venues or perhaps a smaller side room with better acoustics could be used for additional or simultaneous sessions.

c) Options for how to engage should be provided. Some people find face to face meetings difficult and prefer another means to provide their input, such as a phone call or text communications.

5 Site and building layout

5.1 Site planning and position of buildings and other features

Considerations on the location of a site that are relevant to people with sensory processing conditions should be:

- the density of the population;
- proximity to high traffic and other noisy areas; and
- the clarity of the space.

*NOTE Refer to BS 8300-2, Clause **5** for more information on strategic site and building layout.*

5.2 Legibility and coherence

5.2.1 General

*COMMENTARY ON **5.2.1***

The quality of the wider built environment is an important factor when navigating public spaces and streets, with noise, lighting, clarity of routes and quality of green space all having varying degrees of influence on people and how they can interact with the environment. It is increasingly recognized that town planning [6] decisions are critical to the design of places to enhance mental health, eliminating features that can cause difficulties for people who experience heightened sensitivity to visual and audible features.

Many people with neurodivergent or neurodegenerative conditions find public spaces and buildings overwhelming if they are too colourful, brightly lit or confusing in appearance or layout.

When designing spaces/sites the diversity of society and the wide range of needs should be taken into account by incorporating ease of navigation and spaces for respite or play. The

inclusion of green space, with wider pavements and walkways, should allow people to distance themselves from traffic with more space to accommodate busy times.

Designers should plan pathways that flow naturally, rather than linear, so they feel more natural and unobtrusive.

NOTE Refer to RTPI Dementia and town planning [7], and RTPI Child friendly planning in the UK [8].

5.2.2 Spatial considerations

When planning busy public places, e.g., large environments like major rail hubs, airports and stadia, the larger personal boundary requirements by some individuals to avoid anxiety should be taken into account.

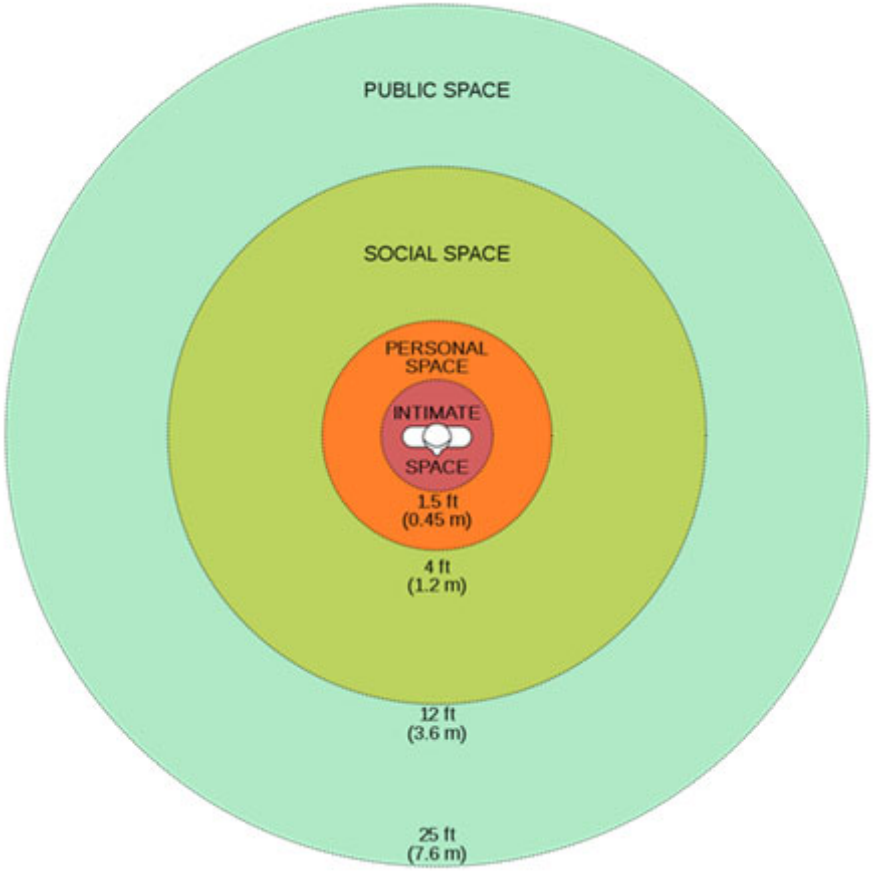
NOTE 1 People can have very different requirements for personal and social space (proxemics), which might be for cultural or neurological reasons. Proxemics can cause anxiety or tension in certain situations for everyone, but some people may experience a much higher level of anxiety, such as many autistic people. Where a larger personal space is required, this can be challenging in crowed spaces, potentially resulting in anxiety and poor wellbeing, distress or overload.

Proxemics can be defined as portions of space:

- *intimate space, close to the body;*
- *personal space, within 1.5 ft;*
- *social space, within 4 ft; and*
- *public space, within 12-25 ft*

If crowds are inevitable at predictable times, these timings should be publicised so that they can be avoided alongside the provision of well signposted quiet/restorative spaces (See **14.1)**.

Figure 1 – Interpersonal distances



NOTE 1 This figure is based on Edward T. Hall Proxemics theory.

NOTE 2 Further research can be helpful to understand the extent of difference in proximity comfort ranges for people who are not neurotypical. Refer to Personal space regulation in childhood Autism Spectrum Disorders [9].

*NOTE 3 See also Clause **7** for more information about external spaces.*

5.3 Facade

5.3.1 General

*COMMENTARY ON **5.3.1***

The design of a building's facade can play a crucial role in heat and light exchange and its technical performance can positively affect the comfort and productivity of occupants as well as energy use and running costs.

The external design should provide a positive impact on people within the vicinity of the building in the following ways:

- ease of navigation and orientation through positioning and optimum use of building contours;
- ease of access through prominent and legible points of entry; and
- avoidance of features that can cause sensory overload.

5.3.2 Reflective materials

Large areas of reflective materials, such as some metals or glazing, should be avoided as this can cause discomfort or disability glare.

NOTE 1 This can particularly affect people with greater sensitivity to light, creating a situation where it can be difficult to see anything or causing distress and sensory overload.

Where reflective materials are used, to mitigate glare at street level, the designs should include:

- a facade that slopes forward;
- the selection of diffused materials;
- the use of low reflectance film or fritting; and
- application of interventions such as external louvres.

NOTE 2 Sunlight and solar glare are often controlled by local planning policy, for example, the City of London Guidelines and best practice for assessing solar glare [10].

NOTE 3 In strong sunshine, reflective metal cladding, handrails and door handles can become hot enough to burn if touched.

Where there is a likelihood of cladding at lower levels reaching high temperatures in an area where people are more vulnerable to burning (such as older people), the risk of burning should be mitigated by:

a) the omission of reflective cladding panels below head height;

b) the selection of an alternative cladding material (entirely or below head height); and

c) the introduction of a feature that would prevent the surface being easily touched.

NOTE For example, flowerbed/planter, railing, seat, or deterrent paving.

Where strong sunlight is likely to cause metal handles and handrails to become extremely hot, designers should mitigate the risk of burning by measures such as:

1) selection of lighter coloured metals (darker colours absorb more heat);

2) applying a ceramic/powder coating to the metal;

3) using a different material, such as wood; and

4) introducing shade, e.g., an entrance canopy or trees.

NOTE 4 A maximum recommended surface temperature of 43°C is established as a safety measure for internal radiators to prevent burning, particularly in older people who often lose sensitivity through peripheral neuropathy and might therefore not remove their hand quickly enough before burning occurs.

NOTE 5 Stone cladding and pavers can also become very hot but are low conductivity materials, so the speed of heat transfer is slower which allows more time for the individual to react before burning occurs.

NOTE 6 Further attention might be necessary where facades are in close proximity to lidos and other areas where exposure of sensitive bare skin is more likely.

5.3.3 Sight lines

*COMMENTARY ON **5.3.3***

Building facades that incorporate angular details and corners can obstruct sight lines for people in the vicinity. Rounded or chamfered corners can give improved sight lines and soften the building's appearance.

The incorporation of some curved walls should be taken into account for many people with sensory processing differences and are generally considered to be calming, with a more natural shape and aesthetically pleasing appearance.

NOTE 1 For people with proprioceptive sensory deficits as experienced by autistic people or with Parkinson's, a curved wall can be used to allow them to move close to the wall.

The flowing form helps people to transition from one space to another, and the improved sightlines should be beneficial to remove some of the anxiety when entering an unfamiliar place by allowing more of a preview of the approaching area.

A combination of external curved surfaces and textured finishes alongside walls of green plants should be taken into account to reduce sound pollution through reflected walls.

NOTE 2 In an emergency situation where occupants are asked to leave a building quickly, the presence of rounded routes can be provided, as this is a time when anxiety is likely to be experienced.

5.4 Entrances and exits

Clear sight lines and/or ease of identifying the locations of entrances and exits should be provided to reduce the potential for sensory overload.

*NOTE 1 Glazing can be helpful in providing an opportunity to preview the space beyond, which can help reduce anxiety and aid orientation and wayfinding (refer to **6.2**).*

Directional signage should be sited such that it is visible from all directions, where practicable and repeated at each decision point.

NOTE 2 Entrance canopies, which are welcomed for their potential to provide shelter, can be a clear indicator on the outside of the building of where the entrance is, particularly on large buildings.

*NOTE 3 Refer to **14.3** for emergency evacuation arrangements.*

5.5 Windows

*COMMENTARY ON **5.5***

*Windows can provide a welcomed view to nature, natural daylight and also a preview into a space. The presence of natural daylight enables less reliance on artificial lighting which can create challenges for people with sensory differences (see **11.2**).*

5.5.1 Views

The potential for glare and distraction should be controlled by the provision of blinds or curtains, the application of a solar control film, or the planting of trees and shrubs in strategic locations.

NOTE 1 Glazing can be used to allow transparent views on the corner of a building, which allows pedestrians to "preview" the approaching area.

NOTE 2 Windows can cause sensory overload in some circumstances, for example, where there is visible activity or distraction outside which significantly affects concentration.

In some situations, other window styles, such as high level (clerestory) windows, should be taken into account.

NOTE 3 Reducing glare in swimming pools is an important safety consideration, especially for good sight lines to the bottom of the pool.

NOTE 4 Where the external view is undesirable, e.g., to a restorative space, giving views of a busy city street or car park, higher level or clerestory windows can allow daylight to enter the space without introducing distraction or affecting privacy.

Blinds or curtains to windows or internal areas of glazing should be used in certain circumstances to allow visual privacy.

*NOTE 5 Blinds that allow slivers of bright daylight to enter a room in the closed position, such as some venetian blinds, can be distracting. Roller blinds, particularly black out quality, can be a very effective alternative where this is an issue. Refer to **14.4** for pull cord safety risks.*

Double or triple glazed windows should be installed where outside noise might penetrate the inside space, even with windows in the closed position.

Temperature loss or gain through glazing should also be taken into account.

5.5.2 Glare

The use of window coverings, such as voile curtains, should be used to reduce glare while permitting daylight to enter.

NOTE 1 Multiple windows can create shafts of bright sunlight or views which are distracting. Higher level or clerestory windows can allow daylight to enter the space without introducing significant glare or a need for window coverings to eliminate distracting views.

The building orientation and the positioning of glazing should be taken into account during the design of swimming pool facilities.

NOTE 2 Glare in swimming pool facilities can reflect off the water, contributing to visual disturbance in an often noisy and reverberant environment, especially for people with sensory sensitivity. Additionally, it can compromise the safety of users as pool side supervisors might be prevented from seeing the bottom of the pool. Refer to the Design guidance note swimming pools [11] on swimming pools and glare.

5.5.3 Vestibular conditions

Where full-height glazing is used, the application of non-transparent manifestation to the lower area should be assessed.

NOTE Full height glazing can cause difficulties for some people with vestibular conditions, particularly at upper levels where they can feel unsteady or dizzy.

6 Wayfinding

*COMMENTARY ON **6***

Wayfinding is often a multi-sensory activity, forming a mental picture based on sensation and memory. The ability to wayfind might be affected by any of the following:

- *ability to see, hear or feel through touch;*
- *sense of direction/proprioception;*
- *language or communication barriers; and*
- *sensory processing differences, including low working memory.*

*Many people have some sensory differences affecting, for example, sight acuity, hearing, balance or proprioception so wayfinding systems that rely on only a single sense, such as visual signage, might not meet the needs of some users (refer to BS 8300-2, Clause **12**).*

Some people have traits relating to information and sequential processes and might rely more on visual cues, symbols and colours when wayfinding.

A decline in the ability to wayfind can be an early symptom of dementia, in part attributed to a loss in spatial perception, reduction in memory, reduction in problem solving abilities and disorientation.

Conditions that affect the vestibular and proprioceptive system can present challenges in moving and navigating through the built environment. Hypersensitivity can affect the vestibular system, disorienting some people and presenting difficulty in navigating different ground or floor surfaces.

6.1 General

Clearly defined wall boundaries should be used, as well as the ability to touch features such as walls, to provide reassurance and familiarity. Transitioning between different ground surfaces should be avoided where possible, as this is a challenge for some people.

NOTE 1 People can have impressive long-term memories, but can also sometimes experience challenges with working memory capacity, affecting the holding and handling of information whilst processing. Working memory is used for:

- *problem solving;*
- *making connections; and*
- *forming a conclusion.*

Information and wayfinding should be provided based on the principle of at least two senses, since information is interpreted via visual, audible, or tactile methods.

NOTE 2 As no single format can communicate information to everyone, some duplication of information in different formats is essential and can be helpful for people with reduced working memory.

The establishment of clearly identifiable wayfinding nodes, (well-known points between travel or routes) where people might naturally converge and make decisions, should be taken into account. This should be coupled with a clear hierarchy for signage and the use, as appropriate, of tactile, visual, and audible wayfinding information.

When designing signage, the following should be taken into account:

- opportunity to preview (easing anxiety which makes the process harder);

- sensory load - avoiding overload through unnecessary visual and audible “noise”;
- use of appropriate lighting to aid navigation;
- layouts that are logical, with clear sightlines to assist self-orientation; and
- familiarity – signage and tactiles fit an already understood model.

Other helpful wayfinding aids should be provided, for example, colour coding to floors or amenities, different types of floor surface to distinguish circulation routes from destinations, and consistent use of symbols across the portfolio (taking care to balance the need for information and choices without becoming overwhelming).

*NOTE 3 See BS 8300-2:2018, **5.2** for further information on inclusive and accessible wayfinding systems.*

*NOTE 4 Where a building has a reception or visitor information point, a distinctive change of colour or contrast can make that area noticeable and visible to reduce any confusion at the entry to a building. However, a visual contrast can compromise access for some groups, such as people with Dementia or Parkinson’s who can experience “freeze” when encountering a colour change in flooring as it is perceived as a barrier or level change. (refer to **12.4**).*

6.2 Preview and advance information

The opportunity to accurately anticipate and experience an environment virtually or through audio or visual description should reduce anxiety. Preview information should be provided, for example in one or more of the following ways:

- websites with virtual flythrough videos;
- audio description for people unable to fully experience the visual footage;
- routinely including in all documents, including appointment letters and invitations, a link to information about the environment that is clear, consistent, and up to date;
- displaying a simple plan of the interior at the entrance to a building.

Pre-visit information should include information about the environment and what to expect during a visit, as well as links to journey information, such as travel options. The quality of information is important in allowing someone to plan and prepare for their visit, reducing the risk of anxiety and should be reviewed annually or sooner if changes are made.

Even with the provision of the pre-visit information, information should be available on arrival, such as colour coded maps with visual cues to facilities and locations. Easy Read and Plain English versions should be taken into account.

NOTE 1 For some people, technology can be helpful, such as using QR codes around the building to confirm your location, or a wayfinding app providing indoor mapping and positioning with navigational instructions.

NOTE 2 For very large and complicated buildings, such as hospitals and some museums, it is helpful to provide a means to access assistance at regular places on routes, for example, a 2-way communication device for people to ask for assistance from a volunteer.

6.3 Orientation and clarity

6.3.1 General

The amount of information provided within a wayfinding system should be carefully balanced.

NOTE 1 If minimal information is provided, people can lose their way, but too much information can be overwhelming.

A wayfinding system should be designed that has a clear and inclusive wayfinding and signage hierarchy, together with multi-sensory supportive measures, taking into account environmental, visual and sensory cues.

NOTE 2 Environments that have clear, simple layouts are easy to navigate and minimize the need for additional signage.

6.3.2 Attentional bias

Consistency in the design of signage or wayfinding cues should be provided from the point of arrival and continue throughout the environment. Introducing different colours, or styles of signs at a later point in the building should be avoided to prevent potential for attentional bias.

NOTE People subconsciously apply mental resources to a selected criteria ignoring other features. An example is someone identifying a style of sign when they enter a building and searching only for that type of sign for the whole journey, missing other sign components that differ in style or colour which are not perceived to be part of the system. Attentional bias is more likely when someone experiences anxiety when wayfinding.

6.4 Wayfinding nodes and landmarks

Unique and highly visible features should be positioned in strategic locations to assist in wayfinding, helping people to stay on the right route or creating a meeting place in a crowded situation.

A centrally or strategically sited visible feature should be installed in a large space (e.g., transport hub, shopping centre or stadium) with good sight lines to other areas, such as platforms, lifts and stairs, to assist with orientation/wayfinding.

NOTE 1 Incorporating landmarks can help people to orientate themselves correctly; the clock or fountain in a public place being a common example.

In addition, nodes should be designed and installed with distinctive features to assist people with sensory differences which affect sequential processing.

NOTE 2 Examples include a memorable wall feature or piece of art, or anything unique such as an escalator (if the only one).

Reception or information and assistance counters, where they exist, should be used as a starting point. If reception counters are not located at the starting point, it should be clear from the entrance how to reach reception to minimise stress and confusion.

Once within the building, directional signs back to reception and primary exits should be included to assist navigation.

6.5 Use of colour

6.5.1 Colour coding

Signs which have many different colours should not be used to avoid overloading the senses, or items being missed due to attentional bias (refer to **6.3.2**).The use of colour coding should therefore be used with consistency and take into account the potential to overwhelm.

NOTE 1 Sensory overload can easily occur when too many competing features are provided at once. The use of too many colours, signs or indicators in close proximity can divide attention and lead to some signs being missed altogether or trigger a feeling of anxiety through not knowing which piece of information to consider first. Changing the overall colour of the background to a sign, e.g., to indicate different floors or zones, can result in multi-coloured directory signs which might be too busy to digest easily. This can also cause people to miss signs, many people subconsciously ignore signs and features that do not match the model they are seeking through attentional bias (established at the outset of a visit).

NOTE 2 Where colour coding is seen as a helpful indicator, designers can create a symbol on the sign rather than change the sign background colour in isolation. Combining colours with shapes can also enable people unable to distinguish by shape recognition (such as people who have colour vision deficiency or someone with monochromatic vision).

If different coloured floor surfaces are to be used, transition zones from one colour to another should be taken into account to avoid a distinct line being perceived as a barrier or level change (see **12.4**).

Consistence of colour and visual contrast across each sign type should also be taken into account.

To avoid creating a highly colourful environment that is overstimulating, colours should be kept to a minimum, e.g., by using muted colours on walls and large surfaces.

*NOTE 3 In general, vivid colours and patterns should be avoided or used sparingly e.g., on feature walls or areas that can be easily avoided (see **12.1** and **12.3**).*

*NOTE 4 Inappropriate use of colours can also result in insufficient visual contrast between sign content and the background they are seen against. Refer to BS 8300-2, Clause **12** and Annex B for guidance on visual contrast and LRVs.*

6.5.2 Visual contrast

Strong visual contrast, measured in light reflectance values (LRVs) should be assessed between the edges of surface finishes of adjacent building elements, such as floors, walls, doors and smaller features such as signs and fixtures. These assessments should be completed to assist visually impaired people to navigate and wayfind.

NOTE 1 Sufficient visual contrast is a requirement of UK Building Regulation.

NOTE 2 See BS 8300-2, Annex B for guidance on achieving sufficient contrast in LRV.

6.6 Signage

*COMMENTARY ON **6.6***

*Signs form part of an integrated communication scheme that gives clear directions, information, and instructions for the use of a building, supporting a wayfinding strategy that takes into account a wide variety of user needs, and the complexity of the building layout. A user who is unable to understand an environment can be reassured by a clear signage system. However, signage might not always be able to fully compensate for a poorly designed building with complex, illogical layouts, and poor sight lines. For example, people with dyslexia and/or scotopic sensitivity might struggle to read some signs unless accessible principles are followed. Refer to BS 8300 Clause **12** and Sign Design Guide [12].*

6.6.1 Signage content

The content of signs should have the following features:

- be easy to interpret;
- have symbols and words; and
- be in contrast from the surface on which it is mounted.

The text on the sign should be as brief as possible to communicate the required information.

NOTE 1 The use of clear language, avoiding clinical or technical terminology, is important in public buildings. For example, “eye clinic” rather than “Ophthalmology”.

All documents, website content and flythrough videos should use the same terminology as the signage and information within the environment to avoid confusion.

NOTE 2 Clear readable signage is particularly important for people with neurodegenerative conditions such as dementia.

Except for universally accepted or mandatory safety symbols or pictograms, symbols or images on signs should also have supplementary text. Widely accepted symbols used for WCs should not be varied significantly as this can be confusing, causing inconvenience and anxiety to many building users.

NOTE 3 For this reason, a green sign might be appropriate outside in an urban environment but is likely to conflict with mandatory fire signage inside a building.

Temporary signage, especially for safety purposes, should incorporate accepted conventions, e.g., for spilt liquids and diversions.

NOTE 4 Attention is drawn to HSE’s for guidance on the use of symbols [13].

NOTE 5 Refer to Annex C for examples of widely accepted and recognized symbols.

NOTE 6 In buildings where people with dementia are likely to be significant users, additional symbols for toilets can be helpful, such as a symbol indicating a toilet pan.

Super graphics are enlarged symbols often used in larger environments such as airports where they can be viewed from a long distance away. They should be supplemented at a comfortable viewing height on approach. The balance between size and viewing distance should be taken into account.

6.6.2 Positioning

Consistency in positioning of signage within a building or environment should be taken into account to assist in navigation.

Visual and tactile maps should be orientated to the viewing position when used.

The signage strategy should commit to clear indicators to main entry and exit points, amenities such as reception, toilets and cafes.

NOTE 1 It is important to clearly and significantly differentiate between signs for drivers of vehicles, general signage for pedestrians or building occupants, and mandatory signage such as evacuation signs.

Once readily recognizable and understandable signage has been established, the style should not be changed significantly to reduce the risk of attentional bias.

Good sight lines through glazing, curved walls or chamfered corners should be taken into account, alongside a consistent signage system.

Viewing heights for signs should be in accordance with BS 8300-2. Signs should be positioned so that they do not obstruct or compete for attention with other features or mandatory signs, e.g., they should not be in close proximity to fire exit signs, wall art or noticeboards where possible.

Overhead signage should always be supplemented with signs that are at comfortable viewing heights and distances when approached.

NOTE 2 Comfortable viewing heights are 1 400 mm – 1 700 mm standing and 750 mm – 1 350 mm seated.

NOTE 3 In addition to children and people viewing from seated height, some people with vestibular or neurodivergent conditions find looking upwards to signs above head height difficult and balance can be affected.

The distance between repeat confirmatory signs where routes are long should be influenced by the complexity of the route. The confirmatory signs should be sited frequently enough to reassure people who find wayfinding and navigation difficult, but not so often that they cause unnecessary clutter within the visual field.

NOTE 4 This is an area for further research but people with sensory processing differences affecting navigation generally require more frequent affirmations that the direction of movement is correct.

NOTE 5 Anxiety can increase if signage cannot be seen regularly or at a distance for some facilities, such as signs indicating WCs, quiet rooms, the way out or reception. Once beyond the entry point, many buildings do not have directional signs for the way out or back to reception, so people might try to follow the fire exit signs which often lead to a very different route. Further research on the proximity distances from other signs to reduce overload might be beneficial.

Consideration should be given to separating signage from other notices and pictures, to avoid a cluster of competing information.

A signage strategy should take into account the benefit of a locational sign to confirm and alert people to the fact that they have arrived at their destination.

6.6.3 Exit signs

Signage for main exits should be consistent to avoid attentional bias and be easy to identify from fire exit routes.

NOTE 1 Directional signage for exits are important, particularly for people who are unable to mentally reverse the route or retrace their steps. Providing “Way Out” signs rather than Exit may be helpful.

*NOTE 2 See also **6.5** for guidance on use of colour, BS 8300-2, **5.2** for guidance on inclusive and accessible wayfinding, and **8.5** for guidance on sign design.*

The use of temporary one way systems for special events or circumstances should be reinforced with other wayfinding cues (refer to Annex C for recognized symbols).

6.7 Tactile information

Wayfinding is multi-sensory and so information should be presented in formats that can be interpreted by more than one sense, i.e., visual, tactile, audio. Sensory clues, whether through touch, smell, or sound, should assist some people with navigation, in particular people who are blind or partially sighted.

NOTE 1 Some people who experience sensory processing differences have higher sensitivity to tactile information. Tactile signs in the form of Braille and/or embossed text might not cause any sensory overload unless someone has both a visual impairment and a sensory processing difference, in which case they can choose not to touch the sign.

Someone with hypersensitivity to tactile features might find tactile walking surface indicators (TWSI's) particularly uncomfortable, so more extensive tactiles for wayfinding for the benefit of people with sight loss should only be introduced after user and relevant stakeholder engagement i.e., to include people with lived experience of sight loss as well as people with high sensitivity to tactile features.

NOTE 2 There is currently little research in this area.

6.8 Technology for wayfinding

Talking signs and other devices such as PA systems assist visually impaired people but are intrusive or overwhelming for people with heightened sensitivity to sound, so the location and volume should be taken into account.

NOTE 1 Technology that works with an individual's personal SMART device is one way of providing audio information without imposing additional unwanted sound on others. There are already a wide variety of developing solutions, mostly through apps on the user's own SMART mobile phone technology and utilizing satellite GPS technology for external environments. This might be developed in the future to be used more in internal environments, which might be helpful to many people to successfully navigate places.

When proposing the use of technology and apps, designers should consult with users who regularly experience significant difficulties in wayfinding to provide for a wide spectrum of different user needs. Volume control, transcription and alternative formats including apps to support audiences and inclusive practice should be taken into account.

NOTE 2 It is important for the user to be able to tailor the appearance and feedback to their own preferences, for example, colours, contrast and changing audio to haptic information.

Adopting established models gives familiarity which should allow the technology to be used by a wider group of people, for example, people with dementia, to obtain information.

NOTE 3 Digital wayfinding solutions can provide more flexibility to adjust content in reaction to dynamic situations, such as crowd control or travel delays, in comparison to fixed signage.

Social-economic factors should be taken into account for the cost of wi-fi, availability of wi-fi to support wayfinding and age of the technology device. Therefore, other alternative formats (such as maps) should be taken into account in addition to technological solutions.

7 External spaces and access to nature

7.1 Access to greenspace and biophilia

Outdoor spaces should be designed, where practicable, to provide areas for activity and areas for escape and calmness, as well as clear connection with buildings and other spaces as appropriate.

Large open spaces should be enhanced by creating smaller pockets of greenspace for contemplation and focus.

NOTE 1 Examples of external spaces include streets, parks, courtyards, and terraces.

*NOTE 2 Natural features such as plants and trees can be helpful wayfinding cues, however; care is taken not to formally use these in preview information where the appearance is likely to change on a seasonal basis unless, seasonal images and description can be included. Refer to Clause **6** for wayfinding guidance.*

7.1.1 Access to nature

Access to nature and outdoor amenity spaces should not be overlooked in assisting both physical and mental wellbeing. These spaces should provide opportunities to escape from overwhelming spaces or crowded buildings, to a place where personal space is provided.

NOTE 1 A lack of connection to nature has a negative effect on people and can lead to increased incidence of anxiety, depression and promote hyperactivity or attention deficit conditions. Connecting with nature can have a restorative effect on people, improving psychological wellbeing and reducing physiological stress. It can also improve the capacity to remain attentive.

Green spaces such as gardens and parks should be taken into account for relaxation and recovery from sensory overload. Independent, free access to nature should be provided, where possible, to people with sensory processing differences to recover from overwhelming busy places, for example, a roof top garden area at high level or a small pocket park at ground level.

Views to outside green space from inside a building are beneficial and should also be taken into account.

*NOTE 2 The use of natural finishes internally allows further connection with nature (see **7.1.2**). Also refer to Mental health and town planning: Building in resilience [6].*

7.1.2 Biophilic design

Biophilic features inside a building should be included at the design stage, e.g., appropriate planting, views or images of nature which are calming and allow better concentration or cognitive processing.

Outdoor views and daylight should assist in reducing anxiety and indoor biophilic features, such as plants and natural materials, should assist in reducing physiological stress.

NOTE 1 Combining views to outside space and indoor biophilic features gives maximum benefit.

In the absence of a natural view, images and virtual reality technology can provide the therapeutic effect of a connection with nature.

A biophilic design approach should include:

a) natural finishes (particularly locally sourced), materials and patterns into an internal space which can tap into human affinity with nature and natural environments together, with natural daylight and ventilation and features that mimic nature and natural forms;

b) strong connection to the surrounding environment and culture provided through views or use of natural shapes in architecture, lighting and spatial arrangements that feel like a natural setting; and

c) naturalistic design with organic forms with shapes, connection with nature through the use of forms and textures that occur naturally, such as landscapes or locally grown or made products, including textiles, natural stone from the area.

*NOTE 2 See **5.3** for recommendations on facades and **14.1** for quiet and restorative spaces.*

NOTE 3 See effects of biophilic indoor environment on stress and anxiety recovery [14].

NOTE 4 Large wall murals and floor to ceiling artwork might cause confusion or distress for some people with dementia.

7.2 Clarity and familiarity of the space

*COMMENTARY ON **7.2***

Design principles for inclusive and safe public realm are critical in providing an inclusive environment for the neurodiversity of the population, who inevitably have a wide variety of sensory processing differences. People with hyposensitivities or hypersensitivities to noise, crowds and lighting can be negatively impacted by poor street design. Following familiar and well-established street designs can make areas easier to navigate and interpret.

The following design principles for inclusive and safe public realm should be taken into account:

a) street furniture aligned and typically at the outer edge of the pavement, allowing pedestrians to move away from the noise of traffic;

b) alleyways and cul-de-sacs providing temporary havens from the bustle of a busy street or bright lights of shops, streetlighting and traffic;

c) “pocket parks” are small pieces of green within city centres and important for the wellbeing of many city dwellers and workers;

d) external spaces that introduce scented plants to orientate and create sensory experience (plants should be sited such so that strong scents do not enter a building where someone might have no choice but to experience them every time a window is opened);

NOTE This can negatively affect someone with a heightened olfactory sensitivity (sense of smell).

e) for individuals who find cluttered space difficult, a more orderly arrangement of plants, seating or other items; and

f) spaces should be intuitive to understand.

7.3 Safety

People who experience sensory overload are likely to seek out spaces that are quieter but appropriate lighting and sight lines for personal safety should be taken into account.

Changing any safety feature in the public realm or spaces should be identified as high risk and requires promotion and explanation to allow everyone to understand the change (this is particularly significant if unfamiliar surfaces or features are used).

NOTE Attention is drawn to the use of Considerate contractor schemes to address deviations to pathways in a uniform and accessible manner.

7.3.1 Road crossings

The appearance of pedestrian road crossings and other safety features in external spaces, should not be significantly changed without user consultation and an Equality Impact Assessment by the Local Government Authority, as this causes confusion and impacts on pedestrian safety.

NOTE There are several pedestrian road crossings, including zebra, puffin, pelican and toucan, not all of which are readily understood by members of the public. The black and white lines on the road surface are, however, familiar to the majority of people and varying the appearance of a pedestrian crossing (such as colourful crossing surface designs which are unique to each crossing and often incorporate blocks of vivid colours) can lead to misinterpretation of the feature, hesitation and anxiety. This particularly affects people with sensory impairments such as sight or hearing loss, people with sensory processing conditions or heightened sensitivity to visual noise.

Where possible, different types of signal controlled crossings should not be used adjacent to each other.

7.3.2 Shared space or shared use

Shared space initiatives or schemes that incorporate shared use surfaces should only be designed via significant consultation and engagement with a wide range of stakeholders and users throughout the design process. These spaces should be assessed for anyone with a sensory processing difference.

NOTE 1 Shared spaces can be hazardous for people with sight loss as there is no detectable kerb to indicate the transition for safe pathway to road surface. Such schemes are also confusing to many older people who might be unfamiliar with such designs; they are also difficult to teach young children and might not appear logical to anyone with a sensory processing differences as they do not follow an established pattern generally used. The sudden approach of a noisy vehicle, or being confronted unexpectedly by vehicle headlights, is likely to be distressing and cause sensory overload.

NOTE 2 Shared use surfaces might be difficult to navigate for some people with sensory processing differences due to difficulties in judging distance, space and speed of approaching cyclists.

NOTE 3 BS 8300-1 does not include any advice on shared space, as a public consultation was under way; this was followed by Department for Transport (DfT) call for a temporary pause on shared space schemes, pending research [15].

NOTE 4 DfT document 'Accessible Public Realm 2020: Updating Guidance' Annex 1 [16] includes in its recommendations the need to avoid cognitive overload.

7.4 Surface materials and sensory feedback

*COMMENTARY ON **7.4***

*Refer to **6.7** for guidance on tactile information.*

Ideally, green spaces should provide a mix of sensory experiences, with opportunities for visual and speech privacy, and to hear, see and touch the natural environment. They should also include natural features that provide sensory feedback, e.g., running water, scented planting, and nature sounds are found to be therapeutic.

Soft and/or smooth surfaces should be used; soft grass or smooth surfaces with limited tactile feedback underfoot. To enhance feelings of security, larger areas should use an orientation map at the point of entry and seating.

Although areas on circulation routes externally should not have any trees or shrubs creating a height clearance less than 2.1 m where people will be walking, it should be taken into account that seating beneath lower hanging shrubs and trees creates a cavern effect of green shrubbery in which people can sit in relative calmness and with some visual privacy.

8 Internal layouts

8.1 Transition between spaces

Features that help people to transition from one space to another should be taken into account.

NOTE 1 Canopies that extend over an external area provide a helpful indication of the point of entry or information, aiding wayfinding. They can provide a sheltered area from which someone can view into the building on arrival before entering, and to view the routes outside before leaving, which reduces anxiety.

*NOTE 2 For extra guidance, refer to **6.2** for preview and advance information and **11.11** for transitional lighting.*

Adjacent floor or ground surfaces that have low contrast difference should prevent some people with dementia becoming confused or people with Parkinson's experiencing difficulty in initiating movement.

Transitions should always use predictable, graduated colour change.

*NOTE 3 Refer to **12.4** for examples of how to create a transition band to reduce the impact of strongly contrasting adjacent ground surfaces, or from outside to inside spaces. Providing easy access to a quiet or restorative space nearby is also helpful (refer to **14.1**).*

8.2 Size, layout and symmetry

8.2.1 Size

Spatial and layout issues should be taken into account as one of the highest areas of importance for people with sensory processing differences. Making sure space is sufficient for people to circulate without bumping into things/hurting themselves or encroaching upon personal space boundaries should be assessed and reviewed, especially for people with conditions affecting coordination or balance, such as Dyspraxia or Meniere's.

NOTE 1 Although large spaces can be daunting, they also provide better opportunities to move freely within the space and to view from a distance whilst inside the space, which can be helpful to people with social anxiety. It is possible to meet the needs from people who require smaller spaces through internal division, perhaps with high back seating or walls that do not enclose completely.

Environments which are unpredictable, large, open plan and involve a lot of people are more challenging but smaller spaces also sometimes feel too busy and become crowded – each environment should be assessed independently. Adequate space circulation is important but people should not be forced to sit in the middle of a large space with their backs to an activity or to people moving around which can trigger anxiety. Where a large space exists, the flexibility for creating smaller areas within the space, e.g., for different activities or to provide retreat areas, should be taken into account.

NOTE 2 This can be achieved with high bank seating, or internal walls to mid or head height rather than full height partitioning.

A variation in ceiling heights should be taken into account, with a lower ceiling creating a more intimate quiet space. Smaller spaces, such as WCs and shower facilities, should be assessed as they potentially force closer proximation to other people through narrow corridors on approach.

NOTE 3 The minimum spatial requirements referred to in BS 8300-2 can form part of the assessment, to allow sufficient passing spaces and allow a larger personal distance between people.

All sizes of space, both multi-function and dedicated use, should be made more comfortable by designers and/or facility managers by taking the following into account:

- providing a clear layout structure that is predictable and imaginable for anyone who finds it difficult to form a mental image of the environment;
- varying combinations of space for group or one-to-one interactions;
- generous spaces, where possible, to help people cope better in social situations where proximity to other people increases anxiety (these can always be sub-divided into smaller areas to provide variety);
- opportunities for people to view a larger space from a smaller part, such as a partially shielded enclosure, provides a perceived safe refuge until an individual feels ready to enter the larger environment; and
- glazed areas to allow a view into a space before entry.

*NOTE 4 Refer to **6.2** for guidance on previewing a space.*

NOTE 5 *A common reason for a preferred location is that it is near the exit, which can be helpful if a person experiences panic, anxiety or overload.* Furnishings and fittings can communicate the purpose of a space, alongside signage and other wayfinding measures.

8.2.2 Familiarity

*COMMENTARY ON **8.2.2***

Layouts that change, such as multi-function spaces, can cause anxiety as the space might not be as remembered (or previewed) and this can be disconcerting. Most people prefer a familiar place and position within a room, with many people choosing the same seat or desk every time they visit. For some people with specific sensory processing challenges, not securing the same position can become very stressful. This can be because the chosen space has a good view of the room and people approaching, or because it is impacted less by glare and/or feels a quieter position.

People should be provided a choice of where to sit and this can be influenced by many factors, including noise, lighting, glare, density of use, smells and décor.

NOTE Office hot desking arrangements might mean at busy times there is no availability of a suitable space for an employee's needs, such as sitting in a corner, centrally or with back to the wall, facing a window, quieter area, etc.

An anchored or tethered desk should be offered to employees with specific physical access requirements (such as an adapted desk or chair); these arrangements should be extended to allow people with a sensory processing conditions to secure a regular desk position or type.

8.2.3 Visual balance

Features that create optical illusions, which arise from offsetting vertical and horizontal lines in a repeating pattern, should be taken into account as these affect the reference points used for balance.

NOTE Some people with neurodivergent conditions have a strong preference for visual balance, with a heightened sensitivity to vertical, horizontal or diagonal shapes, and a desire for orderly placement of internal fittings.

Creating part-enclosures should break up larger spaces and opting for curved walls should be calming and reduce the potential impact of sharp corners (see **5.3.1**).

8.3 Positioning of key facilities

Reception areas should be in a logical position, with the desk close to the main point of entry. Where alternative arrangements are offered, such as self-serve sign in touch down cubicles, this should be communicated in advance and on arrival.

Where practicable, WCs, baby change, tea points and other key amenities should be located consistently throughout a building so that they can be found in a similar position on all floors. The same guidance should also apply to first aid, quiet and faith rooms where more than one is provided.

8.4 Orientation and clarity of routes

A clear structure for circulation spaces should enable an environment to be readable and fundamentally predictable, even when individual layouts within rooms change.

*NOTE People with sensory processing differences can find it difficult to form a mental image of a space. Refer to Clause **6** for guidance on wayfinding for working memory.*

8.5 Use of corridors

Corridors are typically busy, uncontrollable spaces and the building design should take into account variations in expected footfall, and that some people struggle with confined spaces and crowds.

The provision of windows to outside views, images of nature and clear signage should assist in using corridors, but glare should be avoided (refer to **5.5.2** for guidance on glare).

Sound absorption in corridors should also form part of a building design (refer to Clause **10**).

Curved walls or windows in corridors should be reviewed in the building design to reduce proximation challenges.

*NOTE 1 Corners add to the anxiety by obstructing the view ahead (refer to **5.3**). Also refer to BS 8300-2, **9.1** for spatial considerations.*

Long narrow corridors should be avoided and, where necessary, should be broken up using windows on side walls, intersections and possibly recesses which serve as informal break out areas or areas for rest /retreat. Such areas should also serve as an informal quieter area when needed from sensory overload.

Artwork in corridors should also support wayfinding and orientation.

NOTE 2 A window at the end of a corridor can result in strong daylight entering the building resulting in disability glare.

Where dead-end corridors exist, a design to create a seating area to enable someone to sit, re-orientate and resume walking should be taken into account.

9 Mechanical, electrical, plumbing (MEP)

9.1 Sense of smell (olfaction)

People with a heightened or superior olfactory sense which can make some environments difficult or unpleasant should be taken into account.

NOTE 1 Many autistic people, for example, can experience everyday smells to an overwhelming degree.

Being able to reduce unwanted odours by opening of doors and windows should provide some measure of control but filtration and ventilation systems should be sufficient to prevent odours that occur in areas such as canteens, tea points, WCs and reaching adjacent areas.

The following actions should also prevent discomfort:

a) limiting the use of construction materials and finishes containing toxins or emitting volatile organic compounds (VOCs) and semi-volatile compounds (SVOCs);

b) undertaking an air flush or building flush prior to occupancy (a technique where air is forced through a building in order to remove or reduce pollutants introduced during construction);

c) periodic purge ventilation (introducing intermittent, rapid ventilation into a room, usually via an openable window or external door, or through air filtration systems);

d) where possible, select carpets that are free of chemicals with a low nap;

NOTE Carpets and soft furniture are common sources of VOCs.

e) selecting low-VOC or water-based adhesive products if used;

f) cleaning new carpets with a HEPA (high-efficiency particulate air) filter vacuum and cleaning with hot water extraction;

NOTE Attention is drawn to the Environmental Protection Agency guidance for HEPA filters [17].

g) regular vacuuming of carpets;

h) limiting the use of air fresheners with strong perfumes; and

i) plants that can help to reduce VOCs.

NOTE For example, the bamboo palm is known for being particularly effective at removing formaldehyde (a common VOC) from the air and reducing benzene concentrations. Further information on VOC limits can be found in BS 40101.[5)]

*NOTE 2 The provision of restorative or quiet spaces in other locations should provide refuge until odours can be cleared from a space (refer to **14.1**).*

The use of olfactory senses in wayfinding has had limited research and should benefit from further research testing and assessment.

*NOTE 3 Some people with neurodivergent conditions can have a reduced rather than heightened sense of smell (refer to Clause **7** for guidance on external spaces). Also refer to research* Enhanced olfactory sensitivity in autism spectrum conditions [18].

9.2 Air quality and temperature

9.2.1 Fresh air

Openable windows should be provided for some fresh air where outside noise levels are low.

NOTE Noises from outside are often intensely distracting for people with heightened sensitivity so the opportunity to control this is helpful, such as alternative provision (e.g., mechanical ventilation at busy times).

The fast removal of perfume or strong smells should be taken into account as an essential requirement for people who have a strong sensitivity (see **9.1**).

9.2.2 Air conditioning/comfort cooling

Air conditioning systems introduce background noise and natural ventilation should be provided, where practicable.

*NOTE Refer to Clause **10** for guidance on acoustics.*

9.2.3 Temperature control

Balancing temperature preferences and needs across a wide spectrum of people should be reviewed and assessed.

NOTE 1 Heat and humidity can exacerbate a proximation need for a greater distance between people and can be a distraction.

NOTE 2 Sensitivity to cold temperatures can also be problematic for some groups, for instance, cold temperatures can exacerbate pain for people with fibromyalgia.

The provision of openable windows and fans should be taken into account, as well as the option, where practical, to have a choice of temperature and humidity settings in which to work.

NOTE 3 Sensitivity to temperature, particularly heat, is commonly experienced across a range of disabilities and medical conditions, therefore having different working environments kept at different temperatures allows people to choose the most comfortable for them to work all or part of the time.

9.3 Switches, controls, and automation

Controls and switches should be intuitive and simple to use.

5) Currently under development.

NOTE As sensory processing conditions often result in a different way of thinking, the logic of a piece of equipment or technology might not be obvious to everyone. Learning a new piece of technology can take longer, depending upon working memory capacity.

User testing should be carried out by a wide cross-section of users, including people with different neurocognitive profiles.

Automation, such as doors which open automatically on proximity sensors, sensor taps and passive infrared (PIR) lighting can startle some people and should be assessed. Providing advance information should help to minimize anxiety, and an indication of the door swing is helpful. Support in using technology should be provided by a member of staff when required.

10 Acoustics and noise management

*COMMENTARY ON **10***

One of the biggest influences on wellbeing for people with sensory processing differences can be noise. Noise can have a negative physiological and psychological impact. Whilst most neurotypical people can adjust to a variation in noise levels, this can be much harder for individuals with a range of sensory processing differences. For example, hypersensitivity results in increased stress, anxiety and in the absence of any mitigating measures, sensory overload.

People with neurodegenerative conditions (such as dementia), and neurodivergent conditions (such as autism, ADHD) are very often sensitive to noise. Low frequency noise is generally found to be the most difficult to control, due to its ability to penetrate building structures (higher frequencies lack the sound energy to do this). However, mid and higher frequency sounds (particularly those associated with the human speech spectrum, i.e., 500-2000 Hz) can be more disturbing to thought processing and emotion [19].

10.1 General

Individual control for noise should be taken into account, including:

a) the ability to switch an extractor fan on or off;

b) the option to close a window or ventilator panel if noise is coming from the street;

c) the option to use a variety of spaces including access to a quiet room;

d) the option to choose the level of noise (e.g., between using paper towels and hand dryers); and

e) the sound level of fire alarms should comply with UK fire safety regulations, while not being excessively loud. Sound levels in elevators and refuge areas can also be problematic.

NOTE 1 Fire alarms can be challenging for people with hypersensitivity to sound and tinnitus.

NOTE 2 Where provided, hand dryers should be low noise.

NOTE 3 Some people are hyposensitive to sound and actively seek out or make a noisier space so the level at which a sound becomes challenging to an individual can vary widely.

10.2 Acoustic layout and zoning

The location of different types of space and activity within the building at concept stage should be taken into account, so that acoustic zoning and treatment is applied correctly. Spaces should be acoustically modelled by an acoustician to highlight areas that cause challenges for users from either activity or design.

NOTE 1 For example, it is useful to position study and focus type areas away from a busy street elevation and enclose reprographics rooms.

Areas where activities requiring quiet focus or concentration should also have enhanced acoustics internally. Acoustic design should also take into account spaces that are intended for multi-purpose use at different times of the day, and provide ways of adjusting the internal acoustics to accommodate different activities and related sound levels.

Acoustic zoning should be used to allow people to make a gradual transition from the quietest to the noisiest space within a building.

An activity based acoustic design approach should be developed with the needs of the people using the space, the activity taking place and the expected or contextual acoustic ambience to be achieved.

Typically, this should not be complete silence but an acceptable level for the environment and in context with the activity taking place.

NOTE 2 Complete silence can make some conditions, such as tinnitus, more evident and distressing. Some background noise has the useful effect of masking speech and other audible distractions coming from elsewhere [20].

As individual requirements vary, for some people additional control should be provided as an option, including the use of noise reducing headphones.

10.3 Background noise reduction

*COMMENTARY ON **10.3***

Background noise in an internal environment can originate from a variety of sources, e.g., noise breaking in from external spaces, transmitted internally from other rooms or the noise generated inside a space by the ventilation and air-conditioning systems.

Background noise from ventilation and air-conditioning systems, which commonly includes significant low frequency components, should be minimized through the selection of appropriate low noise fans, in-duct attenuators, and acoustically insulated ductwork to minimize air transfer noise moving through the ductwork.

NOTE 1 Unpredictable, sudden, loud sounds (high or low frequency) can be intimidating. Repetitive sounds, such as a ticking clock or whirring fan, often lead to concentration difficulties.

The following areas for background noise should be reviewed and assessed:

a) direct transmission;

NOTE 2 When sound is transmitted between areas, it can be reduced with sound insulation. This can involve increasing the mass of separating walls and floors and further measures might be needed, such as vibration-isolation (e.g., floating floors).

b) absorption; and

NOTE 3 The extent to which sound can be absorbed within the environment reducing reverberation; soft finishes are helpful and sound absorbing curtains and screens can adjust the room acoustics within a space during different activities. Absorptive materials can help reduce the sound pressure level within a space so reducing levels of background noise.

c) flanking sound transmission.

NOTE 4 The extent to which building elements (e.g., walls, floors and ceilings, structure) permit noise transmission such as through gaps around doors, inadequate filling of mortar joints, or so-called “structure borne transmission” where elements are excited by sound and pass along the energy as vibration, to be re-radiated in another part of the building.

10.4 Room acoustics

*COMMENTARY ON **10.4***

Internally, finishes using hard materials reflect sound. In excess, this can create a confusing environment for people with sight or hearing loss, and possibly sensory overload for people who are hypersensitive or highly sensitive to sound.

Ceilings, walls and floor materials should be designed and specified to provide the right amount of absorptive materials for everyone to orientate, focus and dwell within a space without discomfort.

NOTE 1 These can create social spaces to meet and talk, but keep conversations muted rather than echoed around a large, open plan room.

NOTE 2 Soft furnishings and furniture, such as soft seating and textile covered bench seating pods with extended high backs, might be used to soften and diffuse sounds within the environment. However, in some environments e.g., healthcare hygiene and safeguarding considerations might prevent the use of soft furnishings.

When designing room acoustics, the targets should be in accordance with Table 2.

Table 2 – Recommended acoustic values

Room/Activity type	Unoccupied sound level (LAeq 30 min dB	Unoccupied Reverberation Time (RT)	Signal to noise ratio
Quiet rooms	≤ 30dBA	≤ 0.4 (125 – 4 000 Hz)	> 20dB (125 - 750 Hz) > 15dB (750 – 4 000 Hz)
Primary school classrooms, meeting rooms, cellular offices	≤ 35dBA	≤ 0.6 Tmf	> 15dB (750 – 4 000 Hz)
General circulation space including corridors	≤ 45dBA	≤ 0.6 Tmf	—
Sleeping areas	≤ 35 dBA (preferably ≤ 30dBA)	≤ 0.5 Tmf	—
Dining room, restaurant, canteen; Large room (≥ 20 people) Small room (≤ 20 people)	Large: ≤ 45dBA (preferably ≤ 40dBA) Small: ≤ 45dBA (preferably ≤ 40dBA)	≤ 1 Tmf ≤ 0.6 Tmf	—
Multi-purpose hall/ community space	≤ 35dBA	0.8 - 1.2 Tmf	> 15dB (750 – 4 000 Hz)

NOTE 3 For teaching space intended specifically for students with special educational needs (SEN), including hearing or communication needs [21] (Section 0.4) and accompanying guide to Building Bulleting 93: Acoustic design of schools – performance standards, Chapter 6 [22] is appropriate. For mainstream education, refer to Building Bulleting 93, Table 6 [22].

In addition to the need for sound absorption (often applied to the walls in larger spaces), breaking up the space with smaller semi-enclosed areas should be used to mitigate noise.

NOTE 4 People can sound louder or become louder in large reverberant spaces, so acoustic treatments become more important and sometimes more complex.

Acoustic design for open plan offices is typically more complex and should be assessed and reviewed by an acoustic specialist.

10.5 Control

Large open plan spaces reduce the opportunities to sit against a wall, so high backed seating and semi-enclosed areas should be introduced to provide a similar feeling of control.

NOTE 1 For some people who are hypersensitive to sounds, sitting with a back to a wall helps to keep the noise directional, more understandable and reduce anxiety.

NOTE 2 The effort required to block out unwanted sounds to process information impacts on working memory. Working memory can sometimes be impacted in people with differences in sensory processing, which can result in overload. A similar impact is found in people with hearing loss, where the degree of concentration needed to filter out background noise to make speech intelligible becomes exhausting. Competing sources of noise can cause confusion. Many older people struggle to successfully filter out unwanted background sounds, including nearby conversations.

Before installing sound masking systems and manufactured soundscapes, the design should be reviewed and assessed, as they require calibration and control in use and the additional sensory load may have a negative impact on some people.

The combined effect of lighting, noise and visual stimulation through surface finishes or pictures should be taken into account as they can cause bombardment on the senses and consequential distress and overload.

The duration of time spent in the space should also be reviewed as this contributes to the level of comfort and the ability to endure a noisy environment.

*NOTE 3 For example, entering a reverberant glazed atrium for a brief discussion at reception might be tolerable, whilst a prolonged meeting in the same area might not. The ability to "preview" the sound experience of an environment before visiting allowing individuals to prepare or to avoid the visit altogether (refer to **6.2**).*

The availability of quieter spaces, including enclosed quiet rooms and semi-enclosed quieter zones, should be provided as an option to escape if a noisy over-stimulating environment becomes intolerable (refer to **14.1**).

Restorative spaces should be provided with the option of background nature sounds or music, but this should be under the control of the users. Recorded sounds of nature are sometimes confusing or too loud and therefore the option to regulate this should be provided.

11 Light, lighting and reflection

11.1 General

*COMMENTARY ON **11.1***

Good lighting is crucial in allowing people with sensory/neurological processing differences to use buildings conveniently and safely. Lighting can improve visibility in a space to prevent trips and falls. It can also create calm, therapeutic or stimulating environments and affect the quality of sleep.

People who experience sensory overload often have significantly heightened sensitivity to light (photophobia). They can be adversely affected by the lighting frequency, level, colour and positioning and number of light sources, all of which can impact on comfort levels and glare. An important feature of both natural daylight and artificial lighting to accommodate people with photophobia is the ability for individuals to make adjustments to meet their specific requirements.

LED is currently the prominent form of artificial light source, providing higher efficiencies to previous technologies. However, light is emitted directly from LED source so it can be intense and cause visual discomfort.

Measures should be taken to subdue the intensity or direct viewing of the light source. Elements such as diffusers or recessed light sources with reflector technologies should be used. The use of lens optics can assist to direct light to required areas and also limit light pollution or undue light spill onto adjacent areas.

11.2 Natural daylight

Natural lighting or daylight should be provided where possible as it is preferable to artificial lighting and has a positive health effect. Daylight provides daily and seasonal changes, plus good colour rendering, which are beneficial for wellbeing. Opportunities for natural daylight should reduce eye fatigue.

Exposure to sunlight is important to human well-being and some exposure to sunlight should be the recommended approach. However, control of any light sources or significant changes of brightness between adjacent spaces should be taken into account for visual comfort.

NOTE Refer to BS EN 17037 and BS 5489 for more information.

11.3 Glare and shadows

11.3.1 Glare

*COMMENTARY ON **11.3.1***

Glare is the difficulty experienced in the presence of significantly brighter light that the eye has adjusted to, such as shafts of strong sunlight or car headlamps through a windscreen. Refer to BS 40101 for more information.

Direct interference with vision should be referred to as disability glare. Where vision is not directly impaired but there is discomfort, annoyance, irritability or distraction the condition should be referred to as discomfort glare causing visual fatigue.

NOTE 1 Both types of glare can arise from the same source. Attention is drawn to HSG 38 [23].

The potential for glare should be identified from a variety of sources, both natural and artificial, including sunlight through windows and reflection off glossy surfaces. Building designers should avoid glare from natural daylight or artificial light sources.

NOTE 2 Luminaires have a unified glare rating (UGR) and the CIBSE SLL Code for lighting [24] provides guidance on suitable ratings for different types of environments with a UGR value of less than 19, generally recommended to mitigate glare.

All artificial lighting sources should be indirect to minimize glare. Diffused or micro-prismatic fittings should be used to soften glare whilst maintaining light levels.

11.3.2 Glare control

Natural daylight through glazing is desirable, but blinds or curtains should be used to adjust any glare. Window coverings which provide full or adjustable reduction in glare should be taken into account.

NOTE 1 A voile curtain can reduce the brightness which can be sufficient in some areas. Changing the transparency of a blind by combining blackout curtains with a semi-transparent blind, voile curtains or a black out blind can be used to adjust the space.

NOTE 2 For windows, frosted glass or adding manifestation can also be used to diffuse light, similar to the effect of a voile curtain.

*NOTE 3 Some window coverings, such as venetian blinds, can create slithers of bright light breakthrough when in the closed position. This is referred to as pattern glare and can be distracting and stressful for people. The effect of sunlight shining through a slatted blind also has potential to trigger a seizure in someone with epilepsy. Refer to **12.5**, Note 4 for more information.*

Matt surfaces should be provided to reduce glare and reflection.

NOTE 4 Reflected glare can also be reduced for dry wipe boards and digital screens by mounting the fitting with a tilt of 5 to 10 degrees.

Recessed light sources should reduce glare but also have an impact on the efficiency and distribution of light. As a result, deeply recessed fittings should be avoided.

11.3.3 Shadow

Lighting should be designed to minimize the creation of shadow that can be misinterpreted as a barrier, obstruction or hole in the ground, particularly for people with a visual impairment or dementia.

NOTE 1 Recessed downlights can lead to stark contrast and shadowing, and other forms of lighting might be better suited.

A light fitting angle of 20 to 45 degrees should be provided to avoid long shadows.

Harsh shadows and shadowing should be mitigated with good distribution of both vertical and horizontal lighting.

General illumination should mainly be addressed from light distributed from above i.e., downlights, pendants, etc.

A combination of vertical and horizontal illumination should provide good visual comfort and good rendering of facial features and objects within a space.

NOTE 2 The inclusion of supplementary lighting such as floor standing lamps and table lamps with shades can provide horizontal light contributions and wall mounted luminaires assist to provide illumination of vertical wall surface as well as reflecting light.

11.4 Flicker

*COMMENTARY ON **11.4***

People who experience sensory overload or migraines are particularly sensitive to lighting flicker. This flicker is often not visible or consciously perceived but can still cause discomfort, such as eye strain, headaches or migraine.

Flicker should be taken into account as a potential issue when:

a) fluorescent battens are installed;

b) residential quality LED lighting is used with a low-quality driver;

c) incompatible dimming controls are used with poor performance dimmable LEDs; and

d) drivers and luminaires are incompatible.

With high frequency lighting often used in study and learning spaces, an appropriate choice of LED light sources and “constant current” driver technology should be used to achieve a successful system without flicker.

NOTE 1 Flicker is most perceptible between the frequencies of 10 Hz to 25 Hz (a 100 Hz flicker is not an issue for most people). Compact fluorescents operate at 20 000 Hz and are therefore not likely to produce a detectable flicker.

NOTE 2 Dimming controls intended for incandescent tungsten lamps are not suitable for use with LED lamps and can result in flicker.

11.5 Artificial lighting output types

Artificial lighting systems that include variation in higher and lower levels together with a variation in colour temperature should be used to imitate the daylight cycle without fully replicating the benefits of natural daylight. If possible, natural lighting should be provided.

NOTE 1 Incandescent and halogen lamps are closer to the colour spectrum of daylight, whereas LED lamps (even those described as full spectrum) contain more blue light. However, LED light sources provide long-term service life and durability and are therefore the most common type to be used. A variety of lighting in the design can lead to a better outcome.

The use of purpose-built LED luminaires with integrated LED modules and heat sinks should be used for commercial and mainstream, such as in health care settings and hospitals.

NOTE 2 The retro-fitting of LED lamps might not achieve as successful an installation as integrated commercial quality LED luminaires designed in from the outset in a new build situation. This can lead to a lower service life and potentially higher energy costs, and compromise the quality of light.

11.6 Illumination levels

It is important that lighting should be designed and set at an adequate level for the activity or purpose of the space, e.g., circulation spaces being less brightly lit than areas where detailed visual activity takes place.

NOTE 1 Brightly lit interiors can contribute to sensory overload and distress.

Where light level output at procurement is specified as higher than required to allow for deterioration of some lamp types over time, the impact should be assessed for people with hypersensitivity.

NOTE 2 Tungsten/Halogen lamps can lose some 40% of their light output over a short service life. In comparison, LED lamps have little deterioration.

NOTE 3 Refer to BS 8300-1 and BS 8300-2 for guidance on minimum light levels for people with a range of visual impairments.

NOTE 4 Refer to CIBSE Lighting Guides [24] for more information on target illuminance levels. The SLL code for lighting provides guidance for a wide range of interiors and a range of publications relevant to the lighting of building interiors.

Local light levels should be adjusted in areas where someone might remain for long periods of time (rather than passing through to reach a destination). There should be an option to sit

in an area with a lower lighting level, for example, in an open plan environment. The option for building users to adjust the light level over individual seating areas to meet specific requirements should be taken into account. This should be achieved, where appropriate, through individually switched ceiling or wall lights, or desk/floor task lamps. This would be beneficial in libraries, offices and other working environments, and should be essential in quiet and restorative spaces.

11.7 Quality of light and colour rendering index

*COMMENTARY ON **11.7***

Natural daylight provides good colour rendering.

A colour rendering index (CRI) is a quantitative measure of the ability of an artificial light source to reveal the colours of various objects accurately in comparison with an ideal or natural light source.

The colour rendering of surfaces can be enhanced by the choice of the lamp. See SLL code on lighting for further guidance [24].

With appropriate choice of lamp, artificial lighting should achieve good colour rendering for all surfaces. For general occupancy, the colour rendering index (CRI) should be at least 80 Ra in most areas and 90 Ra or higher where the quality of colour is important (for example, in art/photographic studios or galleries, and clothing and hairdressing establishments).

NOTE 1 Also refer to BS EN 12464-1 and BS EN 12464-2 for information on indoor and outdoor lighting.

NOTE 2 Discomfort can be associated with UV light, electromagnetic fields and blue light with impact on migraine sufferers or people who experience sensory difference and sensitivity.

Indirect sources or shielded lamps (shades, diffusers etc) should be used to reduce such negative effects.

NOTE 3 For LED light sources, research by the National Institute of Standards and Technology (NIST) has led to the development of the Colour Quality Scale (CQS) for more accurate results.

Lighting that reflects the change and quality experienced in natural lighting should be used to maintain the natural circadian rhythm (see **11.10** for guidance on adaptational lighting).

11.8 Colour temperature

Lighting of external areas should have a consistent colour temperature.

NOTE 1 Colour temperature is measured in Kelvins (K):

- *Warm — 3 000K and below;*
- *Natural — 3 000K to 4 000K; and*
- *Cool — 4 000K and above.*

Depending on the type of space, character and heritage status, urban areas and amenity lighting should range from warm white light (2 700K) to cool white light (4 000K). A consistent colour temperature to primary routes with level changes, such as steps, gradients, entrance to transport hubs and facilities should be taken into account.

NOTE 2 Lighting with a warmer colour temperature internally (at least 3 000K and preferably 3 500K) might be considered, coupled with dimming, or options to switch off some lights. For residential use, a range of 2 200K (very warm) to 3 000K (warm to neutral) colour temperature might be preferred.

11.9 Switches, control, adjustability, and detection

*COMMENTARY ON **11.9***

Lighting that is triggered by movement or thermal presence sensors can be alarming for some people. A sudden increase in light output can be stressful for light sensitive individuals.

A gradual increase in light levels should be used to allow time for eyes to adjust. Allowing sufficient time and incremental increases in light output as the individual approaches or leaves an activity area should be taken into account.

User engagement should be considered on the speed of change in light output to ensure safety or comfort is not compromised for some users.

*NOTE 1 Many older people and people with sight conditions require longer to adjust to changes in light levels (refer to **11.11**).*

If microwave (movement) sensors are ceiling mounted immediately above the point of entry in circulation spaces, instantaneous light should be provided without any delay to avoid users circulating in a dark environment. A further recommendation for such areas should be to keep the lighting at a low dimmed level (< 10% of intensity) during times that the sensors are not triggered and apply a three to five seconds transition from the time of movement/ thermal detection for any light intensity changes.

Transitions in light intensity in areas of frequent or longer duration of occupancy should benefit from extending the fade in/out timings to 10 seconds.

NOTE 2 Lighting triggered by movement rather than thermal presence can have safety implications for some people. People might not have the physical degree of movement required to trigger the lighting back on, or understand why the lighting has gone out and that they need to move sufficiently for it to sense movement. This is particularly dangerous in some situations, such as when transferring from a wheelchair.

In accessible WCs and other sanitary accommodation such as shower and changing facilities, the lighting should remain on for an extended period and a thermal (infrared) body heat sensor should be installed. In a cluster of WCs, sensors should be provided within individual cubicles and in the circulation space outside.

11.10 Adaptational (circadian) lighting

Lighting that reflects the daylight levels outside, such as circadian or human centric lighting, should be therapeutic by improving natural sleep and alert periods and maintaining emotional stability. Circadian lighting should be beneficial to people who experience seasonal affective disorder (SAD) particularly where access to natural daylight sources is not available.

Indoor screens with live images of the outdoors should be provided where windows and views are not accessible.

11.11 Transitional lighting – illumination ratios

Illumination ratios for transitional lighting should be included in the lighting design. Variation in illumination levels of a ratio greater than 1:3 between the task and the surrounding circulating areas should be avoided and cause visual fatigue in some people, particularly if this is experienced repeatedly. People with sight conditions or heightened sensitivity are particularly affected so lowering the illumination ratio should be taken into account (see **11.6**).

NOTE Lights with sensors can cause issues if there is a delay in the sensor being triggered. This can result in safety risks when entering an initially dark area, followed by the sudden illumination which can cause discomfort or stress.

The positioning and use of microwave and infrared sensors should be taken into account.

11.12 Role of lighting in wayfinding

Lighting, in conjunction with visual contrast and signage, should be designed to assist wayfinding. In addition to sufficient light to navigate spaces, gentle feature lighting should be used to illuminate routes and features to navigate spaces. Any uplighters with a light source at floor or low level should be recessed, and/or diffused or directed to reduce the likelihood of people being exposed to the light source and experiencing disability glare.

NOTE Refer to BS 40101 for further guidance on lighting and wellbeing.

12 Surface finishes

12.1 General

*COMMENTARY ON **12.1***

*Finishes can contribute to wellbeing or anxiety and overload. Absorptive properties of finishes contribute to improved acoustics within a space. See Clause **10** for guidance on acoustics.*

To minimize unwanted reflected light and glare from reflective finishes, the following should be taken into account:

a) floor and wall surfaces are matt or low-sheen (this is easier to navigate and removes anxiety that arises if a floor surface appears to be slippery or wet); and

b) mirrors are only used sparingly and are not full height.

Some patterns also cause sensory overload (see **12.3**), which should be taken into account when finishes are selected.

12.2 Use of colour

Using specific colours to define a space or feature, such as in wayfinding and signage, is sometimes problematic for some users (as not everyone experiences colour in the same way) and should be taken into account during the colour selection process.

NOTE 1 Colours often appear more vibrant to people with heightened sensitivity. A large percentage of the older population have colour vision deficiencies and around 10% of men have colour vision deficiency.

Muted colours are typically more calming and cause less sensory overload than vivid tones, which should be taken into account. A mixture of environments with neutral and visually stimulating backgrounds should be possible in most buildings to offer variety and choice to accommodate different sensory requirements.

NOTE 2 Colours which are directly opposite one another on the colour wheel are experienced by autistic people as higher contrast and might feel particularly intrusive.

NOTE 3 The colour red on a white background is known to cause difficulties for some people. Additionally, red can also appear very intense to autistic people.

Vivid tones and good visual contrast are important features on for example, signage or doors, but should be used sparingly for this purpose.

Colours that are often found in nature, such as greens and light, warm, neutral colours, are particularly soothing and should be used on surfaces which might be in view for longer periods of time.

NOTE 4 For example, colours that can be described as subdued or muted featured on an office wall directly opposite a desk where the colour is constantly in view.

The amount of contrast within a pattern, particularly on a large area such as walls or floors, should be taken into account, as it can influence the level of discomfort and visual overload some people experience (refer to **12.3**).

In quiet/restorative spaces in particular (refer to **14.1**), neutral décor should be used, whilst allowing more vibrant colour in accessories to be added temporarily by individuals using the space if needed.

NOTE 5 Refer to BS 8300-1 and BS 8300-2 for guidance on achieving sufficient visual contrast with adjacent surfaces for people who are blind or partially sighted.

NOTE 6 Where statutory warning or information signs include a specific colour coding, such as green fire exit signs or yellow and black warning triangles, care can be taken to ensure other signage does not look similar in appearance or colour.

NOTE 7 Excessive time in dark places, such as black rooms, can contribute to feelings of depression or depressive emotions in people with symptoms associated with SAD. [9)]

12.3 Visual contrast

Sufficient visual contrast on wayfinding and navigation aids should be provided. Visual contrast should also be taken into account to make the environment easier to navigate around, for example, a visually contrasting door is easier to identify for everyone.

NOTE 1 The provision of sufficient visual contrast between key adjacent surfaces is helpful to 93% of people with low vision. It has been a requirement within building regulations and BS 8300 for many years, and beneficial to have adequate contrast between key surfaces such as doors, walls and floors.

*NOTE 2 Providing a contrast between one floor surface and another adjacent floor surface can affect some people (refer to **12.4**).*

The use of colour and visual contrast should be taken into account to identify obstacles and highlight potential hazards, such as level changes.

The choice of colours should not be very vivid; it is possible to achieve sufficient contrast with muted or natural colours. Visual contrast should be used on adjacent key surfaces such as walls, doors and obstacles as it is critical to wayfinding and navigation systems (refer to Clause **6**).

NOTE 3 Consistent use of colour can be used to reduce sensory overload and assist in navigating the environment.

A visual contrast in adjacent floor finishes should not be proposed without taking into account the problems this causes for some individuals (refer to **12.4**).

12.4 Floor finishes

12.4.1 General

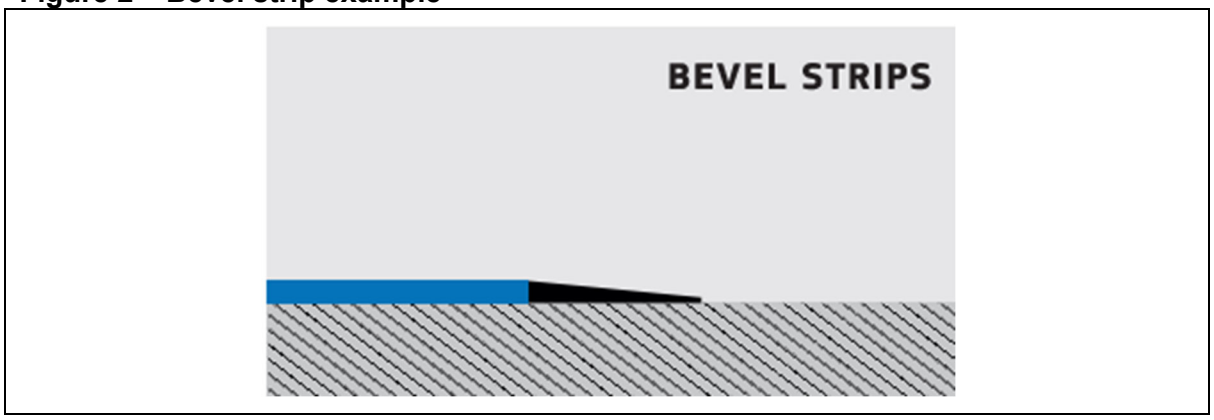
*COMMENTARY ON **12.4.1***

*Flooring is one of the largest surface areas encountered in any environment. The floor finishes used can have a significant impact on the visual and audible qualities of the space as well as safety in day to day and emergency use. Refer to BS 8300-2, **11.3** for guidance on visual contrast and defining level changes.*

12.4.2 Threshold and transition trims

Where two different thicknesses of flooring materials are laid adjacent to one another, a bevel trim or strip should be used in accordance with Figure 2 to address any difference in thickness.

Figure 2 – Bevel strip example



[9)] See https://www.psychologytoday.com/us/conditions/seasonal-affective-disorder

Where possible, the use of a shiny or visually contrasting trim should be avoided, as it causes confusion or hesitation for some people. In accordance with Figure 3, using a trim that closely matches the appearance of one or both finishes should be taken into account.

Figure 3 – Matching trims example

NOTE 1 Where two flooring finishes of the same surface depth are laid adjacent to one another, it is preferable for these to be either abutted (nett fit) or secured by welding or adhesive tape to create an invisible join.

NOTE 2 A nett fit seam is where a seam is cut so that the two widths of material closely abut, this is an alternative to welding for linoleum and other products.

12.4.3 Visual contrast on adjacent surfaces

*COMMENTARY ON **12.4.3***

The appearance of different floor finishes can impact on how people navigate an environment. Hypersensitivity to visual noise, or a vestibular condition, can result in some people being disorientated or having difficulty in navigating some floor finishes. Blocks or edges of highly contrasting floor surfaces or patterns can be interpreted as barriers, resulting in confusion and a lack of confidence. This can result in hesitation, overstepping or veering, particularly for people with visual impairments or neurodegenerative conditions.

Providing a different floor finish to differentiate between areas (such as circulation route and a waiting or rest area), and colour coding to different floors or zones should be helpful in navigating a building for some people, but this should not be to the detriment of people who may perceive a colour change on the floor as a barrier or step.

NOTE 1 Adjacent floor surfaces that contrast in appearance may result in a border line or edge that some people with dementia may not understand and that people with Parkinson's, who experience difficulty in initiating movement, find difficult to cross.

NOTE 2 Most footwear is dark so lighter flooring has been shown to be preferable for warning people with low vision and other sight conditions (which can be related to dementia) about approaching people or crowds.

Blending of ground and floor finishes by using similar tones of finishes should be taken into account:

- A carefully selected entrance flooring system with intermediate LRV value should provide an easier transition between outside and inside by providing a smaller step change in LRV contrast.
- Contrasting adjacent floor finishes should be avoided. The use of consistent or similar tones of floor finishes (internally) between areas assists interpretation of the space.
- Floor finishes within lift cars should particularly avoid black or dark finishes.
- If a contrast is required, this should be provided in doorways.

Different floorings of the same thickness should be abutted without the use of a transition strip, avoiding a potential trip hazard. However, if transition strips are used, they should match the tones of both flooring surfaces, to avoid creating the impression of a step or level change that does not exist.

NOTE 3 Where it is beneficial, or desirable, to have two visually distinct surfaces, for example to provide a clear difference between different types of space (such as circulation aisles from waiting areas),introducing one or more incremental bands to create a graduated change between the two primary surfaces can minimise the risk of misinterpretation by some people. For example, if two adjacent floor surfaces have an LRV difference > 10 points, one or more intermediate bands can be introduced between the two finishes to make the transition from one floor colour to another in incremental steps, reducing the impact of a strong line which can be seen as a barrier.

NOTE 4 A 50mm band is likely to be the minimum dimension that is practicable to install.

To avoid any confusion, band depths should not be similar to step depths.

Steps and escalators should have a strong visual contrast (70 points LRV difference) to the edge of the tread and riser for safety. The edge detail should meet the recommendations in accordance with BS 8300-1 and BS 8300-2.

12.4.4 Use of patterns

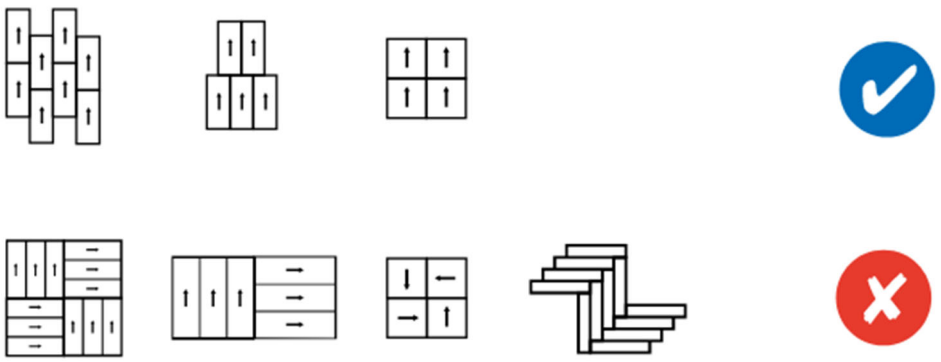
*COMMENTARY ON **12.4.4***

*Very large patterns can also be interpreted as barriers or level changes by people with neurological, sensory processing or sight conditions, resulting in hesitation (often called “freeze”) and confusion (refer to **8.1**). Patterns that have a lower contrast between the pattern and background can reduce negative impact on people who experience hyposensitivity.*

Repetitive patterns across large areas, such as long corridors or big spaces, should be avoided to minimize negatively affecting people with balance conditions as they move across the floor.

Patterned floor tiles that have been laid in a format that rotates and disrupts the pattern (tessellated) to create a mosaic effect, should be taken into account for the floor design due to the potential visual and balance disturbance. Designers should use tile configurations in accordance with Figure 4 for acceptable and non-acceptable designs.

Figure 4 – Floor tile configurations



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NOTE Some flooring manufacturers have adopted a dementia friendly rating scheme which includes a range of floor finishes.

12.4.5 Slip resistance

A suitable level of slip resistance for the specific circumstances should be achieved, for example where floors may become wet, such as entrance lobbies, reception areas and shower rooms, a higher slip resistance is recommended.

NOTE Refer to BS 8300-2, Annex C for guidance on slip resistance values.

12.4.6 Reflective finishes

Floor and wall surfaces should be matt or low-sheen, as this is easier to navigate and removes anxiety that arises if a floor surface appears to be slippery or wet.

NOTE A shiny floor can cause confusion and potentially contribute to the level of 'visual noise' and possible sensory overload.

12.4.7 Acoustic absorption

An absorptive finish such as carpet or carpet tiles should be used to reduce (to some degree) the sound pressure level within a space and reduce sound transmission.

Where a vinyl floor finish is preferred, the acoustic performance should be taken into account. There are many types of vinyl flooring readily available with a backing to improve absorption and this should be helpful where impact sound from floors above are likely to cause unwanted noise.

*NOTE Refer to **10.2** for further guidance on direct transmission and absorption.*

12.4.8 Emissions from floor finishes

Some flooring types or their installation result in odours being emitted into the atmosphere during installation and for varying periods of time afterwards and this should be taken into account when specifying types of flooring materials and methods of installation.

*NOTE This can be particularly disturbing for some people with a heightened sense of smell. For example, VOC off-gassing can be acute during the application and drying of hardwood floor finishes, formaldehyde is present in many carpets and even sustainable materials, such as bamboo, may be chemically-treated with materials that produce VOCs. Refer to **9.1** for more guidance on VOC's and Annex A for cleaning and maintenance guidance.*

12.5 Visual discomfort and use of patterns

*COMMENTARY ON **12.5***

The visual environment can have an impact on comfort and the ability to function within a space. Under certain lighting conditions, the human visual sensory system allows pattern, shape and form to be perceived. Some patterns and arrangements of form can be difficult for the human visual cortex to process and can lead to eye-ache, fatigue and headaches. People with a higher sensory receptivity to visual noise can experience significant and acute reactions. These include acute fatigue, anxiety, migraine, loss of balance, depth perception, sensory overload, and in some cases an epileptic event. See Wilkins, 1984 [25].

This is a relatively new field and techniques for use in the construction industry should be explored further. Until this is developed, creation of concept visuals and virtual modelling with accurately scaled patterns relative to viewpoints should be used to flag potential issues.

The following pattern and image groups should be taken into account for the floor design:

- geometric and repetitive patterns with high contrast; and

NOTE 1 Examples of repeating geometric forms are stripes, bars, and perforated materials that can appear to shimmer or move when viewed. The effect is relative to the size of the pattern in the field of view, the spatial frequency (number of times the pattern repeats relative to the viewing angle), duty cycle (ratio of shape to space, and contrast. Refer to Wilkins, 1995 [26].

- complex images containing visual noise hidden within the image.

NOTE 2 This a relatively new field based on research by Professor Arnold Wilkins [27]. Complex noise is not detectable by visual inspection but can be identified by computational image analysis. Recent research by architect Slocombe demonstrated a technique to identify visual discomfort using virtual modelling [28].

Designers should take into account how patterns and forms can create difficulties and discomfort for people with visual processing differences.

NOTE 3 Common sources of visual discomfort are found in patterned finishes, tiling, louvres, perforated sheet materials, railings, stair treads, entrance mats and repetitive elements used in modular construction.

Spaces with large floor, wall or ceiling areas should be reviewed for visual discomfort and accessibility.

NOTE 4 Photosensitive epilepsy is a type of epilepsy in which most seizures are triggered by flashing or flickering light but designers need to take care to ensure that patterning along circulation routes does not create a flicker rate within sensitive ranges (typically 16 Hz to 25 Hz, but some people are sensitive to rates as low as 3 Hz and as high as 60 Hz).

The following should be particularly taken into account when reviewing visual discomfort and accessibility:

- large areas of stripes and geometric patterns with high contrast.

NOTE 5 The most uncomfortable pattern occurs when six black and six white stripes fit within the width of a thumb when held out at arms-length [27].

- equally spaced and sized repeating elements of high luminant or chromatic contrast;
- uncomfortable patterns in three dimensional forms, daylight shading and electric lighting;

NOTE 6 Some artificial "natural-effect" patterns might contain uncomfortable levels of visual noise [29].

The following should be taken into account to reduce the experience of negative effects:

- Natural materials typically contain low levels of visual noise and can be easier for the brain to process; this is thought to be due to human evolution within natural landscapes.
- Introducing lower visual content in key areas such as communication points, displays, quiet spaces and where concentration is necessary for safety such as machine rooms, kitchens, transition spaces and vertical circulation.
- Keeping the peripheral visual field clear of bold patterns where people are likely to sit/dwell for longer periods and adopting plain backgrounds at key communication points.

NOTE 7 Some examples are behind a reception desk, meeting room walls and in seating pods.

The viewing distance, location and engagement with stakeholders, especially end users of the environment should be taken into account. Virtual fly-throughs should be helpful in assessing the overall environment and the impact of adjacent finishes, rather than considering each finish or feature in isolation.

Reducing tonal contrast between a pattern and its background and the use of muted colours should reduce the visual noise. The following should be taken into account when choosing materials:

- checking with a range of users, including people who experience sensory overload, before making a final selection of a patterned finish;
- compiling a “mood board” that includes all finishes that can be seen in an area together;
- creating a fly-through video to simulate how the finishes might appear in reality; and
- natural materials, such as timber or stone, are likely to have lower visual noise.

*NOTE 8 Refer to **4.2.** for more information.*

12.6 Tactile consideration

Tactile properties should be taken into account when selecting finishes.

*NOTE A tactile wall, for example, can be used as a therapeutic tool in a sensory room but can also attract obsessional behaviour (refer to **6.7**).*

Care should be taken when selecting fabrics where people come into contact with them, such as on seating.

13 Fixtures, fittings and furniture

13.1 Familiarity

*COMMENTARY ON **13.1***

Familiarity is an important factor in the design of fittings, particularly fundamental features such as doors. Fitting a pull handle to both sides of a door that swings only one way is illogical; a combination of a push plate on the push side and a pull handle on the other requires no guidance on how the door operates.

Regarding familiarity, ergonomic principles for appearance and method of use should be taken into account.

NOTE 1 An item that is obvious to operate for someone who is neurotypical, might be confusing for someone with different sensory processing.

NOTE 2 People with neurodegenerative conditions, such as dementia, can relate to features that existed in their youth but more recent examples can be confusing. An example of this is lever and sensor taps, which for many older people might not have been in use within their retained earlier memories. Tap designs that replicate the appearance of the twist operated taps but have an easy lever action should be taken into account, so that older people with memory loss can operate them.

Any self-service devices (e.g., for checking in at a reception) should be user tested and alternative options should be available.

Newer technology should be accompanied by simple directions for use.

Simplicity in function and labelling should also be taken into account, in particular for safety features.

NOTE 3 For example, the push bar on a fire escape door is easy to use, and requires minimal instructions.

NOTE 4 Break glass units used to raise a fire alarm can be confusing for those who have not experienced them before. The "glass" is often a plastic and designed to push in easily but the "press here to break glass" instruction can cause anxiety for some who might think that it can shatter.

13.2 Positioning

*COMMENTARY ON **13.2***

Some people, especially people who experience sensory overload, prefer a symmetrical balance within a space, or a similar visual balance relating to the weight of items within that environment.

All quieter areas or restorative spaces should be planned to feature a symmetrical or similar visual balance.

NOTE Some people can have strong preferences for positioning themselves in locations within a space, such as a corner position, for a better view from all approaches, or a secluded area for visual privacy or less disturbance from people passing by. Some people might choose the same location time after time; this can be habitual but sometimes it is associated with a reduced ability to accommodate change, or there might be a particular feature or orientation of that position which has importance.

Engaging with users of the space before making changes should form an early stage in the selection of items.

13.3 Technology

With consideration for a variety of user needs, technology should be used to enhance an environment, including improving comfort and sensory experience.

Audio visual communication systems should be taken into account.

NOTE 1 Building devices that require voice communication, such as intercoms can be difficult to use by people with speech impediments, impairments or non-speakers, which can result from neurological conditions.

NOTE 2 Another example of an automated device is a hand dryer. These devices can cause surprise and anxiety, particularly the higher speed type, which can be very loud and cause distress.

13.4 Fixtures

Fixtures and controls should be low noise where practicable e.g., soft close cupboards and toilet lids, quiet flush systems are recommended, in particular in quiet rooms, changing places toilets and other provision where sensory sensitivity is likely to be experienced by some users.

Familiarity with types of fittings should be taken into account, e.g., traditional taps should be more familiar to people with dementia, whereas a lever of sensor tap may not be recognised. Where a traditional feature, such as a twist operated tap, will be less familiar, a mix of traditional and modern alternatives should be taken into account.

13.5 Furniture

A mix of furniture styles should be used to meet a variety of user needs. Furniture that is soft to touch and the use of natural materials, such as timber, should be included for therapeutic and calming value.

Furniture with rounded corners appear softer in appearance and reduce the risk of injury so should be positioned in areas where people may bump into them or in areas used or restoration or recovery.

NOTE Refer to BS 8300-2 for guidance on furniture styles.

14 Safety and recovery

14.1 Quiet and restorative spaces

*COMMENTARY ON **14.1***

BS 8300-2 states, "In environments where stress and sensory overload are likely to be especially intense for some people, the provision of quiet spaces can be particularly beneficial". This guidance on quiet spaces is intended for mainstream settings but there can be elements that might be beneficial for special educational needs and care settings.

14.1.1 Recovery and adjustment

*COMMENTARY ON **14.1.1***

Most mainstream environments currently provide few or no quiet spaces, or one multi-purpose space. A single space for multi-purpose use which includes a space for recovery from sensory overload is not ideal. For example, it might be booked to meet a faith requirement and is not readily available to meet the reactive needs of someone experiencing anxiety, distress or sensory overload.

Many people who experience anxiety or sensory overload can benefit from the provision of a quiet room or restorative space which is accessed when needed as a place to escape and recover.

A quiet room or restorative space should be included in all workplace and amenity buildings but is particularly important in large, busy or noisy environments, such as:

- transport hubs;
- education buildings;
- hospitals;
- retail parks; and
- sport, leisure and art venues.

Ease of access to quiet spaces in different locations should be provided.

Quiet rooms should be available to be used in solitude, providing a retreat to relax and regain control. Where possible, a combination of secluded private spaces and shared calming environments should be provided.

NOTE 1 Some environments can have a combination of enclosed and semi enclosed options available, doubling up as focus/study areas or a space to accommodate faith and contemplation requirements. For example, a single space for multi-purpose use is not ideal as it is unable to be booked for specific prayer times without impacting on others who are likely to require a quiet space quickly to react to sensory overload.

When providing access to these spaces, recovery of users should be the design focus; quiet spaces are critical when someone experiences extreme stress or sensory overload.

Providing meeting rooms as the only quiet space provision should be avoided unless one or more is specifically reserved permanently for this purpose; in many organisations meeting spaces are always in high demand and therefore not reliably available and when needed.

A quiet or restorative space should be designed with flexibility to allow the user to adjust key elements to their sensory needs, particularly the level of stimulation through lighting and visual aspects. Some people might have a need for different levels of sensory stimulation within a quiet space, so the provision of additional items which are discreetly stored within the room should be taken into account. Where more than one quiet space is provided, tailoring these for different levels of sensory sensitivity, including adjustments in key aspects such as lighting, should be provided where user needs are identified.

NOTE 2 In existing buildings, it might not be possible to achieve all the recommendations until there is an opportunity for refurbishment; however, any room designated as a quiet space can assist in the meantime.

Areas that are intended to serve as a quiet or restorative space all or part of the time should be calming, with finishes and fittings that do not overstimulate the senses. A location free of odours and low background noise should also be taken into account

*NOTE 3 The size of the space can vary between a single person cubicle to a semi enclosed larger area. BS 8300-2, **8.6.4** specifies the minimum size of a space as 2.1 m x 2.3 m (4.8 m2), whereas the guidance from WELL v2 M07 stipulates a minimum of 7 m2 [30].*

*NOTE 4 In many environments, a quiet space can provide several purposes, which might include a space for faith and contemplation, interviews and private study or focus space. Where this cannot be avoided, additional considerations for furniture, storage and positioning might be required (refer to BS 8300-2, **19.3,** for further guidance).*

NOTE 5 See Exploring the Design Preferences of Neurodivergent Populations for Quiet Spaces [31] for further information.

14.1.2 Management

As sensory overload cannot be predicted, a quiet space should not be bookable. Therefore, a single multipurpose quiet space is not ideal and there should be alternative provision when needed.

An occupancy indicator should be provided on the door to the space.

NOTE Technology might be used to facilitate this; for example, if the occupancy indicator was linked to the intranet (e.g., via a tablet), it flags to others in the building that the space is in use and allows an alternative arrangement to be sought.

14.1.3 Location

The position of quiet spaces should allow easy and immediate access from nearby collaboration, learning or activity spaces. This should minimize any sense of separation or exclusion and allow users to easily re-join others once recovered.

14.1.4 Preview

*COMMENTARY ON **14.1.4***

The ability to preview a space before visiting or entering is important. For example, an image of the inside of a quiet space placed near the leading edge of the door or glazing to allow someone to see the space before entry.

If privacy or black out is needed for the space, blinds should be provided. Organizations that have websites or intranet arrangements should also use these to show an image of the quiet space.

14.1.5 Views

Windows can provide views to nature, and natural daylight, which is beneficial, but privacy to a quiet space should not be compromised. Visual and audible privacy should be taken into account as it impacts people experiencing sensory overload or distress.

NOTE Rods for manually opening and closing curtains and blinds are accessible to most without introducing any ligature risk.

Windowless rooms should benefit from an artificial window, or a picture of nature. A curtain to hide these features should provide flexibility to achieve a plain environment when preferred.

14.1.6 Acoustics

The space should be calming, both visually and acoustically to provide an environment that is gentle on the senses.

Acoustic properties that can be adjusted by users should be taken into account. Some people are particularly sensitive to echo; the simple addition of absorptive soft finishes should be added to reduce echo within the space, such as cushions, carpets or acoustic curtains.

A choice of therapeutic recorded sounds of nature or slow instrumental music with volume control should be beneficial to some people, while a silent environment should be better suited to others (see Clause **10**).

14.1.7 Temperature

Thermal comfort should be taken into account as an important factor where people are not physically active. A temperature ranging from 19 to 23 °C should be provided for passive occupancy, with an ability to be controlled by users. For example, users should be able to open a window for fresh air or to switch on a fan to cool down, or to use a blanket if too cold.

14.1.8 Lighting

Artificial lighting should be adjustable to allow for a variety of preferences and requirements and include lighting sufficient for reading (typically 350 lux). An option to dim to lower levels, providing a combination of fixed and task lights should be included in the lighting design. When multiple lights are used sensory overload is a risk, and an intuitive way to adjust and switch off the lights should be taken into account.

Lighting should not have any flicker or hum detectable by people with heightened visual sensitivity. Halogen or incandescent lamps are less likely to flicker and LED lamps should have less flicker if the correct driver is installed.

An ambient colour temperature of 3 000K should be included in the lighting design. The ability to adjust the colour temperature of the lighting should be taken into account; coloured lights should not be provided other than as a separate feature that can be switched off by the user.

14.1.9 Décor

A single quiet space should be designed as a neutral environment which provides low sensory stimulation to accommodate the highest sensory sensitivities; whilst gentle calming finishes might achieve this, the space should not have a stark or clinical appearance.

Plain ceilings (without patterns) and wall finishes in matt, muted or natural colours should be provided, avoiding bright or vivid colours. Colours that occur in abundance in nature, such as browns, greens and blues should be taken into account.

NOTE Darker walls can be beneficial to people with very high sensitivity.

Adjacent walls can differ in shade but stark contrast from one another should be avoided.

Complex, repetitive patterns and bold linear patterns should also be avoided.

Facilities that are regularly used by people with profound or complex learning needs, such as a changing places toilet facility, should be decorated with calming colours, avoiding dominant patterns.

14.1.10 Biophilia

Plants can be beneficial to any environment, but in a restorative space, it should be planned for one elevation to be kept completely clear of any artwork, plants, or other items so that anyone who finds any objects too stimulating is able to choose to position themselves with a very plain view. Plants with a spikey appearance, such as cacti, or those with a strong visual contrast, such as bright blooms, should be avoided. Plants with distinctive odours such as lavender should also be avoided.

Artwork on walls should be minimal, and an image of nature should be provided where there is no view to nature. An uncluttered appearance should be taken into account, particularly in smaller spaces.

14.1.11 Furnishing

A quiet space should provide comfort, with furniture and fittings that can be repositioned and with minimal risk of causing injury.

NOTE 1 Poor proprioception can be associated with some neuro profiles so bumping into furniture can be more common.

A variety of movable seating should be used to meet a range of user needs, and this should include informal and lower options, such as bean bags and floor cushions.

A meeting room chair with arms that has a back support that flexes as you move to allow small repetitive movements, should be therapeutic to some people. Other seating should also allow natural movement, e.g., soft seating rather than hard rigid formal seating, as this should allow some bounce, swing or rocking motion.

*NOTE 2 Refer to BS 8300-2, **15.1.1** for further guidance on accessible seating requirements.*

Some people when distressed find it calming to be seated closer to the floor therefore cushions, pillows or bean bags should be beneficial in a quiet space. A sofa, or floor cushions and pillows should also allow the option to lie down if required. Pillows and cushions should be stored unobtrusively to reduce unnecessary clutter, unless desired by the user.

Textures that have a discernible nap or pile can be uncomfortable for some people and this should be taken into account.

Fixed cushions and seating should be plain or users consulted before final selection. Patterns that are found in nature, such as fractal patterns, should be taken into account instead of bold, linear designs; colours should be muted and strong contrast should be avoided. User consultation should be offered when choosing fabrics.

14.1.12 Fixtures

An engaged sign to indicate when the room is in use should be provided.

*NOTE 1 A digital screen can also be used for calming music, mindfulness videos, or to display a fixed image like a painting. A screen that is concealed from sight to give the appearance of plain walls at other times is beneficial; however, it can be mounted at an angle to minimize reflection (see **11.3.2**).*

Where digital communications devices are provided within the room, it should be possible for these to be silenced and covered to avoid distracting lights and sound. Provision should be made for sockets in convenient locations; safety and the avoidance of visual disturbance from charging/power lights should also be taken into account.

NOTE 2 Refer to Annex B for a checklist on quiet spaces.

14.2 Sensory stimulation

Some people require a quiet space in which to be still, while others who are hyposensitive prefer a degree of activity or stimulation; the quiet space should have the flexibility to also be used for providing some active sensory stimulation for people who require this.

In-built storage within the space, such as a storage wall which blends into the space, or freestanding cupboards that are visually unobtrusive should be provided to avoid cluttering the environment. Storage should be beneficial for pillows, blankets or items to assist with sensory stimulation to de-stress or reduce anxiety, such as books or fidget or sensory items. With appropriate acoustic design, a storage wall should be able to reduce sound ingress from adjacent spaces.

NOTE PAS 6463 does not provide specific guidance on the design of sensory rooms which have a different purpose to a quiet or restorative space.

14.3 Quiet hours and relaxed performances

For some building types, further measures should be viewed in addition to the provision of quiet and restorative spaces. This should include:

- quiet hours in supermarkets, which many stores now offer. Background sounds such as music and public address system announcements should be minimized during this period and lighting is lowered, whilst maintaining safety requirements;
- relaxed performances in theatres; and

- specific tours or relaxed visitor experiences for museums and galleries when crowds might be less, lighting is more subdued, flashing lights can be turned off and noisy exhibitions or experiences turned off.

14.4 Safer environments and safeguarding

Safety should be a high priority with the requirements of all users taken into account.

NOTE Some features in the built environment present additional risks to users, which can be higher for people with a sensory processing differences and anxiety conditions.

Building features that have the potential for falls should be assessed and action taken to protect vulnerable users. Steps should be in accordance with the guidance in BS 8300-1 and BS 8300-2.

Escalators are a challenge for some people, and an alternative to using an escalator should be provided and clearly signposted.

The following safeguarding arrangements should be taken into account for some environments:

a) depending upon the building type, the quiet space should be in an area where some monitoring or support is readily available;

b) selecting rounded or chamfered corners to furniture that projects into the circulation or open space, to avoid injury;

c) items that collapse or fold, to cause injury if used incorrectly or items that can be easily thrown should be avoided, such as folding plastic chairs;

d) replacing highly reflective or potentially breakable fittings such as glass fronted picture with a lightweight canvas picture;

NOTE 1 Also easier to remove altogether if the wall art might be distressing.

*NOTE 2 Recessed lights are more difficult to damage (see **11.5**).*

e) mirrors, if provided, should be shatter resistant;

NOTE A mirror can be helpful for some people to check their appearance before leaving the space but might be best in a recess or inside a cupboard door.

f) curtains, blinds, and other features should not have pull cords that can introduce ligature risk;

g) removal of any other sharp objects such as cutlery, glass ornaments;

h) ensuring no cleaning materials are left unsecured;

NOTE This is a COSHH [32] requirement but is not always strictly observed.

i) if a sink or basin is provided within the space, it should have rounded lever tap;

j) Whilst daylight and fresh air from windows or doors can be helpful, quiet rooms on upper levels should have window limiters and guarding should be provided to any balcony or terrace area;

k) lighting with sensors should be avoided in some areas.

NOTE Lighting that is triggered by movement is a safety consideration for some users, in particular in WCs where the light can go out and someone might not necessarily realize that movement is needed or might not have sufficient movement to trigger the lighting to turn back on.

14.5 Emergency evacuation

*COMMENTARY ON **14.5***

Some people can have a different perception of a risk and can experience anxiety due to the increased sensitivity to the noise of alarm sounders or flashing lights, or presence of many people moving at once, often onto a

*crowded stairway or exit route. This anxiety can result in a lack of action through panic creating a reluctance to move, or completely disregarding the emergency due to a much lower perception of risk. Many people also experience difficulties with wayfinding (see Clause **6**) due to difference in sensory processing and poor working memory. In an evacuation situation, such difficulties might be magnified by the stress of the situation which can cause additional anxiety; the route to evacuate is often different to the route of entry.*

A formal process for anticipating and developing a PEEP for anyone who requires assistance or guidance to evacuate (including users with sensory differences) should be developed, assessed and reviewed at regular intervals. The PEEP should identify the best route and mode for the individual, and timings.

NOTE 1 For example, leaving before the main flow or using a quieter stair.

Escape routes should be designed to take into account the needs of people with cognitive disabilities, including the provision of appropriate orientation information. Staff should be trained to understand how to assist people with cognitive and sensory processing differences.

People who experience sensory overload and anxiety should be considered as part of any fire strategy, policy, and procedures.

NOTE 2 Loud noises and flashing lights can be overwhelming and undermine the need for a calm exit from the building.

Voice address systems to manage an evacuation should be designed taking into account potential audio-visual overload.

NOTE 3 Tight turns and poor lighting can also exacerbate the situation. Consideration of the proximation needs of many people who are sensitive to touch or who have a requirement for a larger area of personal space should be taken into account on both escape routes. When calculating the size of temporary waiting areas for assistance (fire refuges), a variety of needs should be anticipated including requirements for physical assistance such as carry down, guiding, or facilitated evacuation through additional information and support.

The following should also be taken into account:

a) in buildings with phased evacuation, people with sensitivity to noise, crowds and flashing lights should have the option to exit the building during the first phase when the exit routes are less congested and possibly quieter;

b) clear instructions and notices should be provided using plain English and in an accessible format. The use of easily understood pictograms and bullet points with simple step-by-step instructions should be easier and quicker to read. The text should contrast strongly from the background which should be plain. Text should be mixed case using a sans serif font.

   NOTE Alternative/accessible formats might include audio, audio description, braille, electronic, embossed information, easy read, plain English, large print, accessible pdfs.

c) additional or contingency time should be planned for to allow for misunderstanding of instructions or sensory overload; and

d) inductions and evacuation drills for regular building users should reduce anxiety, such procedures provide a form of “preview” (see **6.2**) and allow anticipation and preparation for a real emergency.

NOTE 4 For some people, a vibrating pager alert or SMS text ahead of the alert sounding can allow some preparation for the ensuing loud alarm and mass exit.

NOTE 5 Accessible and alternative formats guidance can be reviewed at www.sensorytrust.org.uk/resources/guidance.

15 Environment types

15.1 Transport

*COMMENTARY ON **15.1***

Transport environments can be particularly challenging for people who experience sensory overload or experience difficulties with wayfinding and poor working memory. Many large transport hubs are often crowded, noisy and people can be required to sacrifice their preferred personal space when using them. Older environments can have a lot of echo, which can contribute to anxiety and sensory overload.

Rail concourses can contain numerous passenger information screens, frequent announcements, advertising screens and shops including outlets selling hot foods with associated smells. As surfaces are required to be durable for frequent cleaning and to accommodate heavy footfall, inevitably they are hard finishes which can reflect sound and light.

Transport spaces should be well lit.

Quieter areas and easy access should be taken into account when planning transport environments.

15.2 Education and learning facilities

*COMMENTARY ON **15.2***

Places where education and learning happen in a formal setting can present barriers for some people due to the number of people and the concentration required for study. The opportunity to tailor the environment or to escape to a quieter or restorative space can be difficult due to the formal structure of lessons.

Refer to guidance Designing for disabled children and children with special educational needs [21] for further information on specialist educational facilities. This guidance is superseded by BB104, but the general guidance is still relevant.

Display of learner materials should be designated to specific display areas, with other walls kept clear. Structured storage that is not too deep with sliding doors can allow displays and clutter to be hidden, or a blind should be considered so that it can be lowered over the displays when the space is being used for quiet time.

NOTE Assistive aids can be used to make some environments more tolerable to people with sensitivity to sounds, e.g., hearing aids are sometimes worn by people without hearing loss at particular times, specifically for this purpose.

15.3 Sport and leisure buildings

Tensile coverings of external spaces which are used to allow sports and activities to take place outside during inclement weather should also be used when protection from strong sunlight and glare is required (refer to **11.3**).

Surface temperatures in environments where people have exposed skin, such as lidos and swimming facilities, should be taken into account during design so they are safe to touch and do not burn bare skin (refer to **5.3.2**).

NOTE 1 Low ambient noise levels within sports and community halls are beneficial to most people, and critically important for people with hearing differences.

Reverberant large spaces, such as sports halls and swimming pools, should be acoustically assessed to reduce potential for high noise levels. Designers should refer to Clause **10** and Annex A for additional guidance.

NOTE 2 Sports halls on school sites are required under the Building Regulations to at least comply with Building Bulletin 93 [22] with respect to sound insulation, reverberation times and internal ambient noise levels.

NOTE 3 For further guidance, refer to Sport England - Sports halls design and layouts [33].

Lighting in sports facilities should be designed with specialist input from a lighting designer due to the complexity and sometimes conflicting lighting needs to accommodate a variety of sports and activities, with many sports governing bodies having very specific performance requirements [34].

15.4 Healthcare facilities

*COMMENTARY ON **15.4***

Healthcare environments such as GP surgeries, hospitals and treatment facilities, can be places where anxiety is experienced.

Particular care should be taken to ensure that opportunities for quiet spaces are provided (refer to **14.1**), and that reception and waiting areas are not overwhelming with visual or audible noise (refer to Clauses **11**, **12** and **20**).

Wards and dayrooms should provide flexibility for patients to adjust lighting and the opportunity to have visual privacy over longer periods, (such as typically provided with curtains that can be pulled around the bed area for very short periods).

15.5 Arts and culture

*COMMENTARY ON **15.5***

Access to the arts are an important component of everyday life but can be very challenging for people with sensory differences.

Visiting a museum, art gallery, attending a music concert, or taking a trip to the theatre or cinema should become easier by following some of the design recommendations in PAS 6463 coupled with management arrangements referenced in Annex A.

NOTE For example, some people will find it difficult to response to a performance or display, or they might struggle to follow information presented in a particular format. Having alternative modes to present information can be helpful.

Annex A (normative)
Management and maintenance

A.1 General

Management considerations included within the main body of PAS 6463 should be put in place to support specific design recommendations, so that they can be considered holistically. The additional points contained within Annex A should also be taken into account by managers working within policy, HR or facilities management.

Management actions should include:

a) ensuring staff have appropriate awareness training;

b) reviewing policies, procedures and communications to ensure they are sensory friendly and inclusive;

c) reviewing maintenance procedures; and

d) ensuring evacuation procedures take into account sensory processing differences.

Further exploration and detail for measures that should be taken into account fall outside the scope of this standard.

The degree to which management arrangements are prepared and applied should vary in different building types and circumstances. For example, more support arrangements and greater attention to detail should be provided for:

- public buildings where people are likely to be unfamiliar with their surroundings;
- large complex spaces;
- wayfinding in places where no connectivity is available to views of the outside e.g., some below ground rail environments or raised high walks;
- places where activities or surrounding noise or lights are unpredictable;
- places that become very busy; and
- emergency situations, such as an evacuation.

NOTE Refer to BS 8300-2, Annex A, for a checklist that covers a wide range of considerations for people with physical disabilities or health conditions.

For further information for making adjustments in the workplace including recruitment, interview process and how to champion neuro-inclusive workplaces, refer to Neurodiversity at work [35].

A.2 Consultation and engagement

Consultation and engagement with people with a broad spectrum of sensory processing differences should be undertaken before implementing significant changes to an environment, policy or practice.

Feedback and engagement should be permitted in different ways to allow everyone to comfortably give their views and have a voice. Face to face consultation should not be the only way to provide input.

NOTE Engaging with disabled people – an event planning Guide [5] provides useful checklists for arranging consultation exercises and events including setting up representative stakeholder user groups.

A.3 Procurement

Establishing a structure to ensure inclusive design considerations are embedded when procuring goods and services should be established.

NOTE 1 Refer to BS 7000-6 for a structure for setting up, monitoring and evaluating new goods and services.

When acquiring new equipment, noise levels and operational sounds should be taken into account. Low noise or silent devices should be purchased where possible, or an alternative provided (such as recycled power towels as an alternative to us a noisy hand drier).

An acoustic specialist should be consulted before introducing white noise, background music or other masking techniques.

NOTE 2 Many environments can have regular low level sounds, such as the hum of a light fitting or a fridge, a ticking clock, whirring fan, fast boil kettle. Product specifications often provide information on the noise levels produced so that a quieter model can be purchased.

A.4 Facilities management

A.4.1 All environments

Moveable furniture, such as temporary reception counters for events, should take into account the number of people expected. The furniture should be positioned to allow for as generous a clearance as possible – this will help people who find close proximity difficult, or who are likely to misjudge space and potentially walk into furniture. Rounded corners should be taken into account on items that are used temporarily to minimise the risk of injury on impact.

Quiet rooms should be properly managed and maintained to ensure appropriate use. Ground rules, what to expect, and any instructions for technology in the room (e.g., mindfulness videos) should be included in clear and concise language.

Scented items such as air fresheners that automatically release in toilet areas or diffusers, should be avoided or a low scent type used – feedback from users should be taken into account.

Staff training should influence understanding and awareness of different types of sensitivity, and that staff should not wear strong perfumes or scents that might adversely affect others.

Artificial lighting that has deteriorated, producing a flicker, should be immediately replaced (or switched off and a temporary alternative provided that gives consistency of light level until replacement can be made).

A.4.2 Office workspace management

In some cases, such as workplaces, a building becomes very familiar over time but the circumstances within which an individual is placed should be reviewed. This should be taken into account and efforts made to support people who find such variation difficult.

For example, where meeting rooms do not have a consistent design and layout, information should be available to staff at the time of booking or accepting a meeting.

NOTE 1 The visual appearance of the room is very important to know in advance for some people.

Having a colour photograph on the room booking system should be a simple method to provide key information, plus an indication of size and layout.

NOTE 2 A floor plan is helpful but not essential if a photograph can be provided. It is also helpful to provide an image of the room outside if there is no view into the room when the door is closed. This provides an opportunity to preview the space before entering.

A.4.3 Meeting and collaboration space

Helpful and relevant information for meeting and collaboration spaces should be:

- spatial – size of room and layout – seating positions available;
- type of lighting and adjustment options;
- if blinds or curtains are available and the type e.g., blackout, venetian;
- acoustics;

- presence of audio visual and other technology, including assisted listening systems such as a loop system for people with hearing loss; and
- power outlets – whether these can be provided at each table position for someone relying on a computer for assistance or if an extension lead can be requested.

In addition to the information provided above, desk space in open plan offices should indicate the position of the desk in relation to circulation space, windows and doors. Providing a seating plan should enable people to book an appropriate position for their requirements.

NOTE Hot-desking arrangements, whereby an individual could be allocated a desk in a different position every day, might cause anxiety in some people.

Rules for hot desking should be clearly explained and opportunities provided to pre-book. A back-to-the-wall position or corner location should be made available on request.

Staff members who have sensory processing differences should be given the opportunity to have a pre-agreed desk position in the same way that someone requiring a specialist set up for a physical disability would have. This should not rely on a formal diagnosis of a sensory processing difference (as many people are undiagnosed), but an assessment of need should be conducted if this has a logistical impact on desk allocation to ensure that significant requirements are fairly prioritised.

More than one suitable desk position for an individual should be identified in larger offices to allow for some flexibility for demand.

A clear desk policy at the end of the day should be promoted and the amount of clutter should be taken into account.

Opportunities to influence or tailor environments should be provided where practicable, particularly an individual's immediate desk, such as adding a plant or removing or obstructing a view to a cluttered adjacent space.

NOTE Many people with sensory processing differences are particularly sensitive and observant of every detail and are unable to filter out irrelevant detail – a cluttered environment can provide too much visual information to process and be overwhelming. Others need visual stimulation, so a mixture of environments is helpful, or the ability to tailor a personal space.

For quiet spaces and other non-bookable rooms used on a reactive basis, information should be available remotely where possible so that an alternative can be sought. Organisations should establish a protocol on the purpose of a quiet or restorative space, including how it should be used.

A.4.4 Catering and refreshments in workplaces

Canteens should provide information on food options in advance where these vary on a day to day basis. In addition to the usual dietary and allergy information, the details should include whether the item should be consumed in the canteen rather than taken away to a desk or local tea point.

Service level agreements for cleaning should take into account regular cleaning of fridges and microwaves and ovens to prevent lingering food odours.

Staff should be regularly reminded of the need to clear up any mess made on shared worktops such as in the kitchen, including removing crumbs, left-over food, cups and litter. Adequate bins should be provided to ensure bins are not overflowing later in the day.

Where eating at desks in open plan offices is permitted, staff should be made aware of the need to store and consume food with strong smells in kitchen, tea point or canteens where extract and ventilation is provided for this purpose.

A.5 Communication

Communication for the use of buildings should be made available in more than one format where possible.

The provision of advance information should be taken into account for all services in addition to a permanent and consistent wayfinding system.

NOTE 1 A virtual tour provided on a website or an image of a space is welcomed.

Mapping common areas of congestion, or where high levels of visual or auditory noise may be present should be taken into account so that people have choices and advance warning.

NOTE 2 Busy, moving environments place more demand on depth perception, proprioception skills and balance – rapidly changing intense visual information can trigger sensory overload or balance issues.

NOTE 3 Asking people to evaluate and feedback on areas where sensory overload has occurred might inform how the building is managed or designed in the future.

Where digital technology is used to provide information, there should be an alternative available for people who find screen technology difficult.

Moving images such as advertising screens can cause visual confusion so they should be positioned where they can be avoided, for example on side walls rather than straight ahead or recessed.

Information should be provided on known busy times so that people can avoid these if wished.

The opportunity to have a live update before entering the space should reduce anxiety, through a window into the space, camera view or, in some cases, automatic sensors.

Wayfinding information should always be kept clear of obstructions.

Audio announcements should be used sparingly for important messages and simultaneous visual messaging should be provided. The clarity of announcements should be consistent and clear, avoiding key words that sound similar e.g., escalator and lifts sounds clearer than escalator and elevators.

A.5.1 Printed materials

Paper-based information should be more legible and easier to follow with the following measures:

- using off-white, cream or pastel coloured paper;
- wider line spacing;
- sans serif text;
- avoiding long paragraphs;
- if colour coding is used, the visual contrast should be sufficient (70 LRV points recommended from background colour);
- use of recognized symbols;
- easy-read versions are helpful for some people; and
- numbering within a document to allow someone to pause and rest and return to the same place with ease, particularly for larger documents (this could be including line numbers or having numbered paragraphs or clauses).

NOTE 1 Refer to BS 8300-2, Annex A, for additional guidance on communication issues.

Emergency evacuation procedures, together with suitable PEEPS, should be in place for all buildings and should take into account sensory processing differences that may impact leaving a building in an emergency situation.

NOTE 2 Many people will sensory processing differences can find emergency evacuations or other sudden changes in circumstances difficult, and this might cause sensory overload or shutdown. People might be unable to understand some information, or may be non-speaking.

NOTE 3 For further guidance on fire safety issues for disabled people, see also BS 9999 (non-residential) and BS 9991 (residential).

A.5.2 Warning notices

A combination of advance information and preview should be supplemented with additional information at the point of encounter, particularly where safety is a consideration.

Whilst temporary notices or screens add visual clutter, there are a number of instances where these should be taken into account for the safety and comfort of users:

- where a route has been changed significantly, such as introducing a one way system for special events or circumstances. A consistent and clear way of communication last minute changes in situ should be established.
- advance notice of an escalator or moving walkway should be provided, so that people can make timely decisions on alternative options. The notice should include directional information on the alternatives available and where to find them.

  NOTE Escalators and moving walkways are difficult for some people to step on and off and negotiate safely. They are often difficult for people with vestibular conditions to use, and provide a visually complex, moving pattern on the tread and riser surfaces which might be overwhelming.

- where a circulation space is unusually long (typically > 100m) inside a building, a notice explaining the distance should be provided. Very long corridors or aisles, such as experienced in some transport terminals or hypermarkets, should include opportunities to pause or change direction and it is helpful to state if these are provided.

  NOTE 1 Complex or repetitive patterns or clutter at high level in a corridor or aisle (such as a shopping aisle) places more demand on depth perception, making the vestibular system work harder to integrate visual information. Breaks in corridors or aisles can be helpful.

  NOTE 2 In most cases, notices and instructions should be suitably distanced from signs, to avoid visual overload and aid clarity.

- where a route is particularly uneven, a notice explaining this should enable people with conditions such as dyspraxia to make appropriate decisions on whether to seek an alternative. Examples include uneven terrain, muddy areas, cobbles or stones.
- to supplement a robust PEEPs system.
- to provide live digital information at busy times so that people can choose to avoid areas of significant congestion.

  NOTE Crowded, congested places can be particularly intimidating and stressful. Data analytics and modelling can inform design and management of a space to potentially reduce the impact.

A.6 Assistive aids and technology

To help people with sensory processing differences, there are many interventions that are not part of the fixed environment that should be taken into account. This should be either on a day to day basis or when placed in a situation or environment that is particularly challenging, including:

- devices to block out unwanted sound, such as ear plugs, noise reducing headphones, specialist hearing aid technology to cut out background noise;
- items to filter out or reduce visual stimulation, such as screen filters or overlays, sunglasses, cap or hat with peak;
- comfort items such blankets, beanbags, cushions, soft fabrics; and
- stimulation devices or gadgets which can aid concentration, which could include seating that has some movement, rock or tilt, or handheld fidget items.

2403 *NOTE Some people find the pressure of touch calming and benefit from weighted blankets or different textures*
2404 *to touch or stroke.*

2405

Annex B (informative)
Checklist for achieving flexibility in quiet and restorative spaces

Annex B provides key considerations for providing variety, flexibility and control for hyposensitivity and hypersensitivity needs.

When designing quiet and restorative spaces, refer to Table B.1 for a checklist of design considerations and Table B.2 for a sensory sensitivity summary.

Table B.1 – Checklist of considerations for quiet and restorative spaces

Design feature	Implementing variety, flexibility & control in quiet/restorative spaces
Sound	Provide optional sounds on an individual basis Provide earplugs or noise cancelling devices Provide individual capsules where people can select their desired soundscape
Lighting	Provide shades to control daylight and outside views Provide a variety of artificial lights for personal control (without the disturbance of others) Provide artificial lighting controls including dimmers and colour tuning
Space layout	Provide individual capsules for increased optional privacy
Colour	Create visual separation if introducing colours or textures that may be too bright, too distracting or too rough for the most sensitive
Furniture	Provide a variety of furniture options including furniture with movement for self-regulation Provide furniture which is easy to move Provide access to items such as books and office supplies
Decoration	If providing decoration other than plants, make sure it is not visible from some areas of the quiet space
Thermal comfort	Provide cool and warm objects to touch (ensure they do not influence the room temperature) Provide means of warming such as blankets
Olfactory	Provide objects with natural fragrance (ensure they do not spread the scent)

Table B.2 – Summary for sensory sensitivity

Design feature	Baseline design (Neutral) for hypersensitivity		Optional additions for hyposensitivity *(by individual choice*)*	
	Attributes	Comments	Attributes	Comments
Sound	No sound	But not completely free from echo	Nature sound	Avoid if simulated, monotonic or repetitive Preference for water sounds
	Good acoustics	Low reverberation No audible echoes; use soft absorptive materials	Music	Provide a variety of options If in main space: soft, instrumental & slow

Lighting	Artificial lights	Avoid fluorescent lights Provide low level indirect lights with warm CCT	Artificial lights	Provide options for brighter lights and/or cooler CCT
	Daylight and windows	Provide access to daylight & outside views	Coloured lights	Preference for cool colours
Space layout	Simple, private, informal and cosy	Use attributes as guides in space layout design	Spacious and communal	Provide more spacious and/or communal options
Colour	Natural	Use natural materials and colours abundant in nature (e.g., browns, greens, blues)	Light colours (including white)	Might be too bright for neutral space
	Few colours / Muted colours	May use for coloured walls Ensure space is not too bright, avoid glare Maintain low contrast & smooth colour transitions	Textures	Might be too rough for neutral space
	Dark colours (optional)	For a separate section of the quiet space May assist in providing visual relief	Warm colours	Might be too distracting for neutral space
Furniture	Comfort & texture	Most important furniture qualities to consider	Variety	Provide a variety of furniture options
	Chairs, pillows, bean bags, tables & blankets	Ensure comfortable & accessible seating options	Books and office supplies	Provide access to these optional items
	Fabric or wood	Preference for these furniture materials	Movement in furniture	Provide furniture with movement (e.g., bouncing, rocking, swinging) Ensure no visual disturbance
Decoration	Plants	Avoid extreme elements (e.g., spikes, sharp edges, strong contrast patterns)	Images	Provide images of nature Consider images of abstract art
Thermal comfort	Cool environment	For regulating body temperature	Cool materials or objects, warming objects	E.g., cool stone to touch, cold or warm water to drink, blankets
Olfactory	Avoid scents	Avoid introducing scents into the space	Objects with natural fragrance	Objects with natural fragrance which do not emit fragrance to the space
	*Optional additions by choice should either be available in a space that is visually and if possible, acoustically separate from the main space or upon individual request or choice. It should be ensured that their use does not disturb other users of the space.			

SOURCE: T Sadia 2020

Annex C (informative)
Symbols

Annex C provides guidance on the use of symbols for wayfinding.

Table C.1 references symbols that are internationally recognized, and can be used to supplement or instead of text. The symbols can be viewed and understood quickly by everyone and do not require knowledge of English language or a specific literacy level.

Table C.1 – Symbols for wayfinding

Symbol	Meaning	Registration number
	Female WC	BS 8501.5001
	Male WC	BS 8501.5002
	Accessible WC	—
	Accessible route	—
	Accessible parking	BS 8501.4106
	Baby care facilities (option 1)	BS 8501.5009

Table C.1 – Symbols for wayfinding

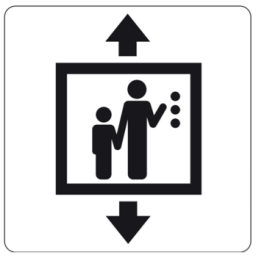
Symbol	Meaning	Registration number
	Information (option 1)	BS 8501.6001
	Information (option 2) [8501 defines as ‘tourist information’]	BS 8501.6002
	Telephone	BS 8501.6003
	Steps	BS 8501.4108
	Lift	BS 8501.4113
	Assistance dogs allowed	BS 8501.4115

Table C.1 – Symbols for wayfinding

Symbol	Meaning	Registration number
	Information or facilities for visually impaired people	BS 8501.6025
	Direction arrow	BS 8501.4119
	Assistive Listening system available	BS 8501.6023
	Induction loop present	BS 8501.6024
	Equipment to enhance microphone sound is set up for people listening through an infrared receiver	BS 8300-2
	Sign language interpreting/ translation available	—
	Closed captions available	—

Table C.1 – Symbols for wayfinding

Symbol	Meaning	Registration number
	Braille information available	—

2420

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Further reading

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BS ISO 12913-2:, *Acoustics – Soundscape – Part 2*

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