PAS 6463:2022

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

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Foreword

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It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

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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 this PAS 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. As a consequence, the way we interact with our environment can vary from person to person. It is dynamic and might change over time, for example, due to an incident such as brain injury, trauma, disease, stroke, an age-related condition or a change in mental wellness.

Neurological profiles can sometimes be collectively grouped as:

a) neurotypical (someone fitting a majority neurological profile and is not neurodivergent);

b) neurodivergent (someone who fits outside majority neurological profile and is commonly associated with autism, attention deficit hyperactivity disorder, dyslexia, dyspraxia, dyscalculia, dysgraphia and Tourette's syndrome – there is no definitive list of conditions associated with neurodivergence); and

c) neurodegenerative (whereby sensory processing differences develop over time through brain diseases, such as different forms of 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), learning disability and mental health difficulties and there is a very wide spectrum of how each individual is affected by the built environment. Neurotypical people can be affected by some elements of the built environment for reasons seemingly unconnected to neurology. For example, where sensory stimulation such as audible or visual noise causes dizziness or triggers headaches, or some other form of discomfort or anxiety is experienced. These effects are not yet fully researched and understood and there are always new medical conditions and effects emerging. For example, the severe alterations in smell perception experienced in many cases of long Covid. For this reason, "sensory and/or information processing difference" is a term frequently used throughout this PAS.

[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).

Sensory processing is how information is perceived, processed and organized when received through the senses, i.e. hearing, sight, smell, touch, taste and movement. To have a sensory and/or information processing difference, is to react through the senses in a different way to the majority. Someone might experience atypically high response to a sensory stimulus (hypersensitive) or atypically low response (hyposensitive). This can sometimes result in stimulation being actively sought out, also known as "sensory seeking". 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. However, it should be noted that all of our senses work together rather than in isolation, so it's important to consider the multisensory impact and balance of how they combine when designing and managing the built environment.

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 necessary. It is very important, where possible, to engage with stakeholders representing a range of neuro profiles to confirm all needs can be reasonably met.

Diagnosed conditions and labels are generally avoided within this PAS, as it is impossible to provide an exhaustive list. The focus of this PAS is to provide design and management guidance which can reduce negative sensory experiences. A few examples 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 physical and mental wellbeing can also be beneficial to people who experience sensory differences. In particular, connection with nature through all the senses, biophilic design principles, applying the golden ratio to replicate in design the proportions commonly found in nature, or use of fractal patterns; such measures should reduce visual noise.

Designs that offer visual legibility, clarity and simplicity, can be calming and reassuring for people who experience differences with visual, proprioceptive (from muscles and joints) and vestibular (from inner ear) integration.

NOTE Designing environments without due regard for neurodiversity are likely to contribute to poor mental health and impaired wellbeing for people with sensory processing differences.

Whilst 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 "sensory shut down", including:

a) sounds, of various types, including intermittent or continuous, from loud to very quiet and particularly when unexpected;

b) visual "noise" which may be caused by light, glare, shadows, colours, patterns, movement, proximity, technology or clutter;

c) spatial and layout considerations; and

d) unwanted or extreme sensory feedback through smell, touch, taste or temperature.

Further reading on sensory and multisensory processing is recommended for a greater insight and understanding of the guidance set out in this PAS.

0.2 Purpose of PAS 6463

This PAS is believed to be the first standard that has been developed by a national standards body that provides built environment guidance for multiple sensory processing differences and conditions. It aims to help with the design, creation or management of intuitive environments which readily accommodates the neurological variations in the way people perceive, process and organize sensory information received through hearing, sight, touch, smell, taste or movement.

The content of this PAS is aimed at buildings, external spaces and environments for public and commercial use, as well as residential accommodation for independent or supported living. The content of this PAS 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 schools or facilities designed specifically for Special Educational Needs and Disability (SEND) in England and Northern Ireland, Additional Learning Needs (Wales) and Additional Support Learning (Scotland).

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. This includes but is not limited to, use and display of information in accordance with information processing, working memory and interpretation. Stress and anxiety, often referred to as “sensory overload” results from what feels like a bombardment of sensory stimuli experienced without the ability to filter, or from spatial perception difficulties due to proprioception differences. There is variation in the amount of space that people feel they need to have between themselves and others (the proxemics), due to cultural and/or neurological differences. The increased demand on an individual of the associated increased cognitive load unsurprisingly leads to increased anxiety, fatigue and, in some cases, potential behavioural changes and/or poor mental health. Examples include trying to filter out unwanted environmental distractors or noise, maintain focus, trying to control impulsive urges to fidget or stop the mind wandering, or to contain internal restlessness.

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

Good sensory inclusive environments provide a range of environmental, economic and social advantages, for example:

a) attraction of new customers or tenants;

b) enhanced employee and customer retention;

c) reduced absence due to mental ill health;

d) improved wayfinding and learning;

e) enhanced wellbeing – reduction in fatigue, stress (including post-traumatic stress disorder triggers) and anxiety;

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

g) enable people to socialize comfortably and safely, with positive communication; and

h) create a more enjoyable environment where people can feel empowered and in control.

0.3 Application

For new buildings, it is beneficial to consider all elements of the guidance from concept stage, with organizations 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 considers a combination of interventions across the different components of design and management are 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.

The content of this PAS can be reviewed alongside established relevant guidance for the design of an accessible and inclusive built environment, such as the BS 8300 series.

Whilst this PAS covers topics that address common features in mainstream buildings and their surroundings open to the public, similar principles might be applicable to housing and home modifications/adaptations.

0.4 Management

Whilst there are many measures that can be taken during design development to improve places for people with sensory and/or information 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 has equal significance.

For many new buildings, the management team are not able to contribute and inform the design process, either because they have not yet been appointed, or because their views are overlooked. The facilities management team should be represented and have input into the building design.

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

Throughout this PAS, 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 or cognitive overload or distress from features within the built environment;
- to provide flexibility, choice and control 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 variations in motor skills, vision and hearing. However, 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 this PAS can be widely evaluated in use by designers, planners, specifiers, facilities/workplace management professionals (also known as estates management or asset consulting) 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 this 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 2010 [1] relating to disability;
- the preparation of Autism Strategies (which are a requirement for some public bodies under the Autism Act 2009 [2]);
- SEND and Ofsted requirements; and
- the adoption of practices to meet dementia-friendly initiatives (such as the Greater London Authority's Dementia Friendly Venues Charter [3]).

Attention is also drawn to Article 9 in the UN Convention on the Rights of Persons with Disabilities [4], which states that appropriate measures can be taken to confirm 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 substantial impact on day-to-day basis, it is very likely that the individual meets the definition of Disability as defined under the Equality Act 2010 [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 differences 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
- detailed 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 are referred to in the text in such a way that some or all of their content constitutes provisions of this PAS[2)]. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 5266-1, *Emergency lighting – Part 1: Code of practice for the emergency escape lighting of premises*

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*

[2)] Documents that are referred to solely in an informative manner are listed in the Bibliography.

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 hearing loss, 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

NOTE Such as screen readers, braille displays and screen magnifiers.

3.1.4 attentional bias

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

3.1.5 biophilia

love of life or living things

NOTE 1 Originates from the Greek word, "philia" meaning "love of".

NOTE 2 Biophilic design introduces nature into the built environment through the use of natural materials, plants and/or by views, images and connections to nature.

3.1.6 braille

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

3.1.7 clerestory window

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

3.1.8 cognitive

of, relating to, or involving conscious mental activities

NOTE This includes thinking, understanding, learning and remembering.

3.1.9 colour vision deficiency

inability or difficulty in identifying or distinguishing between certain colours

NOTE This is sometimes referred to as colour blindness.

3.1.10 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

3.1.11 disability

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

{SOURCE: Equality Act 2010 [1]}

3.1.12 glare

discomfort or disability of vision due to the presence of obtrusive light, 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.

3.1.13 golden ratio

mathematical ratio of a larger to a smaller quantity, commonly found in nature and a theory in design, it fosters natural-looking compositions that are aesthetically pleasing to the eye

NOTE For example, when a line is divided into two parts and the longer part (a) divided by the smaller part (b) is equal to the sum of (a) + (b) divided by (a), which both equal 1.618.

3.1.14 hypersensitivity

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

NOTE Hypersensitivity is also known as "high sensitivity", "highly sensitive person" (HSP) or sensory processing sensitivity (SPS).

3.1.15 hyposensitivity

reduced response to environmental stimuli

NOTE This can result in sensory seeking activity, for example, a need to touch things excessively, turning the volume very loud, etc.

3.1.16 light reflectance value (LRV)

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

3.1.17 multisensory

involving or using more than one of the senses

3.1.18 multisensory room

artificial environment specifically for activities or experiences of a sensory nature to take place, in a controlled way

3.1.19 muted colour

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

NOTE 1 The opposite of a muted colour is a bright, vivid, saturated colour.

NOTE 2 Also known as subdued colours.

3.1.20 neurodivergent (ND)

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

NOTE This can also be referred to as atypical sensory processing or neurominority. Neurodiverse is incorrectly used by some people.

3.1.21 neurodiversity

all types of ways humans think, move, process and act

NOTE Therefore collectively includes all groups termed as neurotypical, neurodivergent or neurodegenerative.

3.1.22 neurotypical

dominant types of neurocognitive function

3.1.23 node

well-known points between travel or routes

3.1.24 personal emergency evacuation plan (PEEP)

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

3.1.25 post traumatic stress disorder (PTSD)

mental health condition that develops following a traumatic event characterized by intrusive thoughts about the incident, recurrent distress/anxiety, flashback and avoidance of similar situations

3.1.26 proprioception

sense of self-movement and body position

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

3.1.27 proxemics

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 non-verbal communication, including haptics (touch), kinesics (body movement), vocalics (paralanguage) and chronemics (structure of time).

3.1.28 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 and/or information processing differences are likely to meet the definition of a disabled person, under the Equality Act [1].

3.1.29 sensory mapping

map showing the rich tapestry of sensory experiences a space has to offer

NOTE It can be used to show areas of high sensory stimulation such as noisy, busy or visually bright or patterned areas.

3.1.30 sensory shut down

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

3.1.31 shared space

urban design approach that minimizes the segregation between modes of road use by removing features

NOTE Such as kerbs, road surface markings, traffic signs and traffic lights.

3.1.32 shared use

areas that allow cyclists on footways in segregated and unsegregated arrangements

3.1.33 trypophobia

intense and disproportionate fear towards irregular patterns, bumps, protrusions or clustered holes and, in general, images that present high-contrast energy at low and midrange spatial frequencies

NOTE This condition is thought to be an evolutional, unconscious reflex reaction.

3.1.34 vestibular

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

3.1.35 visual contrast

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

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

3.1.36 visual stress

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

NOTE Sometimes called Meares-Irlen syndrome or scotopic sensitivity syndrome.

3.1.37 working memory

short-term memory 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.

CRI colour rendering index

LRV light reflectance value

ND neurodivergent (not neurodiverse)

PIR passive infrared sensor

PEEP personal emergency evacuation plan

SAD seasonal affective disorder

SVOC semi-volatile compounds

UGR unified glare ratio

VOC volatile organic compound

4 Developing the brief

4.1 General

Developers, funders, commissioners, client bodies and those designing, specifying or modifying the built environment 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, impairments, and embraces every background, gender, sexual orientation, race, religion or belief (i.e., protected characteristics as defined in the Equality Act 2010 [1]). It helps people to live independently and participate fully in all aspects of life.

4.2 Inclusive design strategy

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 are arranged in such a way as to maximize the accessibility of the development.

NOTE Refer to BS 8300-2, **4.1** for further guidance on design strategy.

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.

NOTE 1 Designing for neurodiversity is an emerging specialism. Designers and access/inclusive design consultants with an expertise in neurodiversity and other relevant experience (this might include built environment professionals, accredited members of the National Register of Access Consultants and licensed occupational therapists) may have suitable awareness and experience but the level of competency can be assessed on an individual basis.

NOTE 2 For additional guidance, see Sport England Accessible and Inclusive Sports Facilities.[3)]

[3)] Currently under development.

Accessibility and inclusive design specialists[4] should be appointed to support organizations throughout the lifecycle of the project. Appointed consultants should offer good awareness and understanding of the features in the environment that could either positively or negatively impact people and be able to support organizations 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 business to champion neurodiversity and sensory-friendly buildings, in addition to taking a holistic approach that draws in all members of the organization. Established frameworks, such as the RIBA plan of work, should assist by providing a framework of considerations. Activities relevant to this PAS should be followed as referenced in Table 1 for each stage, alongside guidance in the BS 8300 series.

Table 1 – RIBA Plan of Work

Stage of project	Design for the mind activities
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 and/or information processing differences and the principal areas of interest. • Confirm 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 this PAS as applicable to the environment. • Check access and inclusive design technical expertise secured with understanding of neurodiversity and sensory and/or information 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.

[4] Specialists can be found via the National Register of Access Consultants (https://www.nrac.org.uk/).

Table 1 – RIBA Plan of Work *(continued)*

Stage of project	Design for the mind activities
Concept Design (RIBA Stage 2)	• Design review of proposals against this PAS – where details are not yet available, confirm that the design team are aware of the range of areas where input is important. • Review issues of the existing site if being retained.
Developed Design (RIBA Stage 3)	• Design review of updated proposals against the PAS and other good practice depending upon sector and location. • Develop access section of the Design and Access Statement for planning and start to develop Access Strategy for Building Control approvals (where applicable) to this PAS. • 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 schedule for Building Control access strategy submission, alongside any other submissions requiring consent. • Update and finalize Access Strategy.
Construction (RIBA Stage 5)	• Conduct access reviews during the build phase to verify 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 confirm they are sensory-friendly or adjustable. • Produce access management plan if required.

Table 1 – RIBA Plan of Work *(continued)*

Stage of project	Design for the mind activities
Use (RIBA Stage 7)	• Post occupancy audit to evaluate any issues arising through the design or management of the building once in use. Verify the methodology for feedback allowing for different formats – monitor sources of feedback to check 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.
NOTE RIBA Plan of Work, modified [5].	

NOTE 1 Many issues in the built environment which adversely affect people with sensory and/or information processing differences only emerge through successful engagement. Consulting early with users identifies adjustments that 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 differences when consulting users and stakeholder groups.

Attention should be given to ensuring everyone has a voice and their specific requirements are met for successful engagement.

Consultation and engagement processes should be designed to include participants with a wide range of cognitive, social, communication and sensory requirements so that they are fully represented. This should include choices about how engagements are conducted in-person and virtually to support active and equitable participation.

NOTE 3 Refer to the Built Environment Communications Group "Neurodiversity in planning: Engagement toolkit" [6] and its seven principles which promote good practice around engaging with the public and stakeholders.

The following should particularly be taken into account during stakeholder engagement:

a) Providing preview information (see **6.2**) for preparing people with sensory and/or information processing differences for the environment and the way in which the consultation meetings are run.

b) The selected venue has the necessary lighting, acoustics, step-free access, and an assistive listening system.

NOTE 4 For example, 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 can be used for additional or simultaneous sessions.

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

d) Volunteers external to the organization to be reimbursed, within reason, for their time and expenses.

NOTE 5 Some people with neurodivergent differences might require larger car parking space to facilitate movement out of and into vehicles. For details of car parking, including design of enlarged and accessible spaces, see BS 8300-1.

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 and/or information processing differences should be:

- the density of the population;
- proximity to high traffic and other noisy areas;
- legibility and coherence, including noise, lighting and clarity of routes;
- spatial considerations; and
- proximity and connectivity.

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 qualities of the wider built environment are an important factor when navigating public spaces and streets, with noise, lighting, clarity of routes and availability 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 [7] decisions are critical to the design of places to enhance mental health, eliminating features that can cause difficulties for people who experience heightened sensory sensitivity.

People might 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 and other people with more space to accommodate busy times.

Where possible, designers should plan pathways to offer a choice of routes between significant locations; both direct, logical straight lines and also more flowing, curved lines that feel more natural and unobtrusive.

NOTE For additional guidance on designing for external spaces, refer to **7.1**, RTPI Dementia and town planning [8], and RTPI Child friendly planning in the UK [9].

5.2.2 Spatial considerations

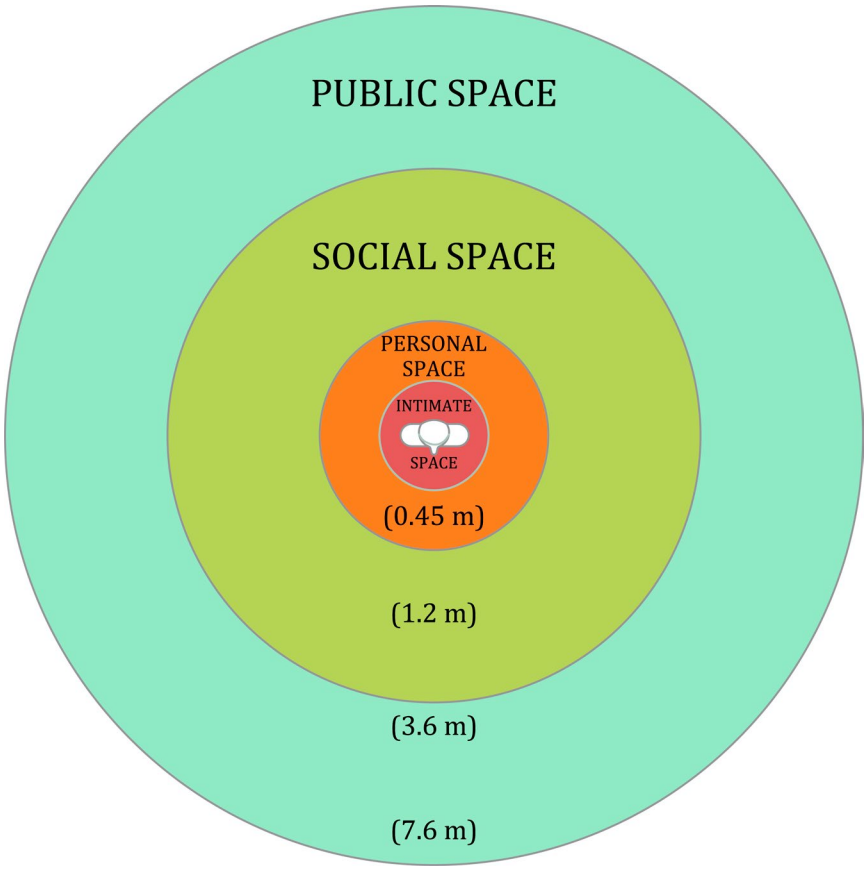
When planning busy public places, e.g. large environments like major rail hubs, airports and stadia, the larger personal boundary requirements by some individuals to avoid anxiety should be incorporated into the design. By providing readily available access and egress routes within busy spaces, this should enable people to have some control over avoiding the most crowded routes.

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

As referred to in Figure 1, proxemics can be defined as portions of space:

- intimate space, close to the body;
- personal space, within 0.45 m;
- social space, within 1.2 m; and
- public space, within 3.6 m and 7.6 m.

Figure 1 – Interpersonal distances



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

If crowds are inevitable at predictable times, these timings should be publicized so that people avoid these, alongside the provision of well signposted quiet/restorative spaces (see **14.1**).

NOTE 2 Further research can be helpful to understand the extent of difference in proximity comfort ranges for people who are not neurotypical [10].

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

5.2.3 Proximity and connectivity

The proximity of a site and its connectivity for pedestrians and uses of public transport should be taken into account, alongside the ability to have nearby parking.

NOTE 1 Many people with sensory and/or information processing differences find travelling on a busy transport network challenging or impossible; this might influence where they choose to work or to visit on a regular basis. Locations that are easy to access by a variety of transport modes, such as cycle and vehicle parking, taxi drop off, provide options for people based on their preferences.

Places to pause or break a journey should be taken into account as they allow someone to reset and recharge before continuing.

NOTE 2 Refer to **7.2** for clarity and familiarity of the space, and **15.1** for transport environments.

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 cause sensory overload.

NOTE Refer to **12.4** for guidance on visual discomfort and use of patterns.

As a principal element of the design process, a sun shading strategy should be taken into account at concept stage. The sun shading strategy should include glare and distraction design considerations such as, where appropriate, inclusion of solar fins and panels, buffer spaces and appropriate material choices.

5.3.2 Reflective materials

Large areas of reflective materials, such as some metals or glazing, should be avoided as these 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 or causing distress and sensory overload.

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

- a facade on a tall building that slopes forward (above head height only);
- the selection of diffusing materials;
- the use of low reflectance film or fritting (fused or partially fused materials used in making glass); and
- application of interventions such as external louvres.

A glare analysis should be undertaken when using large amounts of reflective materials on a facade.

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 [11].

NOTE 3 Physical features that can become hot to touch pose a burn risk to skin and body parts for all users, but particularly for people with sensory and/or information processing differences that might have reduced sensation, poor grip and grasp, and might not be able to move quickly enough.

Where there are 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 heat-related burning to skin or body parts should be mitigated by:

a) minimizing the use 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 causes metal handles and handrails to become extremely hot, designers should mitigate the risk of heat-related burning to skin or body parts 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 open air swimming pools and other areas where exposure of sensitive bare skin and bare feet in contact with surfaces is more likely.

5.3.3 Sight lines

COMMENTARY ON **5.3.3**

Building facades that incorporate angular details and corners at eye level can sometimes 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 and/or information processing differences and are generally considered to be calming, with a more natural shape and 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 or a dado/handrail can be provided for support.

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 (refer to Figure 2).

NOTE 2 Curved surfaces are reassuring and recesses in corridors provide pause places to allow easier transition between spaces.

Figure 2 – Example of curved surfaces and recesses in corridors

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To assist with reducing sound pollution from external sources, exterior green facades or living walls and roofs should be taken into account. Any green facades or living walls should be well maintained to prevent protruding onto or over pathways. Plants with low level scents should be selected to aid people who have hypersensitive sense of smell.

NOTE 3 A green wall is a vertical built structure intentionally covered by vegetation. The sound insulation values can vary, depending on the type and proximity of planting and whether joints are sealed.

NOTE 4 Avoiding abrupt route transitions is also helpful in an emergency situation where occupants are asked to leave an area quickly. Refer to **8.1** and **14.3** for further guidance.

5.4 Entrances and exits

The design impact of entrances and exits should be reviewed to reduce a sense of crowding and imposing on personal space. Where practicable, alternative entrances and exits with clear signage should be provided.

Clear sight lines and/or ease of identifying the locations of entrances and exits should be provided to reduce the potential for sensory overload and to ease orientation and movement to, from and within the building.

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, but can also create potential for incurring additional sensory load and visual clutter/noise (refer to **5.5.1**, **5.5.3**, **6.2** and **A.4.3**).

Where practicable, any entrance canopy should have sufficient space for people to avoid the direct flow of people using the entrance doors. A seat within a large entrance canopy should be used to allow someone to pause and re-set before entering or as they are leaving.

When designing entrance canopies, where possible, materials should not be used which accentuate the sound of rain.

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.

In buildings that are multi-tenanted, clear signage should be easily visible from outside detailing the organizations that occupy that building.

Directional signage should be sited to be visible from all directions of approach, where practicable and repeated at each decision and reassurance point.

NOTE 3 For more information on navigation, orientation, and wayfinding, refer to **6.6.2** and the BS 8300 series, **5.2**.

NOTE 4 Refer to **14.5** for emergency evacuation arrangements.

In areas of bright lighting, entrance mats with a light toned aluminium scraper bar and dark wiper strip should be avoided, as it sometimes creates a strobe effect. Less contrasting combinations should be used.

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**).

Double or triple glazed windows and acoustic glazing should be installed where outside noise penetrates the inside space, even with windows in the closed position.

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

5.5.1 Window treatments

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.

Depending on the angle of the sun and the buildings orientation, sun through windows above head height (including clerestory) creates shafts of light, so the need for window coverings at certain times of day should be assessed.

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

NOTE 4 Windows can be designed to avoid offering a view over an undesirable and distracting exterior.

Blinds or curtains to windows or internal areas of glazing should be used in certain circumstances to allow visual privacy and flexibility to block out strong sunlight.

NOTE 5 Some venetian blinds with opaque slats can create a striped pattern associated with pattern glare and visual discomfort, particularly in bright or sunny conditions. Blinds that allow slivers of bright daylight to enter a room in the closed position can be distracting, particularly where open windows or air drafts create movement of the slats. Roller blinds, particularly blackout quality, can be a very effective alternative where this is an issue. Venetian and roller blinds set into a reveal can have added perimeter strips to prevent light seeping in around the edges. Refer to **11.3.3** for guidance on shadows and **14.4** for pull cord safety risks.

NOTE 6 Refer to guidance Designing for disabled children and children with special educational needs [12].

5.5.2 Glare

Methods to reduce glare should be used whilst permitting daylight to enter, such as brise soleil, translucent semi-transparent blinds, frosted manifestation or voile curtains.

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 pools and other internal water features.

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. Furthermore, the use of bold, contrasting colours on wall finishes can be distracting when daylight is reflected against the water, affecting visibility. Refer to the Design guidance note swimming pools [13] on swimming pools and glare.

5.5.3 Vestibular conditions

Where full-height glazing are proposed on upper floors, the impact should be assessed. The application of non-transparent manifestation or non-reflective film to a lower proportion of the glazing should be taken into account as a helpful intervention, without affecting views out.

NOTE Full-height glazing can cause difficulties for some people with vestibular conditions, such as Meniere's, particularly at upper levels where they can feel unsteady or dizzy. See **11.3.2** and BS 8300-2 for further guidance on the application of manifestation.

6 Wayfinding

COMMENTARY ON CLAUSE **6**

Wayfinding is often a multisensory activity, often supported by mental images based on sensation and memory. Wayfinding may be affected by any of the following:

- ability to see, hear or feel through touch;
- sense of direction and proprioception;
- language or communication barriers; and
- sensory and/or information processing differences, including short term/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, sequential processes, number and word identification and might rely more on visual cues, symbols and colours when wayfinding.

A decline in the ability of wayfinding can be an early symptom of dementia, in part attributed to a loss in object and space 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.

Additionally, language is a wayfinding clue and not everyone is familiar with English. Some settings need to cater for more than English and may need a consistent graphic hierarchy of first, second and other languages. Consistency in the graphic charter for signage between the use of different languages, alphabets and scripts can be helpful for all (e.g. Hindi, Arabic, Cyrillic, Chinese).

6.1 General

Clearly defined and visually contrasting wall boundaries should be used, as well as the ability to touch features such as walls, to provide reassurance and familiarity. For features intended for touch, maintenance, cleaning and hygiene should be taken into account.

NOTE 1 The provision of a strong, identifiable shape, for example a H or T shaped building, might enable some people to visualize and acclimatize more easily.

NOTE 2 For visual contrast information, refer to BS 8300-2.

Designs should not introduce different tonal and textural ground surface or floor finishes where possible as they are a challenge for some people and contribute to the likelihood of tripping.

NOTE 3 A notable exception is the visually contrasting gradients and tactile warning paving surfaces which are important safety features for blind or partially sighted people. See **12.4** for additional guidance on floor finishes and transitioning.

NOTE 4 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, attention and executive function is used for:

- problem solving and planning;
- multi-tasking;
- making connections; and
- forming a conclusion.

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

NOTE 5 As no single format can communicate information to everyone, some duplication of information in different formats is essential and can be helpful/reassuring for people with low auditory or visual working memory.

The establishment of clearly identifiable wayfinding nodes, (well-known points between travel or routes) where people might naturally converge and make decisions, or seek reassurance, 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 wayfinding, the following should be reviewed:

- opportunity to preview (easing anxiety which makes the process harder);
- sensory load, i.e. 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 tactile fit in 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 6 See BS 8300-2, **5.2** for further information on inclusive and accessible wayfinding systems.

NOTE 7 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. (see **12.6**).

6.2 Preview and advance information

The opportunity to accurately anticipate and experience an environment virtually or through audio or visual description should be used to reduce anxiety. This information should provide support for planning and preparing for a visit. 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 environments that are clear, consistent, and up to date; and
- displaying a simple plan of the interior at the entrance to a building.

Information regarding any temporary changes for special circumstances (such as building works) which affects arrival and reception points, should also be included as far practicable.

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 should be reviewed annually or sooner if changes are made to allow someone to plan and prepare for their visit, and reduce the risk of anxiety.

NOTE 1 Verifying that key information is repeated or linked in all communications is helpful.

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

NOTE 2 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 3 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 two-way communication device for people to seek assistance.

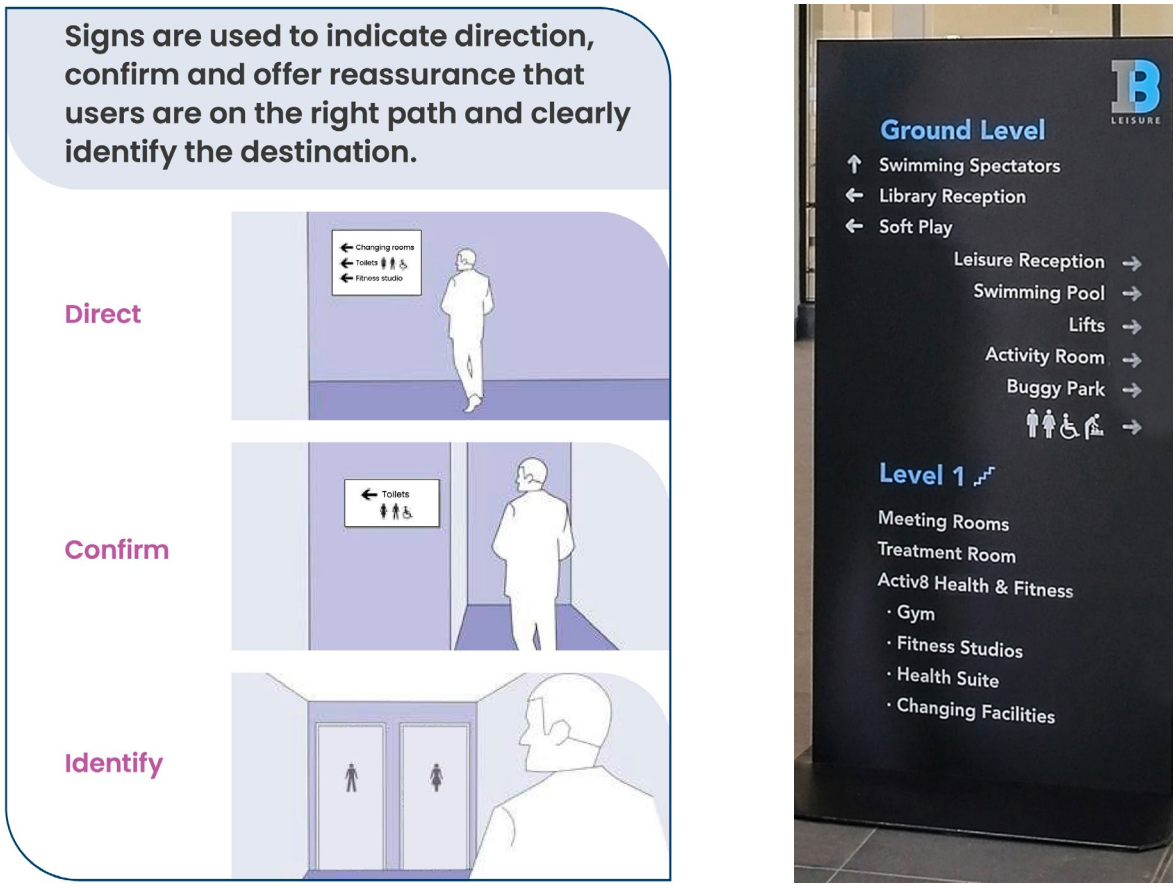
In situations where queues or waiting are expected, the opportunity should be taken to display information about the environment to be entered. The form of display should take into account the potential for sensory overload if highly repetitive or stimulating.

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.



Examples of wayfaring systems.

A wayfinding system should be designed that has a clear and inclusive wayfinding and signage hierarchy, together with multisensory supportive measures, taking into account environmental, visual and sensory cues. This should apply to all potential routes.

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 a new colour, or style of sign or other wayfinding cues at a later point in the building should be avoided to prevent potential for attentional bias.

Signs should be separated from other notices and pictures to avoid a cluster of competing information.

NOTE 1 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.

NOTE 2 Visual distractions around wayfinding features can also limit the ability to process information.

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. Such features should be included on maps and wayfinding instructions, and in advance information.

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. The addition of another sensory aspect to a visual landmark feature, such as tactile, audible (e.g. sound of water), or olfactory, should be taken into account.

NOTE 1 Incorporating landmarks can help people to orientate themselves correctly; a sculpture 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).

Entrances should be shown on plans and, where only specific entrances are fully accessible, these should be clearly indicated.

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 minimize stress and confusion.

Once within the building, directional signs back to reception and primary exits should be included to assist navigation. In complex visitor destinations, help points at key intervals should be taken into account alongside "You are Here" maps. The presence of trained staff or volunteers to guide people should also be taken into account, where possible.

6.5 Use of colour and contrast

6.5.1 Colour coding

Signs which have many different colours should not be used because they risk 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. Where included, colour coding should not be used in isolation of other wayfinding elements.

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 look at 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 who have colour vision deficiencies to distinguish signs using the shape.

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 **12.6**).

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

To avoid creating a highly colourful, overstimulating environment, vivid colours should be kept to a minimum, e.g. by using muted colours on walls and large surfaces, and using a vivid colour to create a distinctive feature or landmark.

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 3 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

NOTE 1 Visual clarity reduces the cognitive load for everyone but is particularly beneficial for people with sensory and/or information processing differences, sight or hearing loss for easier navigation of spaces.

Appropriate 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 for navigation and wayfinding.

NOTE 2 Refer to **12.3** for further information on visual contrast.

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 unfamiliar environment can be assisted by a clear signage system; however, signage alone might not be able to fully compensate for a building with complex, illogical layouts, and poor sight lines. For example, people with dyslexia and/or visual stress might struggle to read some signs unless accessible principles are followed, such as avoiding block capitals and italics, appropriate positioning and style of directional arrows, visual contrast, and size of sign content. Refer to BS 8300-2, Clause **12**, and Sign design guide [14].

6.6.1 Signage content

The content of signs should have the following features:

- be easy to interpret and concise;
- have symbols and words; and
- be in contrast from the mounted surface.

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, flythrough videos and images 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 who find wayfinding difficult, such as 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 causes confusion, inconvenience and anxiety to many building users. New symbols should always be user tested for clarity. Symbols that resemble the actual features in the building should be helpful.

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 guidance on safety signs and signals [15].

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. Similarly, a black and white clear photograph of a typical toilet shape might be easier to interpret than a symbol.

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

6.6.2 Sign locations

To assist in navigation, consistency in positioning of signage within a building or environment should be planned and incorporated into the design.

Fixed-location visual and tactile maps should be oriented to align with the direction that the user faces when they look at the map (also known as "heads up" orientation).

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 differentiate clearly and significantly, 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 – including those through glazing, and around curved or chamfered corners, should be taken into account to support 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 to 1 700 mm standing and 750 mm to 1 350 mm seated.

NOTE 3 In addition to children and people viewing from seated height (including wheelchair users), some people with vestibular or neurodivergent differences 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 Confirmatory signs are also particularly helpful where a change of level happens even if there is no decision at that point, such as a staircase in a corridor, as people may need reassurance before committing to the cognitive and physical effort of changing level.

NOTE 5 This is an area for further research but people with sensory and/or information processing differences affecting navigation generally require more frequent affirmations that the direction of movement is correct.

NOTE 6 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.

A signage strategy should always include locational signs to confirm arrival at the 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" might be helpful in addition to statutory fire exit signs.

NOTE 2 See **6.5** for guidance on use of colour. Also refer to BS 8300-2, **5.2** for guidance on inclusive and accessible wayfinding.

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

Information should be presented in formats that are interpreted by more than one sense, i.e. visual, tactile, auditory. Sensory clues, whether through touch, smell, or sound, should be used to assist people with navigation and wayfinding, in particular people who are blind or partially sighted.

NOTE Some people who experience sensory and/or information 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 and/or information processing difference, in which case they can choose not to touch the sign.

Some 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 who are hypersensitive to tactile features.

Some people with hypersensitivity experience discomfort when walking on tactile paving surfaces, therefore its use should be carefully reviewed and assessed in accordance with the BS 8300 series.

6.8 Technology for wayfinding

Talking signs and other devices such as PA systems assist blind or partially sighted people but are intrusive or overwhelming for people with heightened sensitivity or hypersensitivity to sound, so the location and volume should be taken into account. Users should also be consulted before the features are introduced.

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.

Alternative means of providing the same information should be made available, in event of people not being able to access the technology.

NOTE 2 This can be either through lack of familiarity with such technology, whether someone has a compatible device, or through lack or failure of wi-fi service, battery life, power or product failure.

When proposing the use of technology, designers should not require users to download an app or set up an individual login to a website where possible. Consultation should take place with users who regularly experience significant difficulties in wayfinding in order 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 3 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 4 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.

Socio-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

7.1 Access to greenspace and biophilia

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

Large open spaces are overwhelming at busy times and the design of the space should be enhanced by creating smaller pockets of greenspace for contemplation and focus.

Access to shelter from strong sunshine or inclement weather should be taken into account for greenspaces that are distant from buildings.

Perceived safety and the provision of good sightlines should be taken into account.

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

NOTE 2 Green spaces offer opportunities for physical activity which can be helpful to expend energy, particularly for people who experience hyperactivity.

Provision should be considered for assistance dogs and emotional support animals.

Natural features such as plants and trees are helpful wayfinding cues. However, care should be taken not to formally use these in preview information where the appearances are likely to change on a seasonal basis unless, seasonal images and description are included.

NOTE 3 Refer to Clause **6** for wayfinding guidance.

7.2 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 spaces are provided.

NOTE 1 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.

A lack of connection to nature can have a negative effect on people and can lead to increased incidence of anxiety, depression and promote hyperactivity or attention deficit behaviour.

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 and/or information processing differences to recover from overwhelming busy places, for example, a roof top garden area at high level or a small pocket of greenspace (sometimes called a “pocket park”) at ground level.

The following considerations should be taken into account when creating a garden for wellbeing and restorative purposes:

- choose a location away from extraneous noise, such as air handling plant;
- branches or stems that scratch or creak if they touch the building, to be cut back regularly;
- provide large areas of shade;
- transitioning from one type of area to another to be made gentler by having relaxing spaces to rest and reorient in between;
- open sightlines to reduce confusion;
- provide places for both active engagement with the senses and calm retreat; and
- avoid plants that are toxic to people or animals, plants with sharp foliage or thorns, and strongly scented plants.

NOTE 2 Strongly scented plants are only to be positioned where people can avoid them and where scents are unlikely to reach occupied spaces through windows.

NOTE 3 When creating a garden for wellbeing and restorative space, see also Therapeutic gardens: design for healing spaces [16].

Views to outside green spaces from inside a building are beneficial and should also be taken into account, as they assist with natural wayfinding, orientation and regulation of the body clock (circadian rhythm).

NOTE 4 Gardens situated in the centre of a building or facility can provide safe and easy access to outdoor space whilst providing good sight lines for supervision when needed.

NOTE 5 The use of natural finishes internally allows further connection with nature (see **7.4**). Also refer to Mental health and town planning: Building in resilience [7].

NOTE 6 The opportunity to interact with nature, through planting, care or harvesting of plants or food are generally helpful to wellbeing, where appropriate to do so.

7.3 Lighting external spaces

The approaches to buildings should feature a light design that has illumination to emphasize entrances and support safe wayfinding to visitors and staff.

The use of light emitted in the horizontal plane towards the direct line of sight should not be used, and where possible downward light distribution should be applied.

Any level changes in the external environment should be illuminated for safe use.

Where lit bollards are used, these should feature downward, diffused light distribution and suitable shielding of horizontal distribution to avoid discomfort to people with lower viewing heights, such as wheelchair users and children.

Where there are multiple pathways within gardens and courtyards, a clear and well illuminated route should be provided to and from entrances/exits and key destinations.

NOTE For the illumination of external shared courtyards or garden spaces, refer to CIBSE SLL Guide 6 [17] and BS EN 12464-2.

As specified in BS 5266-1, external emergency lighting should be provided in the immediate vicinity of all emergency exits from the building to the exterior environment (see **14.5**).

With sensor lighting installations for outside spaces, the lights should gradually increase and decrease when entering/leaving the area, rather than providing sudden light or darkness. Safety considerations should be prioritized so that lighting installations do not create dark patches next to lighter patches, as the human eye has difficulty in adjusting quickly to identify a safe path to proceed or react to any hazards (see Clause **11**).

7.4 Biophilic design

Biophilic features inside a building should be included at the design stage.

NOTE 1 For example, appropriate planting, views or images of nature which are calming, natural materials that are therapeutic to touch and sounds of nature all allow better concentration and cognitive processing.

Outdoor views and daylight should assist in reducing anxiety alongside indoor biophilic features, such as plants and natural materials. Opportunities to introduce living plant systems should be taken into account to assist in reducing anxiety and discomfort.

NOTE 2 Combining views to outside spaces and indoor biophilic features provides maximum benefit.

If the design doesn't provide a natural view out, images and virtual reality should provide some connection with nature. In the absence of a natural view, such images should be sympathetic to the room in which they are placed, and not introduce stark contrast, nor should they occupy such a large proportion of the space that confusion would result for some people. It should be evident that they are images rather than views out, to avoid confusion, and the images should use a defined frame or border.

NOTE 3 In certain situations large images of nature can be confusing and alter perception and behaviour from internal to external feelings, for example, the perception of temperature.

A biophilic design approach should include:

a) natural finishes (particularly locally sourced), materials and patterns into an internal space that 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 and shapes, and connection with nature through the use of forms and textures that occur naturally, such as landscapes or locally grown or made products, including textiles, and natural stone from the area.

NOTE 4 See **5.3** for recommendations on facades and **14.1** for quiet and restorative spaces.

NOTE 5 See effects of biophilic indoor environment on stress and anxiety recovery [18].

NOTE 6 Large wall murals and floor to ceiling artwork might cause confusion or distress for some people with dementia.

NOTE 7 A combination of indoor planting, timber, external views to nature, access to daylight and appropriate flooring can create a space that feels connected with the natural environment (refer to Figure 3).

Workspace with plants and natural materials.

Figure 3 – Example of a space connected with the natural environment

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7.5 Clarity and familiarity of the space

COMMENTARY ON **7.5**

Design principles for inclusive and safe public realm and outdoor spaces are critical in providing an inclusive environment for the neurodiversity of the population, who inevitably have a wide variety of sensory and/or information processing differences. People with hyposensitivities, hypersensitivities or highly sensitive to noise, crowds and lighting can be negatively impacted by poor street design. Following familiar and well-established 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, such as post boxes, road signs and benches, aligned and typically at the outer (roadside) edge of the pavement, allowing pedestrians to avoid close proximity with moving vehicles, associated traffic noise and fumes;

NOTE 1 There is a role for management of spaces where loose furniture is used which could be moved by the public.

b) alleyways, cul-de-sacs or recesses providing temporary havens from the bustle of a busy street but without promoting feelings of insecurity or potential for anti-social behaviour;

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 a 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 windows are opened);

NOTE 2 This can negatively affect someone with a heightened olfactory sensitivity (sense of smell).

e) places to lean, rest or sit to give opportunities to pause in a journey;

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

g) spaces that are easy to navigate, use and understand.

7.6 Safety

7.6.1 General

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 (particularly if unfamiliar surfaces or features are used).

NOTE 1 Attention is drawn to the use of Considerate contractor schemes to address deviations to pathways in a uniform and accessible manner.

NOTE 2 Where external seating is available, being able to sit with a back to a wall or screen can ease anxiety for some people.

7.6.2 Road crossings

Road crossings should be easily identifiable through consistent and uniform design following established principles.

NOTE 1 There are several pedestrian road crossing types, including zebra, puffin, pelican and toucan, not all of which are readily understood by members of the public. However, the black and white lines on the road surface are 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 and also people who experience a strong response to visual noise.

NOTE 2 BS 8300-1, **8.4.1** recommends avoiding bold surface patterns on pedestrian surfaces.

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

7.6.3 Pedestrian routes

Pedestrian routes adjacent to vehicular routes, or cycle routes, should be clearly legible.

NOTE 1 BS 8300-1, **5.2.2** sets out guidance on legibility of space including a recommendation for pedestrian paths to have detectable demarcation to support blind or partially sighted users. Such provisions also provide clarity for people with sensory and/or information processing differences, reducing the cognitive demand on users. Routes that lack legible features including detectable demarcation, such as routes within shared space schemes can pose particular risks to people with sensory and/or information processing differences.

NOTE 2 Features often included in a shared space scheme are minimal use of traffic signs and other traffic management-related street furniture, removal of traffic signals, continuous footways, raised table junctions and shared use routes for pedestrians and cyclists. Shared spaces can be hazardous for many people and particularly 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 and/or information 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. See the London Legacy Development Corporation's Inclusive Design Guidance, section 10 [19], on how to create pedestrian comfort zones.

NOTE 3 Shared use might be difficult to navigate for some people with sensory and/or information processing differences due to difficulties in judging distance, space and speed of approaching cyclists. See also LTN 1/20 Cycle infrastructure design [21], which discourages shared use.

NOTE 4 BS 8300-1 does not include any advice on shared space or shared use, 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 [20].

NOTE 5 DfT document "Accessible public realm 2020: Updating guidance" Annex 1 [22] includes in its recommendations the need to avoid cognitive overload.

7.7 Surface materials and sensory feedback

COMMENTARY ON **7.7**

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

Designing routes and spaces that are intuitive, avoiding street clutter, obstacles and clashes between different transport modes should create a calmer, safer and less stressful experience. Quieter spaces should be taken into account to allow people to retreat from the main flow of pedestrian traffic whilst retaining sightlines and safe spaces. Colour and patterns should be used carefully to avoid confusion and visual and balance disturbance (see Clause **12**), giving consideration for choice and safety.

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, lightly 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. Strong patterns, vivid colours and high contrasts should not be used within ground surfaces, contributing to sensory overload and confusion of boundary lines, e.g. where the pavement ends and the road begins.

NOTE 1 Soft surfaces such as grass might require support beneath so that they are able to be used by wheelchair users and people with mobility impairments.

Although areas on circulation routes externally should not have any trees or shrubs creating a height clearance less than 2.5 m where people are walking, seating plans should include seating beneath lower hanging shrubs and trees to create a cavern effect of green shrubbery in which people sit in relative calmness and with some visual privacy.

Shrubs and trees overhanging walkways should be maintained so that they do not encroach on the path.

At the exit from a green, restorative area, an area to pause, observe and adjust before transitioning back into a highly stimulating environment should be taken into account.

NOTE 2 For example, an open space between a park and a busy road where the road can be viewed before it is reached.

Ground surface materials should offer visual contrast between roadway and pedestrian surfaces, allowing for the differences when wet or dry.

NOTE 3 Further details can be seen in BS 8300-1, Annex B.2.

Loose materials, such as gravel, pebbles and bark chippings should be avoided as they present difficulties for people with dyspraxia, vestibular conditions affecting balance, and also many ambulant disabled people.

8 Internal layouts

8.1 Transition between spaces

Features that help people choose and transition to from one space to another should be planned and accounted for.

A holistic approach should be taken to allow a gentle transition, including a range of sensory transitions including light, sound, texture, smell.

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 differences should prevent or reduce the likelihood of a person tripping or becoming confused or affect people with dementia or Parkinson's from initiating movement. A low contrast should be less than 10 LRV points between two surfaces.

Transitions should always use predictable, graduated colour change.

NOTE 3 Refer to **12.6** 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 visual balance

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 and/or information processing differences. Making sure spaces are 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 that 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 should be provided 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 triggers 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. The provision of zones should be used to aid wayfinding and provide a sense of scale and belonging.

NOTE 2 This can be achieved with high back 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 clear layout structures that are 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 are 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.

Providing a familiar space with a set layout should be taken into account for most environments, where practicable. People should be given a choice of environment, such as where to sit.

NOTE 1 Environment choices can be influenced by many factors, including noise, lighting, glare, density of use, smells, décor, perceived temperature, passage of air and surrounding activity/movement.

NOTE 2 Offices that feature variable desk booking 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 and quieter areas. Information about available options provides people some control over where they choose to sit. Desk booking systems might include sensory mapping to indicate not only the desk and chair type but also the environment for each location, e.g. busy collaborative area, focused working and background noise.

NOTE 3 Schemes that allow a regular place to be secured without stigma or release of personal details can be considered. This might include signs on desks to indicate if someone has a specific requirement for the location or may be happy to move if asked.

A fixed desk position 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 and/or information processing differences to secure a regular desk position or type. Desk booking systems should allow flexibility for someone to sit regularly in the same spot or change frequently.

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 negatively affect the reference points used for balance.

NOTE 1 Some neurodivergent people 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.

NOTE 2 Vertical railings or venetian blinds are examples of features where lighting can flicker through gaps to disorientate people passing them. Refer to Clause **10** and **12.5** for additional guidance.

Creating part-enclosures should be used to 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 there are more than one potential reception area or counter, a clear primary or main reception location should be made clear and signage should include directional information back to the main starting point.

Where practicable, WCs, baby change, tea points and other key amenities should be located consistently throughout a building so that they are 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 are provided.

Spatial layouts should be used to encourage face to face communication so that people use their innate lip-reading skills and non-verbal communication.

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 and/or information 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 spaces, which vary from controlled to uncontrolled. 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**).

NOTE 1 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.

NOTE 2 Where a long corridor exists, laying timber (or timber effect) flooring diagonally might be less stressful. Further research is needed on the impact on people with a range of sensory and/or information processing differences.

Lighting design in corridors should be assessed so that there are no dark shadows in corridors, especially corners.

NOTE 3 Long corridors that are dark and narrow, without recesses or windows can create anxiety, and a perception of fear of surprise, as well as affecting people with balance conditions.

Artwork in corridors should also support wayfinding and orientation.

NOTE 4 A window at the end of a corridor might 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 Air quality

People with a heightened or superior olfactory sense should be taken into account, as smells in some environments are difficult or unpleasant.

NOTE 1 Hypersensitivity to odour is common in autistic and other neurodivergent groups.

NOTE 2 People of all ages can experience chemical sensitivity, sometimes associated with ME (Myalgic encephalomyelitis, also called chronic fatigue syndrome), where exposure to even low levels of toxins and fragrances can lead to a wide range of symptoms. These symptoms include headaches, nausea, disorientation/confusion and fatigue.

NOTE 3 An alteration in smell perception, parosmia, can cause nausea or extreme disgust, and can be a temporary, permanent or fluctuating symptom of long Covid [23].

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

The internal layout should take into account that key sources of unwanted odours are from catering and dining facilities. The layout should be assessed so that the appropriate siting of these facilities do not directly impact on more static workspaces.

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 with air 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 pile/nap;

NOTE 4 Carpets and soft furniture are common sources of VOCs. “Nap” or “pile” are the terms used to describe the type and density of the carpet fibres used to create the texture on rugs and carpets.

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 5 Attention is drawn to the Environmental Protection Agency guidance for HEPA filters.[5)]

[5)] Available at https://www.epa.gov/indoor-air-quality-iaq/what-hepa-filter-1

g) regular vacuuming of carpets;

h) eliminating the use of air fresheners with strong perfumes;

i) selecting fragrance free products wherever feasible; and

j) introducing plants that help to reduce VOCs.

NOTE 6 For example, 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.[6)]

NOTE 7 Carpet fresheners are highly unsuitable for someone with chemical sensitivity. Solid flooring might be preferable to carpet, particularly in areas where there is a great deal of footfall and the potential for spillage. The most toxic free carpets are made of 100% undyed and untreated wool but this means that they might stain easily and stain resistant treatment on carpet can also cause difficulties for some people.

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**).

NOTE 8 Some people with neurodivergent profiles 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 [24].

Public display of air quality readings should be provided where possible and are particularly reassuring at building entry points.

NOTE 9 The perception of smell and potential air pollutants can have a negative impact on cognitive processing. The reassurance of an indicator of air quality can change false perceptions.

Heat recovery systems should be included to assist in providing fresh air. Installation of louvres and/or openable windows (where possible) should be used to facilitate purging and ventilation, where external noise conditions allow.

NOTE 10 Noises from outside are often intensely distracting for people with heightened sensitivity so the ability to control this is helpful (e.g. by providing mechanical ventilation for use at busy times).

NOTE 11 Allowing fresh air into an indoor space is also an effective way of reducing the risk of cross-infection from respiratory illnesses.

The location of areas where strong smells are present should be taken into account so that people are able to avoid the area or ventilation used to disperse smells quickly. Chemical masking should not be used for unwanted odours.

NOTE 12 People with asthma or hypersensitive to chemicals can be adversely affected by chemical masking.

[6)] Currently under development.

9.2 Air conditioning/comfort cooling

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

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

9.3 Temperature control

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.

The zoning of environmental controls should be used, with restrictions on the adjustment parameters, to allow people to select their preferred environment without significant changes through adjustment by other users.

NOTE 3 Sensitivity to temperature, particularly heat, is commonly experienced across a range of impairments 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.

The provision of different working environments at different temperatures should be taken into account where practicable, to allow people to choose the most comfortable area for them.

9.4 Switches, controls, and automation

Controls and switches should be intuitive and simple to use.

NOTE As sensory and/or information processing differences 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.

Automated features such as doors, taps and lighting should not operate in a sudden or unexpected way that would confuse or startle someone unfamiliar with the building.

Providing advance information should be used to help minimize anxiety, such as an indication of the door swing. Support in using technology should be provided by a member of staff when required.

10 Acoustics and noise management

COMMENTARY ON CLAUSE **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, high sensitivity and hypersensitivity result in increased stress, anxiety and in the absence of any mitigating measures, sensory overload.

People with sensory processing differences are often very sensitive to sound and noise. This includes people with neurodegenerative conditions (such as dementia), neurodivergent conditions (such as autism, ADHD, dyspraxia), or hearing differences due to hyperacusis or misophonia. The types of noise people are sensitive to are different for different people. It might be a continuous noise, intermittent noise, unexpected noise, high volume noise, or specific frequencies of noise. Although high noise levels often prove challenging for many people, sound does not have to be loud to have an impact. It can also be softer sounds such as a continuous hum, ticking clock or dripping tap.

Low frequency noise is generally found to be difficult to control, due to its ability to penetrate building structures. However, mid and higher frequency sounds (particularly those associated with the human speech spectrum can be disturbing to thought processing and emotion.[7)]

10.1 Acoustic layout and zoning

The location of different types of space and activity within the building at briefing and concept stages should be taken into account, so that acoustic zoning and treatments are applied correctly. Spaces should be reviewed by an acoustics specialist 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 to enclose reprographics rooms to control noise from equipment.

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.

[7)] Available at https://www.ecophon.com/en/about-ecophon/acoustic-knowledge/basic-acoustics/generating-and-understanding-speech/

In some buildings, the purposeful design of typically noisier areas (such as a kitchenette or tea point) without any noisy appliances, should provide a quieter experience (see Figure 4).

Figure 4 – Separate kitchenette area without noisy appliances

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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.

The layout of the building should be designed to mitigate the possible negative acoustic impact of elements and activities on adjacent spaces.

Low noise levels are not always desirable, but an acceptable noise level should be selected for the environment in the context of the activity taking place.

NOTE 2 Very low noise levels 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 [25].

As individual requirements vary, for some people additional control should be provided as an option, including the use of noise cancelling headphones. However, headphones should not be seen as a solution to poor acoustics.

10.2 Background noise reduction

COMMENTARY ON **10.2**

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 noise transfer 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. People with hearing loss and some people with dementia often have challenges perceiving auditory information over high levels of background noise.

The following sources of background noise from sound ingress should be reviewed and assessed:

a) airborne sound transmission; and

NOTE 2 When sound is transmitted between areas, or from external sources into a building, it can often be reduced with sound insulation or improving windows and doors. This can involve increasing the mass and insulation of separating walls and floors and further measures might be needed, such as vibration-isolation of building elements (e.g. floating floors).

b) flanking sound transmission.

NOTE 3 Flanking transmission is 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.

10.3 Room acoustics

COMMENTARY ON **10.3**

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 and to aid communication for both speaking and listening.

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 useful to provide sound absorption to soften and diffuse sound 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 room acoustic values

Room/Activity type	Maximum unoccupied sound level $L_{Aeq,30mins}$ dB	Maximum unoccupied reverberation time (RT) in seconds
Quiet rooms, learning spaces likely to be used by learners with sensory differences	≤ 30 dBA	≤ 0.4 s (125 Hz to 4 000 Hz) [A]
Meeting rooms, cellular offices, audio and video conferencing	≤ 35 dBA	≤ 0.5 s Tmf [B]
General circulation space including corridors	≤ 45 dBA	≤ 0.6 s Tmf [B] [C]
Sleeping areas	≤ 35 dBA (preferably ≤ 30 dBA)	≤ 0.5 s Tmf [B]
Dining room, restaurant, canteen; Large room (≥ 20 people) Small room (< 20 people)	Large: ≤ 45 dBA Small: ≤ 40 dBA	≤ 1 s Tmf [B] ≤ 0.6 s Tmf [B]
Multi-purpose hall/ community space	≤ 35 dBA	0.8 s to 1.2 s Tmf [B]
NOTE The recommendations go beyond the minimum mainstream secondary school requirements currently set out in BB93 as most learning groups include people with sensory processing differences who can benefit significantly from the enhanced acoustic performance.		
[A] These spaces require the average reverberation time to not exceed 0.4 s over octave band frequencies 125 to 4 000 Hz. Furthermore, the reverberation time may not exceed 0.6 s in any octave band within this range. [B] Tmf reverberation time is the arithmetic average of the reverberation times in the 500 Hz, 1 kHz and 2 kHz octave bands. [C] This value takes into account the potential to create respite and pause spaces within the corridor.		

NOTE 3 For teaching and learning spaces likely to be used by learners with special educational needs (SEN), including hearing or communication needs, Building Bulletin 102, Section 0.4 [12] and accompanying guide to Building Bulleting 93: Acoustic design of schools – performance standards, Chapter 6 [26] is appropriate.

NOTE 4 Speech perception in noisy environments is difficult for many people; therefore, measures may be taken to help people perceive speech (or other acoustic signals) clearly.

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

NOTE 5 The addition of sound absorption reduces the reverberation and echo within a space. Indirectly, this can also affect sound transmission; utilising materials that provide high levels of sound absorption can help reduce the sound pressure level within a space, treating the noise in the source room before it becomes a challenge to uses in adjacent spaces.

NOTE 6 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 are typically more complex and should be assessed and reviewed by an acoustic specialist.

NOTE 7 Refer to BS ISO 22955 for technical guidance to achieve acoustic quality in open office spaces to support dialogue.

The creation of distinctive areas within an open plan space should reinforce and support various activities, each with appropriate lighting, acoustics and finishes.

10.4 Control

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 when noise comes from the street;

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

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

Where provided, quieter hand dryers should be selected to reduce sensory overload.

NOTE 1 There is currently no agreed standard for hand dryer testing, but a "quiet" hand dryer is often one that is no louder than 70 dB. However, test conditions can vary and this level is likely to be too loud for most people with heightened sensitivity or hypersensitivity to sound.

NOTE 2 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.

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

NOTE 4 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 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 5 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 (see Figure 5 and **14.1**).

Figure 5 – Example of a semi-enclosed quiet zone

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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**

The application of lighting has a significant impact on the wellbeing of all occupiers. The services of a professional lighting designer together with user input can help establish that the application of a well-considered and informed lighting design is achieved.

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 and highlight obstacles to prevent trips and falls. It can also create calm, therapeutic or stimulating environments and affect the quality of sleep. The effect of colour temperature is an important aspect as higher values can disturb the circadian rhythm and disrupt the sleep cycle.

People who experience sensory overload often have significantly heightened sensitivity to light (photophobia). They can be adversely affected by the lighting flicker, illumination, 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 wherever possible.

Light emitting diode (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. LED lighting when used to create backlit information panels can create difficulties (refer to **15.5**).

In areas predominantly used for relaxation or rest, such as quiet spaces, lighting with a colour temperature range of 2 700 K to 3 000 K should be provided.

NOTE 1 The colour temperature of lighting has an impact on sleep cycles, with higher values, i.e. cooler white of 4 000 K and above, more likely to disturb the circadian rhythm and disruption to sleep cycles. This is due to the increased presence of blue light within the cooler temperature.

NOTE 2 Providing variable colour temperature lighting is preferable, particularly in areas occupied 24/7 such as hospital wards, living and hotel environments.

NOTE 3 Colour therapy has been acknowledged to have some therapeutic effect on some people but can be disturbing for others. The use of coloured light is not generally advised within the built environment but may be considered in dedicated or personal space with input from a colour therapist specialist.

Mixed use environment with a choice of formal and informal seating and acoustic booths

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 should be used to assist with direct light to required areas and also limit light pollution or undue light spill onto adjacent areas.

NOTE 4 The location of a light source can be concealed, i.e. downlights with LED module located close to the opening and ceiling surface, have a much greater visibility and the potential for glare. Whereas light sources which are recessed within a downlight avoid a direct view (other than viewing upwards from directly under the downlight). The level of glare is noted with the UGR value of a fixture.

Fast moving or changing light effects should be avoided or introduced with consultation and specialist input as people with photophobia experience this as flashing with the same seizure risk known for strobe flashes and epilepsy.

NOTE 5 Also refer to BS EN 12464-1 and BS EN 12464-2 for information on indoor and outdoor lighting.

11.2 Daylight

Daylight should be provided where possible due to a preference over artificial lighting and the positive health effect.

NOTE 1 Daylight provides daily and seasonal changes, plus good colour rendering, which are beneficial for wellbeing.

Opportunities for access to daylight should reduce eye fatigue and assist in maintaining circadian rhythm (see **11.10**).

Exposure to daylight should be the recommended approach because of the importance to human wellbeing. However, control of any light sources or significant changes of brightness between adjacent spaces should be taken into account for visual comfort.

NOTE 2 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 than the eye has adjusted to, such as shafts of strong sunlight or car headlamps through a windscreen. Refer to BS 40101, BS EN 12464-1, BS EN 12464-2 for more information.

Direct interference with vision is referred to as disability glare. With vision not directly impaired where there is discomfort, annoyance, irritation or distraction the condition is referred to as "discomfort glare causing visual fatigue".

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 or display screens. Building designers should design to avoid glare from daylight or artificial light sources.

NOTE 1 Both types of glare can arise from the same source. Attention is drawn to HSG38 [27].

NOTE 2 The quantity of glare emitted from luminaires are noted by their Unified Glare Ratio (UGR) with values varying from 40 to 5, the lower rating values producing less glare. A UGR value of 19 is general acceptable for a majority of uses, with lower values considered where reduced glare is of importance to detailed tasks being carried out within an area or to cater for people who may be sensitive obtrusive glare from luminaires. Refer to the CIBSE SLL Code for lighting [28] for guidance on suitable ratings for different types of environments.

The use of in-direct lighting should assist in illuminating spaces with reduced risk of glare. Also the use of micro-prismatic diffusers and luminaires with recessed light sources should be taken into account to soften glare whilst maintaining light levels.

11.3.2 Glare control

Blinds or curtains should be used to adjust any glare with daylight through glazing. Window coverings that provide full or adjustable reduction in glare should be taken into account.

Dependant on the location/orientation of a building and the potential for one or two sides of a facade to be directly facing towards the sun, some form of daylight glare control should be taken into account to establish suitable contributions from daylight.

NOTE 1 Methods to reduce glare whilst permitting daylight to enter can be assessed and implemented, such as brise soleil and other facade treatments or solar shading, translucent semi-transparent blinds, frosted manifestation or voile curtains.

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; however, deeply recessed fixtures used in isolation cause harsh shadows and should always be supplemented with other forms of lighting, such as uplighters.

A voile curtain reduces the impact of glaring manifestations at BBC Cardiff.

11.3.3 Shadow

Lighting should be designed to minimize the creation of shadow due to visual misinterpretation as a barrier, obstruction or hole in the ground.

NOTE 1 This might affect walking efficiency and variability, particularly for people who have dementia and/or are blind or partially sighted [29].

NOTE 2 Recessed downlights can lead to stark contrast and shadowing, and other forms of lighting might be better suited.

Critical lighting to the functionality of spaces that cater for occupants with visual sensitivity, engaging the services of a professional lighting designer should be a priority. A ceiling mounted luminaire with a beam angle of 20 to 45° should limit glare and avoid casting long shadows.

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

A balance of lighting should be used to create visually comfortable spaces, from various locations and to include the ceiling, wall and floors. For the majority of uses, light directed from above utilizing output from pendants and downlights should provide the general lighting requirements. However, supplementary lighting to vertical surfaces and also upwards should create a good balance of light distribution. Suspended fittings providing both upward and downward light distribution should provide a comfortably lit place from a single lighting solution.

Floor level lights should be deeply recessed to provide shielding from glare.

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

Whilst stark shadowing should be avoided, levels of shadowing are important to provide visual modelling of three-dimensional objects.

NOTE 3 Shadowing is also a key factor in reading facial expressions when people are communicating both face to face and via video conferencing. A contrast ratio range of 1.5:1 to 3:1 is generally acceptable for such purposes.

NOTE 4 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 sensitivity, migraines or epilepsy 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. Disabled people and people with vestibular/balance conditions can also be disoriented by flicker.

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

a) fluorescent battens are installed;

b) poor quality LED lighting are used with a low-quality driver (commonly associated with retro-fit LED lamps);

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 at frequencies up to 60 Hz (a 100 Hz flicker is not an issue for most people). Compact fluorescents operate at 20 000 Hz and are not likely to produce a detectable flicker, but this might happen towards the end of their service life.

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 (although this doesn't fully replicate the benefits of daylight). If possible, daylight should be provided.

Generally, spotlights should be avoided or used with care as they produce high light level contrasts and pooling of light and shade.

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 builds, such as in healthcare settings and hospitals (rather than LED luminaires utilizing retrofitted or replacement LED lamps).

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.

NOTE 3 For definitions and further information, see CIBSE SLL Code for lighting [28].

11.6 Illumination levels

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.

Flexibility and the ability to individually adjust the illumination of particular spaces are beneficial and should be taken into account (see **11.9**).

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

Where light level outputs at procurement are 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 40% of their light output over a short service life. In comparison, LED lamps have much lower deterioration.

NOTE 3 Refer to the BS 8300 series for guidance on minimum light levels for people who are blind or partially sighted.

NOTE 4 Refer to CIBSE Lighting Guides [28] for more information on target illuminance levels. The Society of Light and Lighting (SLL) code for lighting provides guidance for a wide range of interiors and a range of applications relevant to the lighting of building interiors.

Where practicable, local light levels should be adjustable in areas where someone remains for long periods of time (rather than passing through to reach a destination). There should be options 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 should be taken into account for libraries, study areas, offices and other working environments, and should be essential in quiet and restorative spaces.

NOTE 5 With quiet/restorative spaces, sometimes no light may be needed at all, for example, for someone with a migraine or extreme dizziness.

Designers should request and follow lighting manufacturers' recommendations for tested and compatible LED switches. This should avoid the buzzing/humming noises which are generated by lighting typically when operated at a dimmed level of light intensity.

NOTE 6 The cause of this common issue is linked to the dimmer switches and their compatibility with the LED lighting equipment and, more specifically, the driver/power supply component. When transitioning from using conventional light sources (e.g. tungsten and fluorescent lights) to LED lighting, it is important to confirm that suitable dimmer switches are specified. Due to the low wattage and electronic nature of LED lighting, connecting it to traditional dimmer switches used for high wattage conventional light sources and resistive loads may not reach the minimum power required to allow dimming, resulting in unsettling noises. For example, if a dimmer switch with a range of 20 W to 300 W is connected to one 15 W LED luminaire, the luminaire may start to flicker or buzz. Equally, exceeding the upper threshold of 300 W is likely to cause short-circuiting and lead to LED failure.

NOTE 7 The minimum and maximum power of the dimmer switch is commonly stated on the packaging or at the back of the component itself.

11.7 Quality of light and colour rendering index

COMMENTARY ON **11.7**

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 for lighting for further guidance [28].

With an appropriate choice of lamp, artificial lighting should achieve good colour rendering for all surfaces. For general occupancy, the minimum CRI should be 80 Ra in most areas and typically 90 Ra or greater internally where the quality of colours is often more important (for example, in art/photographic studios or galleries, and clothing and hairdressing establishments).

NOTE 1 Discomfort can be associated with UV light, electromagnetic fields and blue light with an impact on migraine sufferers or people who experience sensory difference and sensitivity.

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

NOTE 2 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 taken into account to assist in maintaining the natural circadian rhythm (see **11.10** for guidance on adaptational lighting).

11.8 Colour temperature

Where possible, lighting of external areas should have a consistent colour temperature.

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

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

Depending on the type of space, character and heritage status, urban areas and amenity lighting should range from warm white light (2 700 K) to cool white light (4 000 K). 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 3 000 K and preferably 3 500 K) might be considered, coupled with dimming, or options to switch off some lights. For residential use, a range of 2 200 K (very warm) to 3 000 K (warm to natural) colour temperature might be preferred.

NOTE 3 See **11.6**, Note 6 for further information on retro-fitting dimmer switches.

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.

Where PIR or thermal detector lights are installed, 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.

NOTE 1 For details of manual reach heights and positioning of switches and controls see BS 8300-2.

User engagement should be evaluated and confirmed on the speed of change in light output to verify safety or comfort is not compromised for some users.

NOTE 2 Many older people and people with sight conditions require longer to adjust to changes in light levels (refer to **11.11**).

The lighting design should take into account appropriate positioning of sensors to mitigate extreme changes in light levels. If microwave (movement) sensors are ceiling mounted immediately above the point of entry in circulation spaces, instantaneous light should be provided without delay to avoid users being left in a dark environment. For these area types, the lighting should be set 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 3 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 design that promotes circadian entrainment should be taken into account for therapeutic value by improving natural sleep, alert periods and maintaining emotional stability. Circadian lighting should be helpful for people who experience seasonal affective disorder (SAD) or living with dementia, where access to daylight sources is not available.

To provide the same non-visual/circadian effects as daylight, the electric light should feature a minimum weighted lighting level to the human eye.

NOTE The lighting levels are described in detail in CIE System for Metrology of Optical Radiation for ipRGC Influenced Responses to Light [30].

A lighting specialist should be consulted on the appropriate selection of fittings.

Indoor screens with relayed real-time views of the outdoors are beneficial and should also be provided where windows and views are not accessible. The use of artificial views/windows should only be used where there are no possibilities of providing access to daylight, such as in basement areas.

11.11 Transitional lighting – illumination ratios

Illumination ratios and transitional lighting should be included in the lighting design.

NOTE 1 An illumination ratio is calculated by comparing the lighting in one area with an area that is immediately adjacent, e.g. comparing the lighting on a desk with the lighting on a wall. Where the ratio is too high, people can find it difficult to adjust from the difference, as both light sources can be within the visual field whilst using the desk. Transitional lighting is lighting designed to compensate for visual adaptation between regions of high and low light level, such as when entering tunnels from daylight.

Variation in illumination levels of a ratio greater than 1:3 between a fixed task area and immediately adjacent spaces causes visual fatigue and should be avoided, particularly if these are experienced repeatedly. People with sight conditions and heightened or hypersensitivity to lighting are particularly affected, so lowering the illumination ratio should be taken into account to achieve a comfortable level of lighting uniformity (see **11.6**).

The impact of movement and transition between different spaces with varying illuminance levels and characteristics should also be taken into account.

NOTE 2 For example, moving from an external environment into an internal one, or from circulation space to a brighter office, or a darkened lecture theatre.

The positioning and use of microwave and infrared sensors should be taken into account for safe transitioning between spaces.

NOTE 3 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.

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, feature lighting should be used to illuminate routes and features to navigate spaces; however, lighting should be positioned and directed where it should not produce disability glare. 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.

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 have low reflectance, i.e. are matt or low-sheen (see Figure 6), making it easier to navigate and preventing anxiety from arising if, for example, a floor surface appears to be slippery or wet; and

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

NOTE A mirror on the upper rear wall of a lift can be helpful to wheelchair users if they need to reverse out; however, a large mirror can be frightening for people with dementia as they might think there is someone in the lift with them. A smaller mirror carefully positioned can help facilitate safe reversing whilst minimizing the impact on people with neurodegenerative conditions.

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

Figure 6 – Example of matt or low sheen surfaces

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12.2 Use of colour

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

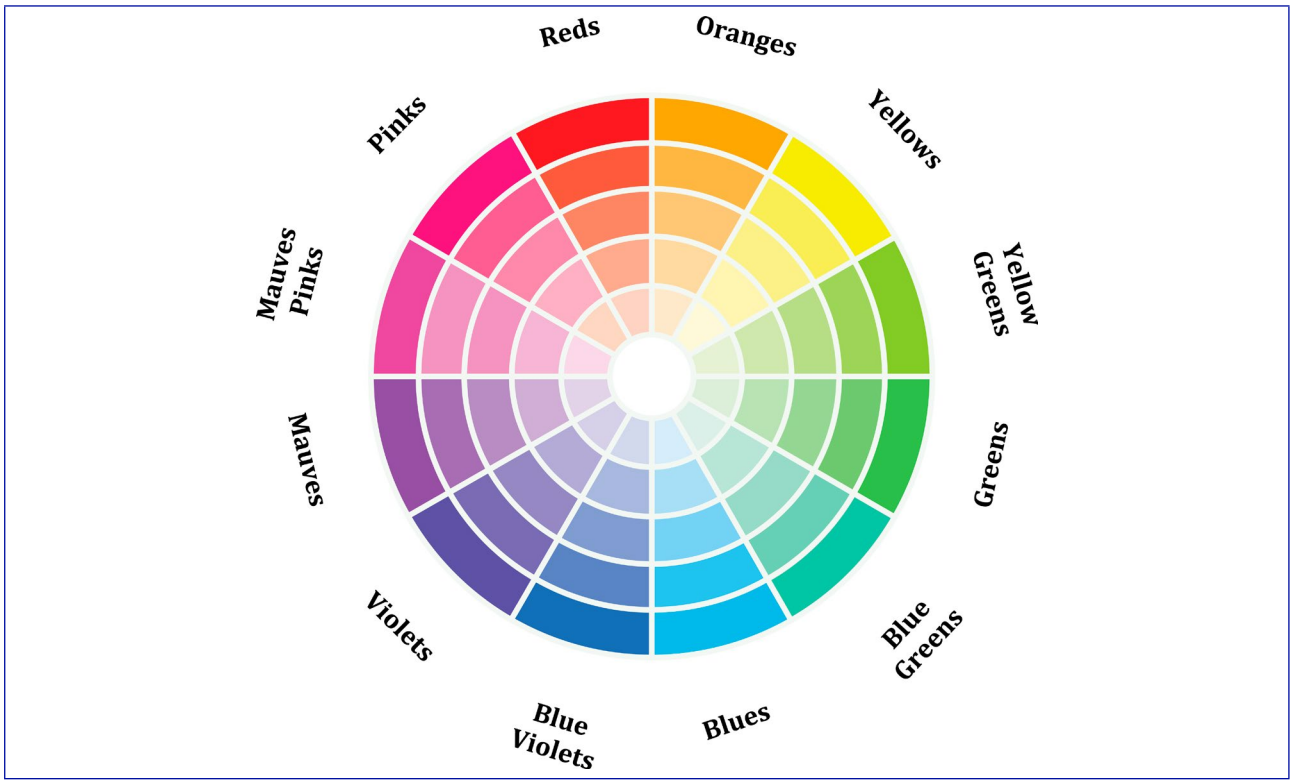
NOTE 1 Colours can appear more vibrant to people who are visually hypersensitive. A large percentage of the older population have colour vision deficiencies and around 10% of men have colour vision deficiency.

Muted colours are typically more calming and cause less sensory overload than vivid colours, which should be taken into account. Using 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 Vivid or fluorescent colours on the opposite side of the colour wheel (see Figure 7) when used together provide a strong chromatic contrast, and for some people can create a shimmer or moving effect which is disturbing or may feel 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.

Figure 7 – Colour wheel



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

Colours that are in abundance 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 high contrast increases 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 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 verify other signage does not look similar in appearance or colour.

NOTE 6 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.[8)]

12.3 Visual contrast

Sufficient visual contrast on wayfinding and navigation aids should be provided. Visual contrast should also be incorporated in the design to make the environment easier to navigate.

NOTE 1 For example, a visually contrasting door is easier to identify for everyone. 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 Refer to BS 8300-2, Annex B for guidance on achieving sufficient contrast in LRV.

NOTE 3 Providing a contrast between one floor surface and another adjacent floor surface can negatively affect some people (refer to **12.6**).

NOTE 4 High visual contrast within patterned surfaces is generally to be avoided, as this can increase the degree of visual disturbance experienced. For more information about the use of patterns, refer to **12.5**.

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; there are possibilities to achieve sufficient contrast with muted or natural colours. Visual contrast should be used on adjacent key surfaces such as walls, doors and obstacles to aid with wayfinding and navigation systems (refer to Clause **6**).

NOTE 5 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 **12.6**).

[8)] Available at https://www.psychologytoday.com/us/conditions/seasonal-affective-disorder

12.4 Visual discomfort and use of patterns

COMMENTARY ON **12.4**

The visual environment can have an impact on comfort and the ability to function within a space. Under certain lighting conditions, the human 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 changes in how the space is perceived. This can cause eye-ache, fatigue, headaches, nausea, fainting and other physiological responses. 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 [31]. 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.

Reception area with informal waiting area with mix of seating styles, muted colours, and connection with outside.

Visual discomfort and use of patterns is a relatively new field for the built environment and techniques for use in the construction industry should be explored further. Until the field becomes 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 not be used 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 [32].

- complex images containing visual noise hidden within the image.

NOTE 2 This is a relatively new field based on research by Professor Arnold Wilkins [33]. Complex noise can be identified by computational image analysis based on a mathematical technique known as Fourier analysis. More recent research by Jason Slocombe demonstrates a technique to identify visual discomfort using virtual modelling [34].

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

NOTE 3 High-contrast or vivid colours in patterns (e.g. a bright motif on a dark background or vice versa, repeated at short intervals over a large area) can be extremely visually over-stimulating for many hypersensitive people. This is a frequent issue with carpet and wallpaper patterns, particularly in heritage settings. Other 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.

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.

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; however, designers may assess and verify 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 avoided 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 [33].

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

NOTE 6 Some artificial "natural-effect" patterns might contain uncomfortable levels of visual noise [35].

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

- introducing reduced visual content in key areas such as communication points, displays, quiet spaces and where high levels of concentration are 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;
- avoiding bold or intense patterns on walkways or stairs where there are risks of falling. Moving across patterns increases the intensity of the effect and leads to loss of balance, change in gait and depth perception; and
- organizing areas where people congregate and interact in such a way that less stimulating areas are in their field of view.

NOTE 7 Examples include behind a reception desk, meeting room walls and in seating pods.

NOTE 8 Patterns that occur in nature, such as biomorphic shapes and curves, fractal and biomorphic designs typically contain low levels of visual noise, which is easier for the brain to process and generally have a positive effect. These effects are thought to be due to human evolution within natural landscapes.

Where using natural forms and images is unavoidable, images should be selected that do not contain triggers for people with trypophobia.

NOTE 9 Refer to **3.1.33** for a definition of trypophobia. This type of fear affects a significant minority of the population. When trigger visuals are seen, symptoms such as severe fear and associated nausea, increased heart and breathing rate, choking, sweating or agitation/panic attacks can be experienced.[9)]

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 are seen in an area together;
- providing still images/photographs that show how the finishes look to be previewed in advance, and considering in addition a fly-through video; and

[9)] For more information, refer to https://www.verywellmind.com/trypophobia-4687678

- using natural materials, such as timber or stone, which are likely to have lower visual noise.

NOTE 10 Refer to **4.2** for more information.

12.5 Tactile consideration

Via stakeholder/user consultation and engagement, tactile properties should be taken into account when selecting finishes (refer to **13.5**).

NOTE 1 A tactile wall, for example, can be used as a therapeutic tool in a multisensory room but can also attract obsessional behaviour (refer to **6.7**).

Additionally, an assessment should be conducted when selecting fabrics where people come into contact with them, such as seating. Fabrics that feel harsh or rough should be avoided as they cause discomfort.

NOTE 2 Soft fabrics and textiles, such as bamboo, cotton or velvet, are generally preferred and can be reassuring to people with sensory processing differences. However, there is a wide variation in personal preferences, including some disliking smooth, slippery materials such as satin and silk, and some preferring distinctive textures. Like many areas within this PAS, preferences can vary and therefore having a variety of finishes on everyday items, like seating, allows choice.

When selecting floor finishes, contrast in the feel underfoot of different floor or ground finishes should be used to provide a tactile sensation that aids people with sight impairments. Furthermore, another area of sensory intake to communicate navigation or orientation should be used to aid everyone.

NOTE 3 See BS 8300-2, **C.1** for guidance on avoiding frictional differences on adjacent floor surfaces.

NOTE 4 For external surfaces, there are specific tactile warning surfaces that should be used consistently. These are detailed in BS 8300-1 and Inclusive Mobility 2022 [36].

12.6 Floor finishes

COMMENTARY ON **12.6**

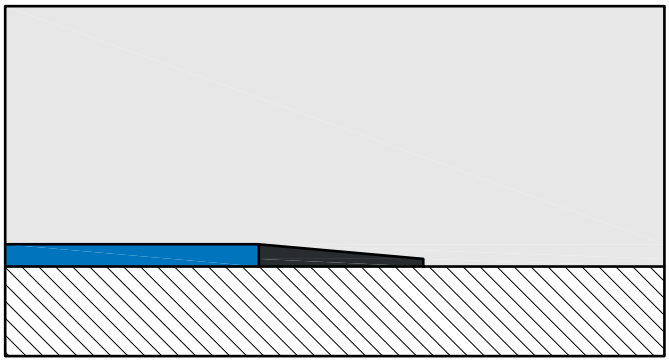
Flooring is one of the largest surface areas encountered in any environment. The floor finishes used can have a significant impact on the visual and audible qualities of the space as well as safety in day to day and emergency use. Refer to BS 8300-2, **11.3** for guidance on visual contrast and defining level changes. Also, refer to HSE's Slips and trips hazard spotting checklist [37] for additional guidance on floor finishes.

12.6.1 Transition trims

Where two different thicknesses of flooring materials are laid adjacent to one another, a bevel trim or strip should be used that conforms with Figure 8 to address any difference in thickness.

NOTE 1 This enables a smoother transition and reduces the likelihood of a person tripping or the creation of a barrier to movement.

Figure 8 – Bevel strip example



Where possible, the use of a shiny or visually contrasting trim should not be used, as it causes confusion or hesitation for some people. In accordance with Figure 9, trim selection should closely match the appearance of one or both finishes.

Figure 9 – Matching trims example

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NOTE 2 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 3 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.

12.6.2 Visual contrast on adjacent floor surfaces

COMMENTARY ON **12.6.2**

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 contrast change on the floor as a barrier or step.

NOTE 1 Adjacent floor surfaces that contrast in appearance might result in a border line or edge that some people with dementia might not understand, or it might create difficulty initiating movement, such as for people with Parkinson's. Contrasting, transitional, colour coding of floor surfaces should therefore be carefully considered in the context of building users and designed accordingly.

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 about approaching people or crowds. Some people living with dementia experience visual differences. A range of 45 to 75 LRV [38] is helpful to allow easier navigation in busy, highly populated areas.

During the design phase, blending of ground and floor finishes by using similar tones of finishes should be reviewed and assessed for:

- Entrance mat system with an intermediate colour, should aid the transition between indoor and outdoor contrasting surfaces.
- 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 not use black or dark finishes.
- If colour contrasts are required, for example a change of carpet colour, this should be installed in doorways, with the surfaces featuring a similar LRV.

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 minimize 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 50 mm 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 the BS 8300 series.

12.6.3 Use of patterns

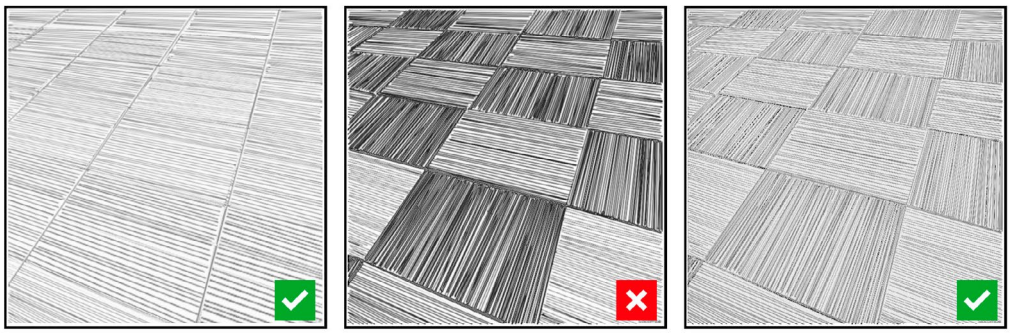
COMMENTARY ON **12.6.3**

Floor markings and large patterns can be misinterpreted as changes in level, holes or physical objects by people with neurological, sensory processing differences or visual impairments. Some geometric patterns can affect walking gait and depth perception, increasing the risk of a fall or causing hesitation (often called “freeze”) and confusion. Patterns that have a lower contrast between the pattern and background can have a lower negative effect on people who experience hypersensitivity to visual noise (refer to **8.1** for guidance on pattern use).

Repetitive floor patterns, including strong linear or striped designs, 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 laid in a format that creates a mosaic effect (such as rotating alternate tiles), should be carefully assessed for the potential to cause visual or vestibular disturbance. No rotation or reducing the visual contrast within the pattern should result in a lower risk (refer to Figure 10).

Figure 10 – Floor tile configurations



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NOTE 1 Where the tiles are plain or have a very low degree of pattern, for example wood floors (or where the contrast is minimal i.e. below 10 LRV), the configuration of the tiles is less important.

NOTE 2 Some flooring manufacturers have adopted a dementia-friendly rating scheme which includes a range of floor finishes.

12.6.4 Slip resistance

A suitable level of slip resistance for the specific circumstances should be achieved. For example where floors become wet, such as entrance lobbies, reception areas and shower rooms, higher levels of slip resistance should be used to avoid slips and trips.

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

12.6.5 Reflective finishes

Floor and wall surfaces should be matt or low-sheen, making it easier to navigate and removing anxiety that arises if a floor surface appears to be slippery or wet.

NOTE A shiny floor might give the impression that the floor is wet and slippery. Shiny floors increase reflections from overhead lights and bright sunlight, which can increase discomfort glare for people with higher sensitivity to bright light. Overall, a shiny floor can cause confusion and potentially contribute to the level of "visual noise" and possible sensory overload.

Cleaning regimes should review and verify that floor surfaces do not become shiny over time.

12.6.6 Acoustic absorption

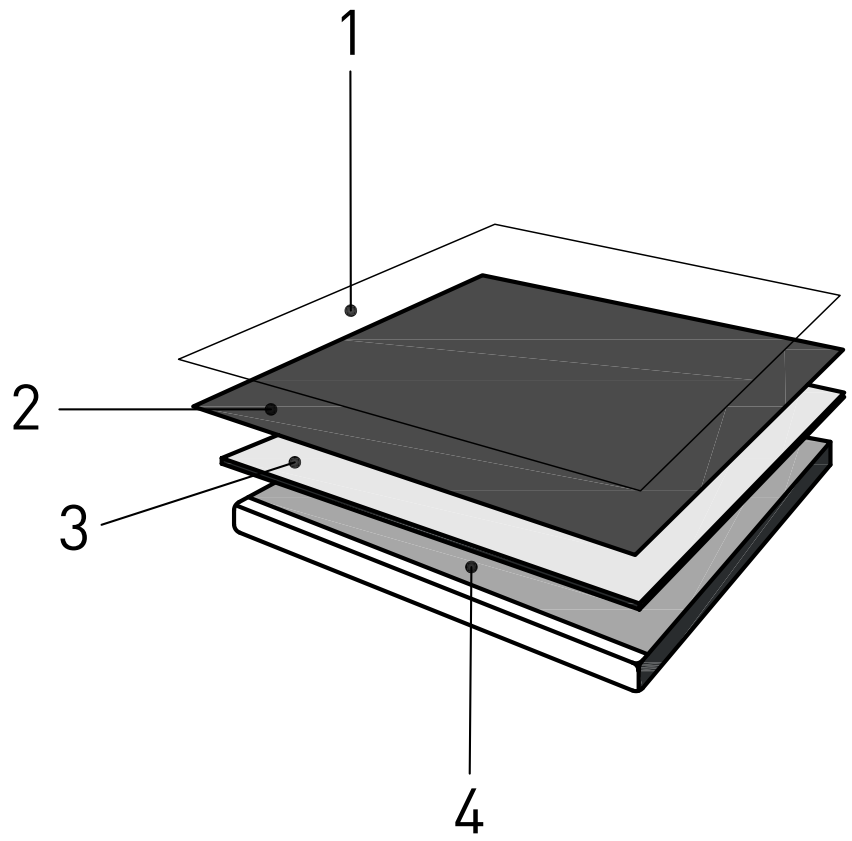
An absorptive finish such as carpet or carpet tiles should be used, where practicable, to reduce (to some degree) the sound pressure level within a space and reduce sound transmission.

NOTE 1 Deep pile carpet increases the effort needed to propel a wheelchair.

Where vinyl floor finishes are preferred, the acoustic performance should be assessed and reviewed. There are many types of vinyl flooring readily available with a backing to improve absorption and this should be used where impact sound from floors above are likely to cause unwanted noise (see Figure 11).

NOTE 2 Refer to **10.2** for further guidance on direct transmission and absorption.

Figure 11 – Acoustic floor build-up example



Key

1 Surface protection layer
2 Printed design layer
3 Intermediate reinforced layer
4 Foam base

12.6.7 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. This should be reviewed 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.

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 the push side of doors is illogical, when a simple push plate can be installed so that the door can be used intuitively.

Regarding familiarity, ergonomic principles for method, comfort and intuitive use should be included in design and planning considerations.

NOTE 1 An item that is visually obvious to operate for some people might be confusing for others, because it is not recognized or recalled, or its operation is not intuitive for all.

NOTE 2 People with neurodegenerative conditions, such as dementia, can sometimes relate and interact with features with familiar designs, rather than innovative more recent models that did not exist in their earlier years. Examples of this are 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 twist operated taps but have an easy lever action should be used, so that older people with memory loss are able to operate them. For example, lever taps should be designed with a side-to-side action, not an up-down movement. Taps that look traditional but operate like a lever (refer to Figure 12) should be selected when specifying products.

Figure 12 – Example of traditional looking taps that operate like a lever

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

Technology should be accompanied by simple directions for use containing both text descriptions in plain English and a visual representation, such as an easy-to-understand flow chart and/or symbols where possible.

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.

NOTE 5 Some people may interpret the words "break glass" as an instruction to be followed, regardless of emergency. If the specific words "in the event of fire" do not precede the words break glass - the provision of a notice above the device can be helpful in explaining its purpose.

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. For example, some people have a heightened need for unambiguous vertical, horizontal, or diagonal alignment of built forms with a preference for the alignments that help maintain their balance.

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

COMMENTARY ON **13.3**

Technology can change rapidly and there are opportunities to provide solutions or to make environments more difficult for some, depending upon the type, complexity and modes of operation, and the individual user's preferences or requirements.

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

Where the presence of a high number of large digital screens has potential to cause sensory overload, the following should be taken into account:

- having nearby locations with fewer or no screens to reduce the impact or having an area with direct sightlines to the screens; and
- locating screens away from areas where people have to wait.

Where personal or general assistive technologies are provided as part of a safety-related solution, for example for directing, information or alerting individuals in an emergency, it should be compatible across all digital platforms.

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 and other conditions including hearing loss.

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.

NOTE 3 For features associated with emergency evacuation, refer to **14.5**.

13.4 Fixtures

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

NOTE 1 Some fixtures used for collaboration and learning, such as chalk board and dry wipe boards, can create sounds when used, e.g. squeaks or scraping sounds made by chalk or markers. Flip charts are an appropriate alternative if digital collaboration technology is not available.

Familiarity with types of fittings should be taken into account, e.g. traditional taps should be more familiar to people with dementia, and a lever or sensor tap should not be used. With less familiar traditional features, such as a twist-operated tap, a mix of traditional and modern alternatives should be taken into account.

NOTE 2 The temperature of hot taps is a key consideration in some facilities to avoid scalding. This includes the water temperature of taps in sanitary accommodation (see BS 8300-2), as well as appropriate warning/safety features on boiling water dispensers commonly used in tea points and kitchens.

13.5 Furniture

A mix of furniture styles should be used to meet a variety of user needs and settings. This should include ergonomic considerations, including sit-stand desks, and different seat heights and support features, giving people options and choices to find the most suitable solution for their requirements.

NOTE 1 Refer to BS 8300-2 for accessible seating options.

Furniture that is soft to touch and the use of natural materials, such as timber, should be included for therapeutic and calming value. Materials that contain chemicals and VOCs should be avoided (refer to **3.1.14** for further information).

Furniture with rounded corners is softer in appearance and reduces the risk of injury, so should be provided in areas where people may bump into them or in areas used specifically for restoration or recovery.

NOTE 2 In some settings, robustness of furniture can be assessed and reviewed to withstand damage and reduce the risk of ligature. Refer to **14.4** for safeguarding guidance.

NOTE 3 Refer to BS 8300-2 for guidance on furniture styles.

Familiarity with furniture designs is also important; visually contrasting furniture against a background, e.g. floors and walls, should be easier to interpret for everyone and less likely to become an obstruction.

NOTE 4 Refer to BS 8300-2, Annex B for information on assessing visual contrast.

14 Safety, recovery and quiet spaces

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.

Where only one quiet and restorative space or room is provided, it should be designed as a flexible environment with a variety of design options that are customizable to the individual's sensory needs. Each design aspect should have both low and high stimuli options to accommodate both hypersensitive and hyposensitive needs. In mainstream environments where only one space is provided, it should be designed as a low stimuli quiet space with higher stimuli optional additions by choice. If multiple spaces are available, several spaces of various levels of stimuli should be taken into account.

When creating sensory or quiet spaces, the context of how the spaces are designed and the potential needs of the users should influence the design choices. If a facility is highly stimulating and busy, more than one space should be provided – quantity, quality and location should be taken into account.

14.1.1 Recovery and adjustment

COMMENTARY ON **14.1.1**

A quiet and restorative space provides a supportive environment for the regulation of an individual's senses. 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 likely to cause difficulties for users due to a conflict in requirements. For example, it might be in use as a faith or meeting space and would not be 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 space should be used to provide a calm environment with low stimuli where people find relief from stress and sensory overload. The space does not have to be silent but should be designed to create a mentally "quiet" environment that promotes relaxation.

NOTE 1 A quiet space can also be called a restorative, retreat, contemplation, silence, refuge, escape or calming space.

Quiet rooms or restorative spaces should be included in all public mainstream buildings and workplaces, but are particularly important in large, busy or noisy environments, such as:

- transport hubs;
- education buildings;
- hospitals;
- shopping centres and retail parks;
- sport and leisure facilities; and
- museum and art venues.

Ease of access to quiet spaces in different locations should be provided and, where possible, should not require the request of a key or permission to use the space.

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

NOTE 2 Some people can find it disturbing to have doors shut or locked, where others might benefit from feeling that their privacy is secured.

When providing access to these spaces, recovery of users should be the design focus; quiet spaces are critical when someone experiences extreme stress (such as sensory overload or a PTSD memory trigger or flashback).

Providing meeting rooms as the only quiet space provision should be avoided unless one or more are specifically reserved permanently for this purpose; in many organizations, 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 adjustments and removal of some visual aspects. Some people 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 quiet spaces are 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 3 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 should not overstimulate the senses. A location free of odours and low background noise should also be taken into account.

The size of the quiet room should be taken into account as some people find a confined space difficult. Spaces where people are able to move freely, with options to stand or pace, should be provided (refer to Figure 13).

NOTE 4 The size of the space can vary between a single person cubicle to larger rooms or 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 m^2), whereas the guidance from WELL v2 M07 stipulates a minimum of 7 m^2 [39]. It is helpful to have a larger space where possible, to enable people to move around and pace if needed.

NOTE 5 Although multi-purpose spaces are generally not recommended, 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 6 See Exploring the design preferences of neurodivergent populations for quiet spaces [40] for further information.

Figure 13 – Designing in space for someone to pace

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14.1.2 Management

As sensory overload cannot be predicted, a quiet space should not be bookable. Therefore, single multi-purpose quiet spaces are not ideal and there should be an 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, without revealing the occupant, 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.

Organizations that have websites or intranet arrangements should also use these to show an image of the quiet space.

Where windows allow a view into the space, privacy/blackout blinds or curtains should be provided.

14.1.5 Views

Whilst windows provide views to nature and daylight, 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 1 Rods for manually opening and closing curtains and blinds are accessible to most people without introducing any ligature risk.

NOTE 2 Refer to **14.1.8** for guidance on managing lighting.

Windowless rooms should benefit from an artificial window, or a tranquil scene 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 gentle on the senses.

Acoustic properties that are adjustable by users should be taken into account. Some people are particularly sensitive to echo; the simple addition of some absorptive soft finishes should be taken into account to reduce high reverberation that exists within a space, such as the addition of cushions, carpets or curtains. Where necessary, acoustic wall panels should be taken into account.

A choice of therapeutic recorded sounds of nature or slow instrumental music with volume control should be beneficial to some people, whilst a quiet environment should be better suited to others (see Clause **10**, plus Annex B, Table B.1 and Table B.2).

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 °C to 23 °C should be provided for passive occupancy, where possible, with an ability for users to make adjustments within this range.

NOTE For example, users may 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. An option to dim to lower levels and providing a combination of fixed and task lights should be included in the lighting design. When multiple lights are used, the risk of sensory overload increases and an intuitive way to adjust and switch off the lights should be taken into account.

NOTE Refer to **11.6** and **11.8** for information on lighting.

Lighting should not have any flicker or hum detectable by people with heightened visual or auditory sensitivity. Halogen or incandescent lamps are less likely to flicker and LED lamps should be used as they have less flicker with the correct driver installation.

An ambient colour temperature of 3 000 K should be included in the lighting design. The ability to adjust the colour temperature of the lighting from warm to cool should be taken into account as a positive addition. Coloured lights should not be provided as part of the lighting design other than as a separate feature that the user chooses to switch on or off.

14.1.9 Décor

Where a single quiet space is provided, it should be designed as a neutral environment which provides low sensory stimulation to accommodate the highest sensory sensitivities. Whilst gentle calming finishes 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 should differ in shade but stark contrast from one another should be avoided. Complex, repetitive patterns and bold linear patterns should also be avoided. Conversely, organic shapes and fractal patterns should be used to improve the perceived comfort and calmness of a space.

14.1.10 Biophilia

Plants are 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 are able to choose to position themselves with a very plain view. Plants with a spiky appearance, such as cacti, or those with a strong visual contrast, such as bright blooms, should be avoided. Plants with distinctive scents such as lavender should also be avoided.

For safety reasons, plants should be non-toxic and safe to touch. Any plants within general reach should be comfortable to touch, i.e. without thorns, or spiky leaves that could cause injuries.

Artwork on walls should be minimal, and a tranquil image should be provided where there are no views 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 are easily repositioned and with minimal risk of causing injury.

Furnishings with sharp or unnatural lines, such as venetian blinds and ventilation grilles, should be avoided.

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 beanbags and floor cushions.

NOTE 2 Some people become restless and fidget when they sit in a chair that is too high. Footstools or beanbags can enable their feet to rest flat on the floor. Footstools can also release the uncomfortable pressure from the backs of a person's thighs.

A meeting room chair with arms and 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 3 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 beanbags should be used to facilitate this in a comfortable way. 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.

NOTE 4 Furniture that allows the user to be cocooned or swaddled can be very comforting and calming.

Textures that have a discernible nap or pile are 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. The colours should be muted and strong contrast should be avoided. User consultation should be offered when choosing fabrics.

Products that contain petrochemicals, synthetic dyes, glues and solvents in the process of manufacture should be avoided (refer to Clause **9**).

14.1.12 Fixtures

An engaged sign should be clearly signposted to indicate that a quiet room is occupied.

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, whilst 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 multisensory stimulation for people who require this where a separate multisensory environment cannot be provided.

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 1 Where a separate multisensory environment can be provided, adjustability remains important, as such environments are usually intended for use in a controlled way to help an individual. Features vary but can include a sparkling ceiling or sensory sound equipment (often for soft music or sounds of nature). Equipment such as interactive tables or mats can also be provided, alongside furniture that can rock or move, and lighting that can change colour. These are just a few examples that might be present in a dedicated multisensory environment.

NOTE 2 This PAS does not aim to provide comprehensive guidance on the design of sensory rooms which have a different purpose to a quiet or restorative space. For further information on the development of multisensory rooms, see Multisensory rooms and environments [41].

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 should be adjusted so that it is less intensive, whilst maintaining safety requirements;
- relaxed performances in theatres; and
- specific tours or relaxed visitor experiences for museums and galleries when crowds are smaller and flashing lights and noisy exhibitions or experiences have been turned off.

Systems to pre-warn visitors/customers of any musical or theatrical performances in non-arts based settings should be taken into account. This should include communication via notices, tannoy announcements, and/or social media; alternative formats should also be provided. Sensory mapping to show areas that are quieter in comparison to full volume traffic areas should be used to benefit many people.

14.4 Safer environments and safeguarding

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

NOTE 1 Some features in the built environment present additional risks to users, which can be higher for people with a sensory and/or information processing differences and anxiety conditions.

Building features that have the potential for falls should be assessed and action taken to protect people who are more vulnerable to trips and falls. Steps should be in accordance with the guidance in BS 8300-1 and BS 8300-2, with increased visual contrast to step edges where practicable.

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) locating the quiet space, where practicable, in an area where monitoring or support are readily available;

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

c) avoiding items that collapse or fold, with the potential to cause injury if used incorrectly, such as folding chairs, or items that are easily thrown;

d) replacing highly reflective or potentially breakable fittings, such as glass-fronted pictures, with lightweight alternatives, such as canvas frameless pictures;

NOTE 2 Frameless pictures are also easier to remove altogether if they are distressing.

NOTE 3 Recessed lights are more difficult to damage (see **11.5**).

e) providing mirrors, where appropriate, that are shatter resistant;

NOTE 4 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) installing windows, such as a combination of high- and low-level windows, providing access to daylight and the potential to open the higher windows;

g) avoiding the use of curtains, blinds, and alarm systems with pull cords that introduce ligature risk;

NOTE 5 If an alarm for staff is desirable in some settings, this would ideally be through a push pad positioned with unobstructed access and operable with a closed fist or elbow.

h) removing sharp objects such as cutlery, glass ornaments;

i) securing cleaning materials in safe storage;

NOTE 6 This is a COSHH[10] requirement but is not always strictly observed.

j) fitting round lever taps for sinks or basins, if provided within the space;

k) installing window limiters and guarding for balconies or terrace areas;

l) minimizing the risk of touching hot surfaces, such as radiators, by designing features like underfloor heating;

m) avoiding the use of lighting with sensors in some areas.

NOTE 7 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 the 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 sensory processing differences and poor working memory. In an evacuation situation, such difficulties might be magnified by the stress of the situation, or cause additional anxiety, given that the evacuation route 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 physical and 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, people with dyspraxia may have proprioceptive difficulties and might require use of handrails and consultation on speed of travel when ascending and descending stairs.

Plans should also be prepared for evacuation requirements that could arise from unknown visitor needs (sometimes called GEEPs – General Emergency Evacuation Plans).

NOTE 2 Refer to further information on the preparation of PEEPs and GEEPs in BS 9999, BS 9991, FSO supplementary guidance [42] and Sport England - Accessible and Inclusive Sports Facilities 2022[11].

[10] Available at https://www.hse.gov.uk/coshh/
[11] Currently under development.

Evacuation plans should cover all potential emergency evacuation situations, including fire and flood. For some buildings chemical or substance release or leak, bomb alert or any form of attack should also be taken into account.

Escape routes should be designed to take into account the needs of people with cognitive impairments or differences, 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 consulted as part of any fire strategy, policy, and procedures. The sound level of fire alarms should conform with relevant fire safety regulations, whilst not being excessively loud. Alarm sounders and beacons should be specified and positioned to conform with fire safety regulations.

NOTE 3 Loud noises and flashing lights can be overwhelming and increase anxiety, and might undermine the need for a calm, orderly evacuation from the building. Sound levels in lifts and refuge areas can also be problematic. Fire alarm sounders can be challenging for people with hypersensitivity or who are highly sensitive to sound, and can exacerbate tinnitus.

Voice address systems should be taken into account to improve communication from voice instructions which are helpful to everyone. Live and automated voice address systems and live messaging in an emergency should be kept short and succinct, using plain vocabulary. Complex instructions should be avoided.

NOTE 4 Messages that give a list of instructions might not be absorbed or followed by some users and can add to confusion and anxiety.

Systems that alert staff first and rise in sound level progressively should also be helpful in preparing people.

Emergency lighting design should be installed by a professional lighting designer or engineer and conform to the electrical characteristics specified in BS 5266-1. The emergency lighting design should take into account a wide range of user requirements, including the negative or safety impact of sudden significant changes in light levels on some people. In some situations, a higher level of emergency lighting should be taken into account to safeguard occupants.

NOTE 5 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 all escape routes. When calculating the size of temporary waiting areas for assistance (such as 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 (see Annex A, **A.5.1**, for recommended contract on documents);

NOTE 6 Alternative/accessible formats might include audio, audio description, braille, electronic, embossed information, easy read, plain English, large print, accessible PDFs. Where electronic displays and signboards exist, it is helpful to utilize these to reinforce the message that an evacuation is in progress.

c) temporary notices or signs should not use glossy materials, such as laminates or film, which cause difficulties reading and affect people with visual stress;

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

e) sightlines, visual contrast in floor finishes for the location and design of exits (see **5.4**); and

f) 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 7 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.

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.

All areas should provide clarity in both wayfinding and information (see Clause **6**). Transport spaces should be well lit.

NOTE 1 In large transport hubs, signage and information can be affected by glare, especially information screens which are often at high level. Therefore, they can be more difficult to see and more likely to be affected by reflection from lighting. Case studies that provide successful design of wayfinding in airports and large transport hubs are welcome.

A less busy, clear route to avoid navigating the duty free at an airport.

Easy access should be taken into account when planning transport environments.

The appropriate design and placement of information/help desk booths in open environments (such as a transport concourse) should be taken into account to reduce sensory overload.

NOTE 2 For example, when passengers/customers try to engage in conversations with the station staff, whilst filtering out the additional noise and movement around them.

Quieter routes and quiet areas within busy transport environments should be provided where possible, to enable people to remove themselves from busier areas and pause to make decisions.

In emergency evacuation situations in large transport environments, live information boards should be used to communicate instructions in addition to audio announcements.

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.

Multisensory issues such as temperature, light, air quality and acoustics have a substantial impact on the propensity to learn and particular attention should be paid to learning environments that accommodate a balance and allows potential to adjust sensory input.

NOTE 1 Refer to guidance Designing for disabled children and children with special educational needs [12] for further information on specialist educational facilities. This guidance is superseded by BB103 and BB104, but the general guidance in BB102 remains relevant.

Display of learner materials, such as school children's art and project work, should be designated to specific display areas, with other walls kept clear. Structured storage should not be too deep with sliding doors, allowing displays and clutter to be hidden from view some of the time and opened when needed.

NOTE 2 Assistive aids can be used to make some environments more tolerable to people with sensitivity to sounds, e.g. white noise hearing aids are sometimes worn by people without hearing loss at particular times, specifically for this purpose.

NOTE 3 Designing and/or using the home as a continuous lifelong learning environment can create considerable opportunities for people with sensory and/or information processing differences. Structured hands-on tasks and activities can be included throughout the day to help to develop life, communication and social skills, and aid wellbeing. This approach can help to reduce frustration and anxiety, to achieve goals (no matter how small), maintain physical and mental health and improve quality of life [43].

15.3 Sport and leisure buildings

COMMENTARY ON **15.3**

Sports facilities, such as gyms and leisure centres, can play an important role in supporting people's physical and mental health. However, for some people places can become inaccessible due to the higher visual and audible sensory loads they can present in large areas with hard surfaces and glazing found in sports halls and swimming environments.

Tensile coverings of external spaces which are used to allow sports and activities to take place outside during inclement weather should 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**).

Court and pitch markings on indoor and outdoor surfaces should be clearly distinguishable. The use of unnecessary graphics should not be used, as they make it very difficult for some people to play due to identifying the critical markings. Surface finishes on courts should take into account Sport England's guidance on the consistent use of colour markings for different sports.

NOTE 1 For further guidance, refer to Sport England - Sports halls design and layouts [44].

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

NOTE 3 Sports halls on school sites are required under the Building Regulations to at least comply with Building Bulletin 93 [26] with respect to sound insulation, reverberation times and internal ambient noise levels.

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 [45].

NOTE 4 The presence of chemicals for water treatment can present smells that some people might find overwhelming (see **9.1**).

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 confirm that opportunities for quiet spaces are provided (refer to **14.1**), and that reception and waiting areas should not be overwhelming with visual or audible noise (refer to Clause **11** and Clause **12**).

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 are pulled around the bed area for very short periods).

NOTE For more guidance regarding healthcare environments, see Sensory friendly LED lighting for healthcare environments [46].

15.5 Arts and culture

COMMENTARY ON **15.5**

Access to the arts as a choice of career, and as a visitor, are important components of everyday life. However, it can be very challenging for many when practice is not fully inclusive and does not acknowledge the needs of neurodivergent people, staff or visitors with sensory and/or information processing differences.

Recognition of inclusive, accessible practice within service provision (e.g. sensory mapping, information and content structure), working practice (e.g. policy and processes, such as recruitment and retention methods) is important, and it is critical to take positive action to support neurodivergent staff and visitors as they navigate spaces, places and processes.

Taking positive action can be easier by following some of the design recommendations in this PAS. This should also be done in collaboration and consultation with experienced consultants, specialists and people with the lived experience – taking a people-centric approach to design inclusion into every aspect of the staff and visitor experience.

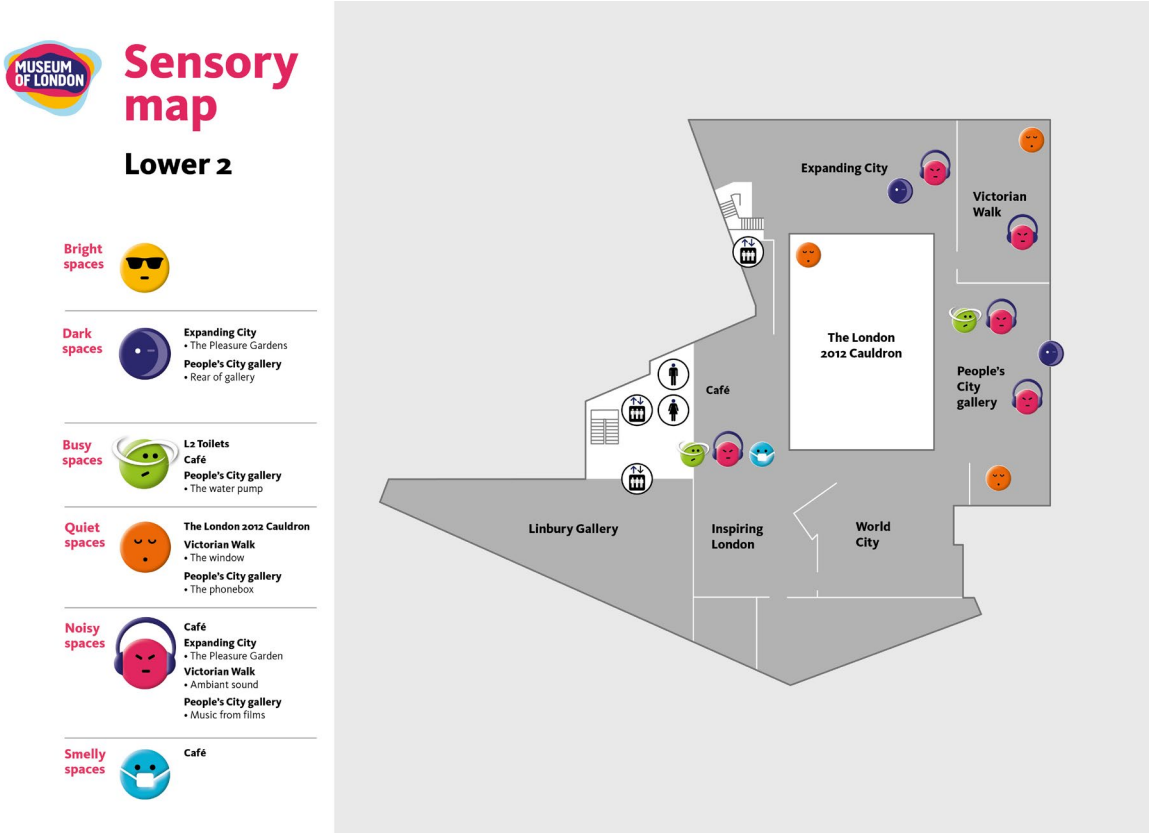
The following actions should be taken:

- champion inclusive practice and positive role modelling, with a people-centric approach at the core of the sector;
- engage neurodivergent people to inform and contribute;
- confirm that policies and procedures are regularly reviewed, and take contributions and guidance from people with lived experience, including neurodivergent people;
- identify the range of visual/sound/olfaction/tactile stimulation across the spaces and places, including areas which have high levels through to quieter areas, to support visitors and colleagues;
- offer opportunities for flexible working;
- provide clear advance notification and potential preview to audiences or visitors of where sounds or visuals are triggered automatically by sensors (sensory mapping could be used to show this – see Figure 14);
- offer welcome guides for all visitors explaining on-site features, what that means for them and give options to avoid any triggering spaces or exhibitions;
- provide transcripts, live or closed captions to support focus on accessibility;
- offer relaxed performances and events, creating calm and inclusive experiences;
- offer a range of alternative formats for information; and
- introduce a clearly sign-posted quiet room or area for calm and recovery.

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

NOTE For example, some people can find it difficult to respond 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. Providing information with an LED backlit display can create difficulties and alternative formats are welcomed.

Figure 14 – Sensory mapping example: Museum of London



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15.6 Living and sleeping accommodation

COMMENTARY ON **15.6**

Whilst this PAS does not necessarily provide sufficient or bespoke guidance for specialist housing, applying many of the general principles to the design or management of general housing should be beneficial. This includes single family dwellings, and retirement and supported housing.

Other design principles referenced in this PAS might also apply and are used as a tool to improve design for all.

The application of this PAS design and management principles should be applied to both new build and existing premises during planning and design stages and/or when a person's home environment is being modified, refurbished or retro-fitted. The guidance should be used to assist designers and specifiers, including other professions such as occupational therapists, to achieve more successful, inclusive design solutions. Applicable specifications for each situation vary; however, key aspects such as logical layouts to assist navigation and wayfinding, flexible use of space and adaptability, suitable acoustics and lighting, the avoidance of glare, temperature and touch preference should all be taken into account. Specifying or procuring appropriate products/fixtures and fittings, together with appropriate use of tonal contrast/ use of colour and aesthetics are all measures which should be used to reduce confusion and anxiety, and reduce the potential for sensory overload.

NOTE 1 Occupational therapists can play a key role in modifying and making recommendations on the design of new build housing, as well as home adaptations and modifications to living accommodation, and are a relevant target audience for this PAS.

NOTE 2 Designers and operators of hotels, guest accommodation and halls of residence should consider the principles set out in this PAS in order to anticipate and be able to offer greater flexibility for visitor/guest requirements for overnight facilities. Hotel operators can also refer to BS 8300-2 for further accessibility and inclusive design guidance.

NOTE 3 Refer to **15.2**, Note 3, for guidance on the use of a home setting as a learning environment.

Annex A (normative)
Management and maintenance

A.1 General

Management and maintenance considerations play a significant role in the operation of the built environment post-design and should be taken into account and regularly reviewed. Management or maintenance recommendations included in this PAS should be put in place to support specific design measures, so that it forms a holistic approach. The additional points contained within Annex A should also be taken into account by managers working within policy, HR or facilities or estates management.

Management actions should include:

a) provide staff with appropriate awareness training on how to support people with sensory and/or information processing differences;

b) devise policies, procedures and communications that are sensory-friendly, inclusive and enable reasonable adjustments to be provided; and

c) implement evacuation procedures that take into account reasonable adjustments for sensory and/or information processing differences.

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

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 with no connection 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 are very busy;
- situations where routes or circumstances are temporarily altered (such as during construction works); 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 that provide inclusive and accessible environments for all. For further information on making adjustments in the workplace including recruitment, interview process and how to champion neuro-inclusive workplaces, refer to Neurodiversity at work [47].

A.2 Consultation and engagement

Consultation and engagement with people with a broad spectrum of sensory and/or information 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 1 Refer to "Neurodiversity in planning: Engagement toolkit" [6] for the seven principles on engaging with neurodiverse people.

NOTE 2 Sensory preference cards can be a useful tool to assist in understanding sensory preferences where communication barriers exist.

A.3 Procurement

A structure should be established to verify inclusive design considerations are embedded when procuring goods and services.

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 providing recycled paper towels as an alternative to a noisy hand dryer).

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 helps 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 temporary items to minimize the risk of injury on impact.

Quiet rooms should be properly managed and maintained to establish correct 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.

Maintenance and cleaning techniques should be adopted that adhere to manufacturers' recommendations, e.g. correct cleaning methods used for flooring, particularly where floor finishes include specialist finishes.

Scented items, such as perfumed cleaning products and 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.

NOTE To assist people with hypersensitivity to chemicals, it is advisable to avoid the use of synthetic fragrances in toilet and public areas. Air purification systems can be used where scents or odours are likely to arise.

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). A temporary alternative should be provided that gives consistent light levels until replacements are available.

A.4.2 Quiet and restorative spaces

Once created, quiet rooms or spaces should be monitored to see whether more spaces are required to meet demand.

The success of such spaces should be measured by management to confirm they are readily available when needed most and in an acceptable condition, i.e. clean, orderly, and ready for adjustment by the next user.

Items should be returned that are taken out of a cupboard, rather than leaving the space cluttered. Lighting should be returned to a midway setting, not too dim or too bright, and blinds/curtains left open.

A.4.3 Office workspace management

NOTE 1 In some workplaces, there are opportunities to develop familiarity over time and to work within a consistent setting.

Some people find changes difficult to manage, and efforts should be made to support people who find such variation difficult.

For example, hot desking or other bookable desk arrangements should use a clear booking system that describes the location and local environment (in particular, a form of sensory mapping), and 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 2 Flexible desking arrangements, whereby an individual could be allocated a desk in a different position every day, can cause anxiety in some people.

NOTE 3 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 4 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.4.4 Meeting and collaboration space

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

- size and layout of the room, and spacing and availability of seats;
- 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 are provided at each table position for someone relying on a computer for assistance or an extension lead.

In addition to the information provided, 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 1 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 and/or information processing differences should be given the opportunity to have a pre-agreed desk position in the same way that someone with a physical impairment requires a specific desk or set up. 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 verify that significant requirements are fairly prioritized.

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 to reduce the amount of clutter.

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 2 Many people with sensory and/or information processing differences are 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 alternatives are sourced. Organizations should establish a protocol on the purpose of a quiet or restorative space, including how it should be used.

A.4.5 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, 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. An adequate number of bins should be provided so that bins are not overflowing later in the day.

Where possible, eating at desks should be discouraged, as this affects people nearby. Alternative dining arrangements should be made available. Staff should be made aware that the sound of eating and drinking causes sensory overload or anxiety for some people.

NOTE Some people might have particular sensitivity to low level sounds, such as chewing and swallowing, e.g., misophonia.

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 kitchens, tea points or canteens where extraction and ventilation are provided.

With provided food in meeting spaces, a policy or procedure should be introduced so that the area is cleared and, where possible, ventilated before the next use.

A.5 Communication

Opportunities for visitors to seek additional information, both before and during a visit, are helpful in providing reassurance and should be given where possible.

Communication related to 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 technologies are used to provide information, there should be an alternative available for people who find screen technology difficult.

Moving images such as advertising screens cause visual confusion, so they should be positioned where people have the choice to avoid them. They should not be in the primary sightlines for people using desks or meeting tables.

NOTE 4 For example, they can be positioned on side walls or recessed, rather than straight ahead.

Information should be provided on known busy times so that people 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 plain paper;
- wider line spacing;
- left justified text;
- sans serif text;
- avoiding long paragraphs;
- when using colour coding, 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;
- offering more than one format type; 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; however, note that not everyone works easily with numbers in the same way).

NOTE 1 Refer to BS 8300-2, Annex A, for additional guidance on communication issues. Accessible and alternative formats guidance can also be reviewed at www.sensorytrust.org.uk/resources/guidance.

Safety-related information, such as documents on emergency evacuation procedures, including GEEPs and PEEPs, should always be in a concise and accessible format, taking into account sensory and/or information processing differences that impact how quickly and easily they are understood. Staff should be trained in assisting and supporting people with sensory and/or information processing differences during all emergency alarm situations, including alarm testing and faults.

NOTE 2 Refer to **14.5** for guidance on emergency evacuations.

NOTE 3 Many people with sensory and/or information 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 4 For further guidance on fire safety issues for disabled people, see 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 considerations are needed.

Whilst temporary notices or screens add visual clutter, there are a number of instances where these should be taken into account for the improved 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 communicating last minute changes in situ should be established.
- advance notice of an escalator or moving walkway should be provided, so that people are able to make timely decisions on alternative options. The notice should include directional information on the alternatives available and where to find them.

NOTE 1 Escalators and moving walkways are difficult for some people to step on and off and negotiate safely. They are often difficult for people with visual, vestibular and neurodegenerative conditions to use, and provide a visually complex, moving pattern on the tread and riser surfaces which might be overwhelming.

- where circulation spaces are unusually long (typically > 100 m) 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 to state if these are provided.

NOTE 2 Complex or repetitive patterns or clutter at high level in a corridor or aisle (such as a shopping aisle) place more demand on depth perception, making the vestibular system work harder to integrate visual information. Breaks in corridors or aisles can be helpful.

- floor standing temporary signs and notices should not encroach on routes or people movement unless there are specific safety reasons to do so. Temporary notices and instructions should be suitably distanced from directional signages to avoid visual overload and confusion.

NOTE 3 For example, the positioning of a warning sign to guard a temporary spillage or other temporary hazard.

- where routes are particularly uneven, a notice explaining this should enable people with conditions such as dyspraxia to make appropriate decisions on whether to seek an alternative.

NOTE 4 Examples include uneven terrain, muddy areas, cobbles or stones.

- to supplement or support the evacuation procedures in place.
- to provide live digital information at busy times so that people are able to avoid areas of significant congestion.

NOTE 5 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 and/or information 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 situations or environments that are particularly challenging, including:

- devices to block out unwanted sound, such as ear plugs and noise cancelling headphones, ear defenders when entering loud areas, or 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 as blankets, beanbags, cushions, soft fabrics; and
- stimulation devices or gadgets that aid concentration, which could include seating that has some movement, rock or tilt, or handheld fidget items.

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

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 and control in quiet/restorative spaces
Sound	Provide optional sounds on an individual basis Provide earplugs or noise cancelling devices Provide individual pods/capsules where people are able to 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 pods/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 (check they do not influence the room temperature) Provide means of warming such as blankets
Olfactory	Provide optional objects with natural fragrance (make sure it does not emit scent)
NOTE Sadia. T, 2020.	

Table B.2 – Summary of design considerations for sensory sensitivity

Design feature	Baseline design (neutral) for hypersensitivity		Optional additions for hyposensitivity (by individual choice)[A]	
	Attributes	**Comments**	**Attributes**	**Comments**
Sound	No intrusive or manufactured sound	But not completely silent	Nature sound	Avoid if simulated, monotonic or repetitive Preference for water sounds[B]
	Good acoustics	Low reverberation time No audible echoes; use soft absorptive materials	Music	Provide a variety of options If in main space: soft, instrumental and slow
Lighting	Artificial lights	Avoid fluorescent lights Provide low level indirect lights with warm CCT (correlated colour temperature)	Artificial lights	Provide options for brighter lights and/or cooler CCT
	Daylight and windows	Provide access to daylight and outside views Reduce glare	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

Table B.2 – Summary of design considerations for sensory sensitivity *(continued)*

Design feature	Baseline design (neutral) for hypersensitivity		Optional additions for hyposensitivity (by individual choice)[A]	
	Attributes	**Comments**	**Attributes**	**Comments**
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 Check that the space is not too bright, avoid glare Maintain low contrast and smooth colour transitions	Textures	Might be too rough for neutral space
	Dark colours (optional)	For a separate section of the quiet space Assist in providing visual relief	Warm colours	Might be too distracting for neutral space

Table B.2 – Summary of design considerations for sensory sensitivity *(continued)*

Design feature	Baseline design (neutral) for hypersensitivity		Optional additions for hyposensitivity (by individual choice)[A]	
	Attributes	**Comments**	**Attributes**	**Comments**
Furniture	Comfort and texture	Most important furniture qualities to consider	Variety	Provide a variety of furniture options
	Chairs, pillows, beanbags, tables and blankets	Establish comfortable and 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) Verify no visual disturbance
Decoration	Plants	Avoid extreme elements (e.g. spikes, sharp edges, strong contrast patterns)	Images	Provide images of tranquil nature Consider images of abstract art
Thermal comfort	Cool environment	For regulating body temperature	Cool materials or objects, warming objects	For example, 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

Table B.2 – Summary of design considerations for sensory sensitivity *(continued)*

Design feature	Baseline design (neutral) for hypersensitivity		Optional additions for hyposensitivity (by individual choice)[A]	
	Attributes	**Comments**	**Attributes**	**Comments**
NOTE 1 Sadia. T, 2020. **NOTE 2** Sensory preferences can be assessed in many ways, including the use of a toolkit of sensory mapping cards.				
[A)] Optional additions by choice can 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 can be verified that their use does not disturb other users of the space. [B)] Water sounds in offices can be calming, but such sounds might be unhelpful on hospital wards and in older people care settings where they may trigger more frequent demand for toilet visits.				

Annex C (informative)
Symbols for wayfinding

Annex C provides guidance on the use of symbols for wayfinding.
Table C.1 references symbols that are internationally recognized and can be used instead of, or to supplement, 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

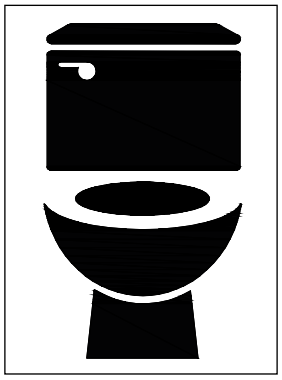
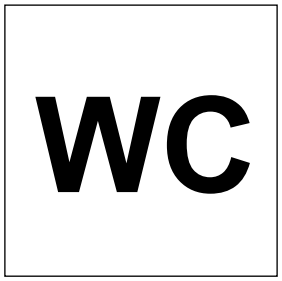
Symbol	Meaning	Registration number
	Female WC	BS 8501.5001
	Male WC	BS 8501.5002
	WC (option 1)	—
	WC (option 2)	—

Table C.1 – Symbols for wayfinding *(continued)*

Symbol	Meaning	Registration number
	Accessible WC Accessible route Accessible parking	BS 8501.4106
	Baby care facilities (option 1)	BS 8501.5009
	Baby care facilities (option 2)	—
	Showers	BS 8501.5013
	Information (option 1)	BS 8501.6001

Table C.1 – Symbols for wayfinding *(continued)*

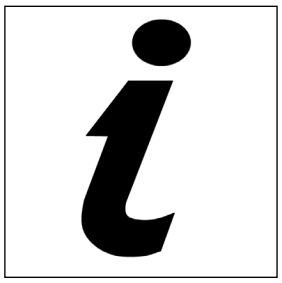
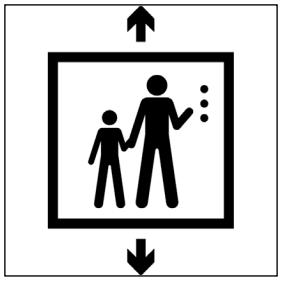
Symbol	Meaning	Registration number
	Information (option 2) [BS 8501 defines as "tourist information"]	BS 8501.6002
	Telephone	BS 8501.6003
	Steps	BS 8501.4108
	Lift	BS 8501.4113
	Assistance dogs allowed	BS 8501.4115

Table C.1 – Symbols for wayfinding *(continued)*

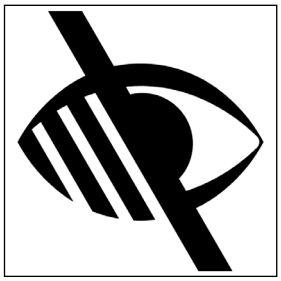
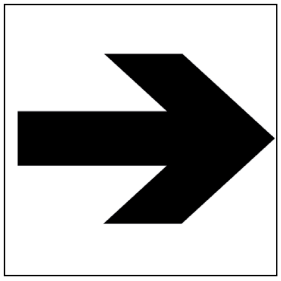
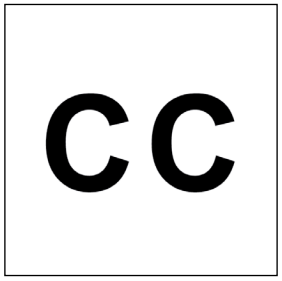
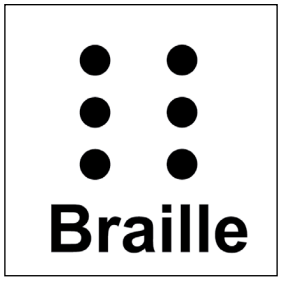
Symbol	Meaning	Registration number
	Information or facilities for blind people	BS 8501.6025
	Direction arrow	BS 8501.4119
	Assistive Listening system available	BS 8501.6023
	Induction loop present	BS 8501.6024
	Equipment to enhance microphone sound is set up for people listening through an infrared receiver	BS 8300-2

Table C.1 – Symbols for wayfinding *(continued)*

Symbol	Meaning	Registration number
	Sign language interpreting/ translation available	—
	Closed captions available	—
	Braille information available	—
	Audio description available	—

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