Design for Mental Health

HOUSING DESIGN GUIDELINES

To promote independent living and mental health recovery.

Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

housing agency

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Introduction

These guidelines identify ways in which homes can be designed to help overcome the barriers to independent living experienced by people diagnosed with certain mental health conditions. The guidelines offer a perspective on housing type and design for people considering alternatives to congregated settings.

Government policy on mental health in Ireland and in many other countries is strongly committed to community care and recovery principles. However no specific design guidance on home environments that foster independent living for this group exists.

One of the most basic needs of every person is to live in a suitable home. For people with severe mental health conditions, meeting this basic need has presented particular challenges. In the past psychiatric institutions provided housing for this group. With the closure of these institutions the issue of where people will live has not been satisfactorily resolved. There are still many who use the mental health services living with their parents into middle age or in health service-provided congregated accommodation.

The emphasis in these guidelines is on maximising functional abilities and minimising barriers through the provision of good design, so that people are empowered to live in their own homes with appropriate supports where required. The overall bias is on a positive and enabling built environment.

Internationally, research has been published on designing psychiatric hospitals (e.g. Karlin and Zeiss, 2003) and group homes (e.g. Cleveland Urban Design Collective, (not dated). However, little is documented to guide good practice in the development of individual home environments.

People with disabilities caused by mental conditions such as schizophrenia have a distinct set of needs. One of the biggest barriers to independent living is difficulties with specific cognitive skills. These difficulties can compromise some people's ability to carry out their daily activities effectively. Other areas for consideration are personal safety, social isolation and physical stamina. By means of good design, this guide hopes to support a person achieving and maintaining their optimum level of functioning and quality of life.

As in the case of a person with a physical disability, and indeed for everybody in society, a well organised, needs-driven, tailored environment can make it easier for people diagnosed with mental health conditions to carry out daily living tasks, reduce environmental stressors and promote independence and quality of life. We hope this document will provide guidance into ways of designing and fitting out buildings and interiors, including the adaptation of existing dwellings, that will assist people in bypassing some of their specific difficulties. The aim is to ensure that people with disabilities caused by mental health conditions can live comfortably in their own homes and communities.

It is anticipated that this guidance will be particularly useful for those involved in providing housing for people diagnosed with mental health conditions including service users, families and carers, housing providers, housing professionals in local authorities and voluntary housing bodies, including health service professionals such as occupational therapists, along with architects and other design professionals.

Structure and scope

The guide is divided into four sections and appendices:

- **Section 1** 'Overview' describes the basic concepts and factors to be considered in designing housing for this group and provides an overview of design solutions to address specific needs.
- **Section 2** 'The Home' provides guidance on the location and dwelling type.
- **Section 3** 'Spaces Within the Home' provides detailed guidance on the design of individual rooms and spaces within the dwelling.
- **Section 4** 'Detail Design' provides guidance on building elements and services.
- **Appendices A to D** expand on the guidance and tools for implementing this guide.

The recommendations within this guidance relate to a very specific set of problems experienced by some people diagnosed with mental health conditions. This guide will not provide for conditions or circumstances beyond this area but can be cross referenced with other specialist guides to meet broader needs. Statutory and legislative requirements must also be complied with, as they apply.

The recommendations in these guidelines are based on literature research and expert opinion rather than on empirical research or direct service user feedback.

Some of the recommendations in this guide need to be combined with adequate supports to fully achieve the intended improvements in independence and quality of life.

Acknowlegements

The Health Services Executive and Housing Agency would like to thank the many people who contributed their advice, knowledge, experience and time to this project.

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SECTION 1

OVERVIEW

CHAPTER 1

Context

This chapter outlines information relevant to housing and mental health under the following headings:

1 | **Mental health and independent living**

2 | **Government policy**

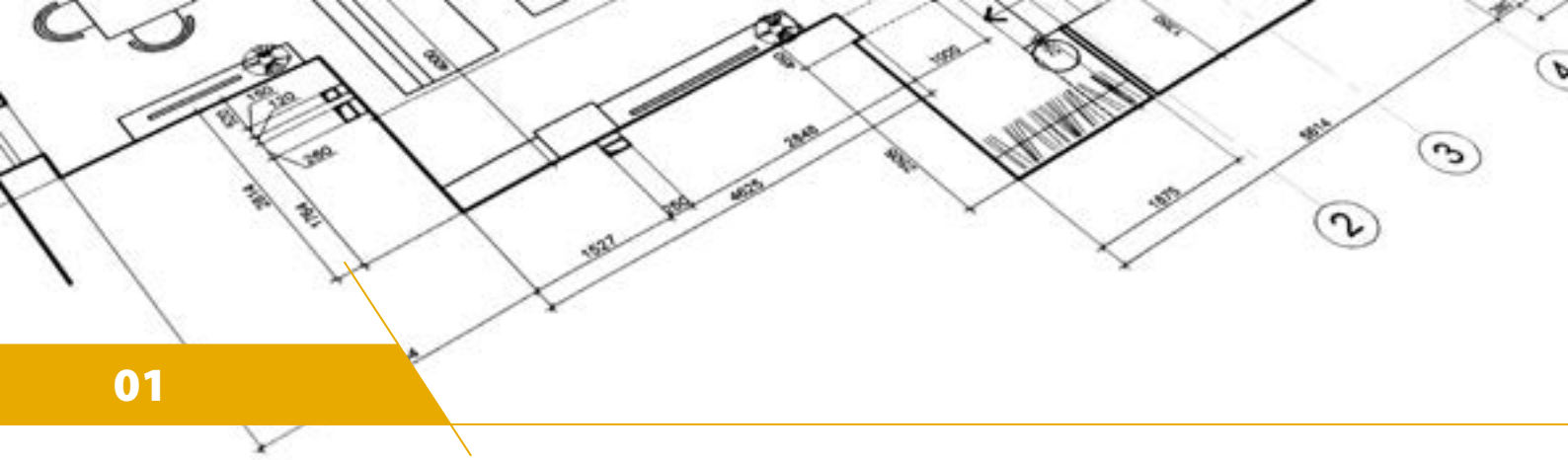
3 | **Mental health and disability concepts**

4 | **The built environment and mental health**

5 | **Design concepts**

6 | **Assistive technology**

7 | **Why specialist design?**



01

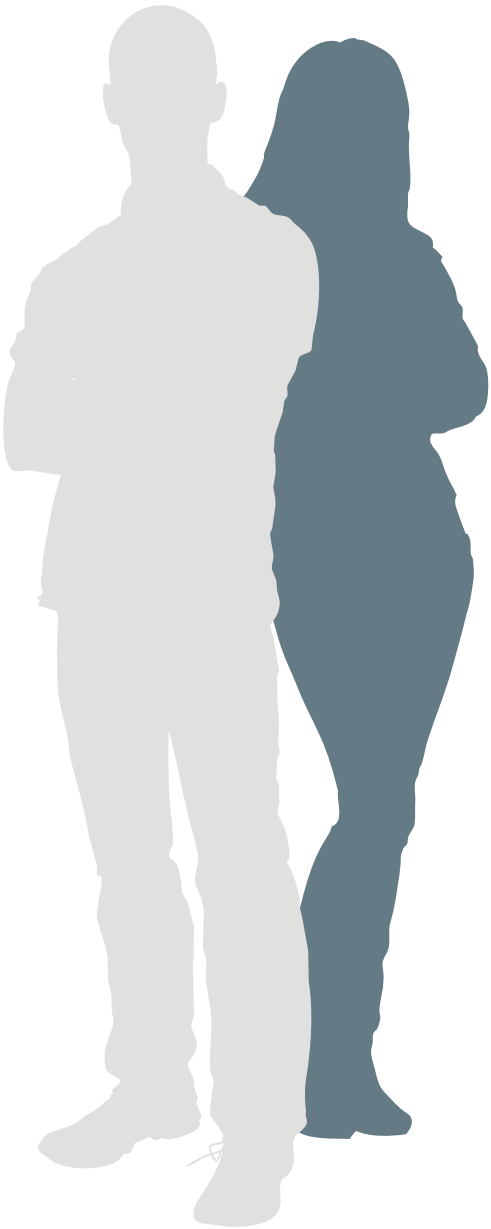
Mental health and independent living

One in four people experience mental health issues at some time in their lives. There are many different facets of human behaviour and personality that can become disordered. For example, anxiety or fear that interferes with normal functioning may be classified as an anxiety disorder. Intense and sustained sadness, melancholia or despair is known as depression. An abnormally 'high' or pressured mood state, is known as mania or hypomania. When these states alternate with normal or depressed mood this is known as bipolar disorder. When a person's perceptions, beliefs and thinking go awry (hallucinations and delusions), this is known as a psychosis. When a psychosis is present for a period of time, is disabling for the person and has no other explanation, a person may meet the criteria to be diagnosed with schizophrenia.

Just as there are many different types of mental disorder, there are many different ways in which a person's daily living skills can become impacted, e.g. a person may stop looking after themselves due to the low mood associated with depression. Most of these are temporary and are alleviated when the symptoms resolve.

For a small minority, difficulties with community living are more enduring. Certain long-term conditions are more debilitating and can make daily life more demanding. The recommendations in these guidelines are designed to meet the needs of this fraction of the population.

Difficulties with independent living are caused by many diverse factors. These include features of the condition and the treatments involved and features of the physical and social world that surrounds the person. The following sections briefly outline these factors.



Social Life: Many individuals with mental health issues do not socialise regularly, are not in clubs or organisations, tend not to eat in restaurants or go to pubs and rarely go to social events with others.

Social: Disability caused by mental health conditions, like other disabilities, is a multidimensional social phenomenon. As a result of this, people can experience a wide range of social and personal disadvantages.

Economic: Studies of populations with severe mental conditions have universally found that they experience low levels of employment.

Physical: Many people with a mental health condition also have co-existing physical ailments, often leading to decreased stamina or dexterity restrictions, which can make everyday living more demanding.

Cognitive: Cognitive deficits experienced by many people with schizophrenia are strongly associated with longer-term difficulties in day to day functioning.

Safety and protection need to be carefully considered within the context of the person's needs.

Schizophrenia is a major cause of disability and is ranked as the third most disabling condition after quadriplegia and dementia and ahead of paraplegia and blindness.

Social Stigma: 'Not in My Back Yard' phenomenon – where neighbours may object to people with mental health conditions moving into their area.

Violence: Myth – people with mental health are violent. Truth – they are frequently victims of violent crime.

Cognition

The association between mental illness and emotional and behavioural problems is well known. However, the cognitive difficulties experienced by people with mental illness are less well known and are often misperceived (e.g. as laziness). They can result in frustration, low self-esteem, low coping and feelings of worthlessness for the individual involved.

Cognitive skills are the mental capacities or underlying skills required to process and learn information, to think, remember, read, understand and solve problems. Many people, particularly those with schizophrenia, may find it difficult to think clearly, pay attention and remember. For some people cognitive problems are only evident during episodes of illness, while for many others the cognitive problems are more persistent.

It is now generally accepted that cognitive deficits are experienced by many people with schizophrenia and are strongly associated with longer-term difficulties in functioning (e.g. Green, 1993). Schizophrenia affects around 0.3-0.7% of people at some time in their lives, or 24 million people worldwide (Van Os and Kapur 2009). Schizophrenia is a major cause of disability, and is ranked as the third most disabling condition after quadriplegia and dementia and ahead of paraplegia and blindness.

Cognitive difficulties are also associated with other mental health diagnoses such as major depression and bipolar disorder (e.g. Snyder et al 2015). In the past it was commonly understood that cognitive abilities were restored as the symptoms heal, however some studies report that the impairments observed in the acute phase can persist in periods or remission. Research findings are inconsistent which may indicate that this only holds true for certain subgroups of the population who experience these conditions (e.g. Hammar and Ardal 2009).

Awareness and understanding of cognitive difficulties are important for housing design because they can cause a person to interact with things (objects in their environment) differently and impact on the person's abilities to use their home environment easily and efficiently. See Appendix B for a more detailed description of the cognitive difficulties experienced by this population.

Physical health

Many people with a mental health diagnosis have coexisting physical ailments, or have physical health difficulties as a consequence of the treatments and health behaviours associated with severe mental health conditions. Awareness and understanding of physical difficulties is important for housing design as they can result in problems such as decreased stamina or dexterity restrictions which impact on the person's ability to use their home environment.

Social disability

Disability caused by mental health conditions, like other disabilities, is a multidimensional social phenomenon. Because of this people can experience a wide range of social and personal disadvantages. These are outlined below.

Economic status

Studies of populations diagnosed with severe mental health conditions have universally found that they experience low levels of employment, and when they are employed they are more likely to work part time, and sporadically, with poor promotion prospects. This has an impact upon the person's standard of living (Bruce 2001). For example, they may have low levels of home ownership and car ownership, fewer holidays, no life assurance policies and not have private pensions.

Social Life

For a variety of reasons, this population tends to have weaker social networks than the general public. A study in Northern Ireland (Prior; 1993:24) describes ex-institutionalised people as 'living in a world composed of other ex-patients, psychiatric professionals and care staff'. An Irish study (Bruce 2001) showed many individuals did not socialise regularly, were not involved in clubs or organisations, did not eat in restaurants or go to pubs and rarely attended social events with others.

Violence

A common myth is that people with mental health conditions are violent and dangerous. What is less commonly known is that people with severe mental health difficulties are much more frequently victims of violent crime than are members of the general population. An American study showed that for people with mental health conditions rates of violent crime victimisation were 2.5 times higher than that of the general population (Borum and Wagner 1999). These authors point out that this may be an underestimation as people in this group, 'under-complain' to the authorities.

Social Stigma

The social stigma associated with mental health conditions is a widespread problem. The violence mentioned above is one (extreme) element of this. Another is the 'not in my back yard' (NIMBY) phenomenon where neighbours object to people with mental health difficulties moving into a locality.

There is an element of vicious cycle to social stigma and other social factors and mental health conditions. Social problems exacerbate mental health difficulties which in turn make the social difficulties much worse, e.g. some people are in poor accommodation because of their mental health condition and in many cases their poor accommodation has exacerbated their mental ill health.

Risk

Safety and protection are integral ingredients of good design and are exemplified by health and safety and building standards. In hospitals the threshold for safety design increases, to protect those that are acutely unwell. Much debate arises about the appropriate level of safety design for accommodation for service users when building in the community. In simple terms the debate centres on 'risk versus need'. The service provider's perspective tends to emphasise risk assessment, while the service user and carer's perspective tends to focus on personal needs.

An example of this arose when an opportunity presented itself for a mental health service to acquire a detached property in an urban setting beside a canal. A lengthy discussion ensued as to whether the canal posed an intolerable risk to any would-be tenant and whether it was an appropriate location for mental health housing. In the end logic prevailed and moving forward a decade that service still has a beautiful private residence in a tranquil city location within an environment that promotes mental health wellbeing. Ironically the residents commissioned a life buoy to be erected outside the property in case a need arose to assist passers-by in the event of someone falling into the canal.

According to the Royal College of Psychiatrists (2010) risk cannot be eliminated and accurate prediction is never possible for individuals, because of the multiplicity of and complex interrelation of factors underlying a person's behaviour. For the purpose of this document reasonable and justified precautions are recommended in design guidance. However, the overall bias is on a positive and enabling built environment.

02

Government policy

Ireland's current policy document on mental health *A Vision for Change* (Department of Health and Children, 2006) emphasises the importance of independence and recovery for those with persistent mental health conditions. Regarding housing, it states 'The majority of new service users, including those with severe mental ill health, will not require community residential facilities but may need varying degrees of support to live in individualised, independent accommodation.' [p109]. It advocates the mainstreaming of housing provision, pointing out that 'The statutory responsibility to provide this housing is not within the remit of the mental health services or the HSE. Close cooperation with relevant housing authorities is required to ensure this obligation towards people with severe and enduring illness is honoured.' [p109].

In 2011, the government outlined its strategy on housing for people with disabilities (Department of Environment, Community and Local Government, 2011 (now the Department of Housing, Planning, Community, and Local Government).This strategy set out a number of aims, including 'equality of access for all people with disability to the full range of housing options' and 'to support people with a disability to live independently in their own houses and communities'. In that document the government recognised that the provision of good quality, secure and appropriate housing was a key factor in facilitating recovery. It set out the principles by which the specific and complex housing needs of people with a mental health disability could be identified and addressed effectively in order to assist in the promotion and sustainment of recovery.

Ireland's current policy document on mental health A Vision for Change (Department of Health and Children, 2006) emphasises the importance of independence and recovery for those with persistent mental health conditions.

03

Mental health and disability concepts

The following mental health/disability-related concepts have influenced the formulation of this guide.

Recovery

In Ireland over the past decade, there has been a growing focus on recovery within mental health services. Policy documents have shifted away from focusing exclusively on the elimination of symptoms towards increased emphasis on rebuilding a valued life, reclaiming valued social roles and the establishment of a positive self-identity (A Vision for Change, 2006).

Adequate housing is frequently cited as one of the components necessary in a person's life to support the process of recovery. Mental health consumers consistently report a strong preference to living in their own homes with appropriate supports (e.g. Tanzman 1993).

International Classification of Functioning, Disability and Health

The International Classification of Functioning, Disability and Health, known more commonly as ICF, views functioning and disability as a complex interaction between the health condition of the individual and the contextual factors of the environment, as well as personal factors. The picture produced by this combination of factors and dimensions is of 'the person in his or her world'. The classification treats these dimensions as interactive and dynamic rather than linear or static (World Health Organisation, 2001). This broadens the view of the person from one that focuses on disease alone to one which includes other components, such as the environment, activity participation, and other people. Disability is

seen as the result of the interaction between a person's health problems and how society is set up; hence much can be done to improve the individual's experience of a health problem by adjusting the social and physical environment.

The ICF model is very relevant for people living with severe mental health conditions. In the past the individual's entire situation was seen as a manifestation of illness. The ICF model gives domains like the environment, social stigma, activity levels, personality, health status, caregivers' behaviour and social participation an equally important status in the outcome for the person.

Person environment and occupation

One of the basic assumptions of occupational therapy is that participation in meaningful activities is essential to health and wellbeing (e.g. Roley et al. 2008). Environmental factors are considered crucial and intervention at an environmental level (both the physical and social environment) is emphasised in best practice guidance facilitating a person's engagement in and performance of any activity.

The understanding of the interaction of the person and their environment has been further developed by Fisher (2003 & 2009), Velligan (2013) and Allen (1992). These theorists have developed practical ways of quantifying and addressing difficulties.

Models of specialist housing provision in mental health

There are two main models of specialist housing provision for people with disabilities caused by mental health conditions (e.g. Pleace, 2011). The more traditional model is one in which individuals move through different levels of housing support and each level moves them closer to independent housing e.g. from accommodation providing 24-hour care, to night-time only supervision, to sporadic supervision to independent living. Care and housing needs are often met by the same provider. They operate from a concept of 'housing readiness' and individuals must address any barriers to living in lesser levels of supervision before moving to the lower care.

The Housing First concept is that a homeless individual or household's first and primary need is to obtain stable housing, and that other issues that may affect the household can and should be addressed once housing is obtained. In this model people move straight into housing and their support needs are met through a variety of agencies. In general, the housing and support needs are delivered separately and there is security of tenure so that if the person does relapse they will not lose their home.

04

The built environment and mental health

There is a body of literature exploring the impact of the built environment on mental health. Galea et al (2005) found that people in general living in neighbourhoods characterised by poor internal and external features of the built environment were 29% to 58% more likely to report depressive symptoms in the past six months than others living in a better built environment.

Issues such as insufficient daylight are associated with increased depressive symptoms. Poor ability to control environmental stressors, such as noise exposure, is also associated with an exacerbation of mental health issues. The environment can also positively affect mental health. The natural elements in the built environment such as plants and views of the natural environment from windows are associated with reducing stress and diminishing cognitive fatigue (e.g. Evans 2003).

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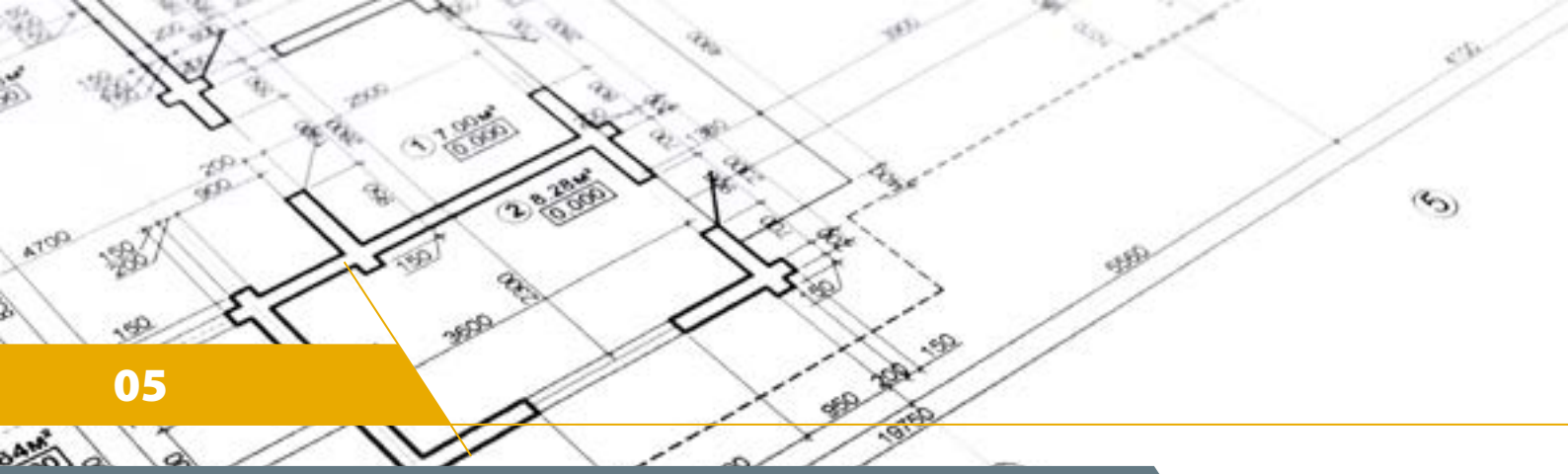


05

Design concepts

Research about design for other disability groups such as *Technology Research for Independent Living* (TRIL), Dublin (e.g. Bailey et al., 2010); and Alzheimer Australia (2004) has shown that a well-designed environment can support people with a variety of physical and cognitive disabilities by compensating for impairments and maximising independence and integration into the community. The principles applied in these projects should also be applicable to the cognitive disabilities experienced by people with severe and enduring mental health issues.

The following concepts have influenced the formulation of this guide.

Environmental press

This conceptual model draws attention to the interaction between the person and their environment. It suggests that a person's ability to adapt to their environment or deal with the challenge presented by particular activities is influenced by both the demands of the environment (**environmental press**) and the person's own capabilities. The 'environmental press' will have a greater demand as the competence of the individual decreases.

Behaviour in a particular environment can be altered either by changes in the person e.g. skills training to improve functioning or by altering the level of environmental press – e.g. improving the environment (Lawton and Nahermow 1973).

Affordance and person-centred design

The concept **affordance** describes the link between a person's perception of an object and how they use it, for example, a knob affords twisting and perhaps pushing, while a cord affords pulling. The user must discover the physical characteristic and act accordingly. When an object's use is unclear, this can lead to mistakes and inefficiencies. Because of this an object or environment can present a greater or lesser challenge to the user. The person's capabilities in perceiving and understanding are an important factor in most definitions of affordance (Gibson, 1977 and 1979 and Norman, 1988). Norman uses the term 'signifier' to denote a more specific instruction on what action is required e.g. a push/pull sign on a door or an arrow indicating which way to push a knob.

Norman also explores the concept of **person-centred design** – design that focuses on the needs of the user (other considerations such as aesthetics are of lower priority). He outlines many aspects of user-centred design such as simplifying the structure of tasks, making things visible, getting the mapping right, and designing for error.

Mental models and **system Images** are two other concepts put forward by Norman in understanding how people interact with their environment. Mental models are the models people have of themselves, others, the environment and the things with which they interact. They shape behaviour and set an approach to solving problems and doing tasks. The system image is defined as the information conveyed by the physical product itself. When the system image of a device is incomplete, contradictory, incoherent or inappropriate the user cannot easily use the device.

The cognitive difficulties that many people living with schizophrenia and some other mental health conditions frequently experience mean that objects do not stimulate the actions they 'afford' as easily as with the general population. In addition, models of objects or situations may not be formed as efficiently. Hence they find poorly designed doors, light switches, taps etc. more demanding, frustrating and disabling than the general population. Some of the recommendations contained in this document are an attempt to design living spaces that compensate for or avoid or bypass these difficulties.

Universal design

According to the Centre for Excellence in Universal Design (CEUD), Universal Design is 'design of products and environments to be usable by all people to the greatest extent possible without the need for adaptation or specialised design' (National Disability Authority, 2012). Designers are advised to ensure that their resulting housing design solutions do not immediately appear to be anything other than good design.

There are several recent Irish publications on Universal Design including *Buildings for Everyone, A Universal Design Approach* published by the National Disability Authority in 2012. This provides comprehensive proactive guidance on how to design, build and manage buildings and spaces so that they can be readily accessed and used by everyone, regardless of age, size, ability or disability. *Universal Design Guidelines* for Homes in Ireland was published in 2015 by the CEUD. It concentrates on four key design principles.

These state that a Universally Designed house should be:

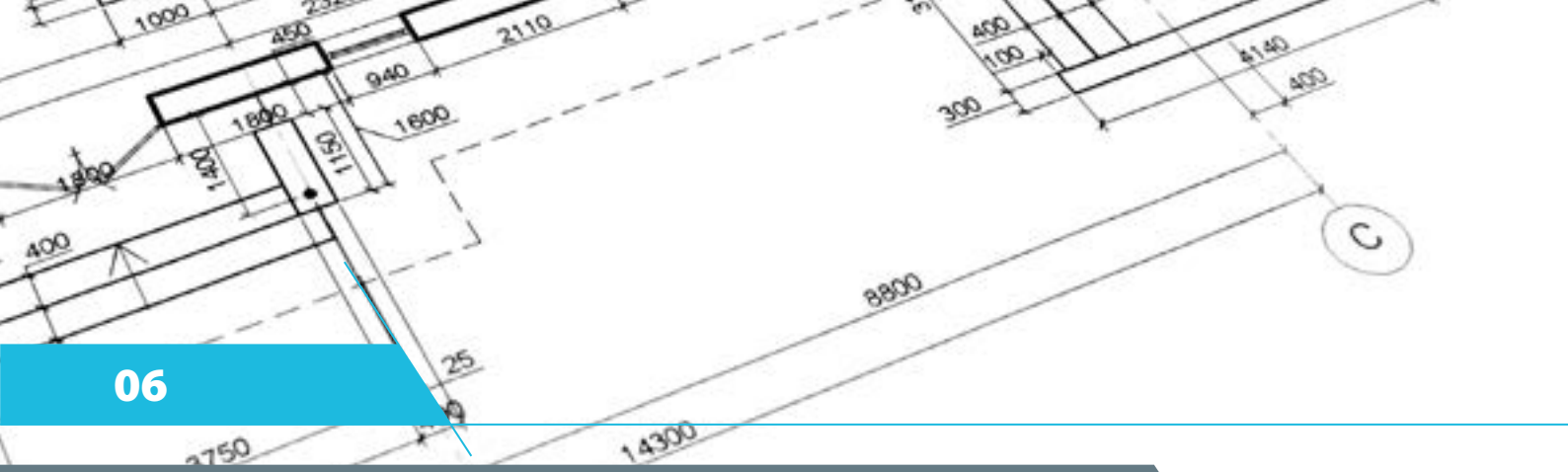
1. Integrated into the neighbourhood
2. Easy to approach, enter and move about in
3. Easy to understand, use and manage
4. Flexible, cost effective and adaptable over time

In 2015 the CEUD also published a guidance document on universal design for people with dementia. There are many ideas in this work that are relevant to design for mental healthcare. The authors clarify the place of 'specialised design' in universal design concluding that 'Universal Design Principles… create a high supportive baseline which can then be adapted for specific needs. Universal Design dwellings minimise the need for modifications to an existing dwelling that may otherwise be required to make a home functional and accessible by a person with a disability'.

This research also emphasised the importance of involving the person and their family or carer, if appropriate, in the design process (**design participation**). As well as a thorough understanding of the person's personal preferences and functional difficulties, a designer needs an understanding of how the person might react to potential solutions. The effectiveness of any design solution depends heavily on its perceived usefulness and how it fits into the person's everyday life.

Design for Social Inclusion

A community's worth is not only based on the buildings themselves. Architecture and design has the potential to suggest and direct people's activity (e.g. CABE 2009 and Amborst et al 2016). Community design, through the built environment can contribute to a more equal inclusive society. Design for social inclusion is about creating neighbourhood settings where people can develop bonds and where they are therefore able to look out for one another. There are many features that improve a community's inclusiveness. These include areas that encourage social interaction while recognising the desire for privacy, facilities such as shops, cafés and public transport within walking distance, and features that promote accessibility to people of all ages, abilities and ethnicities.



06

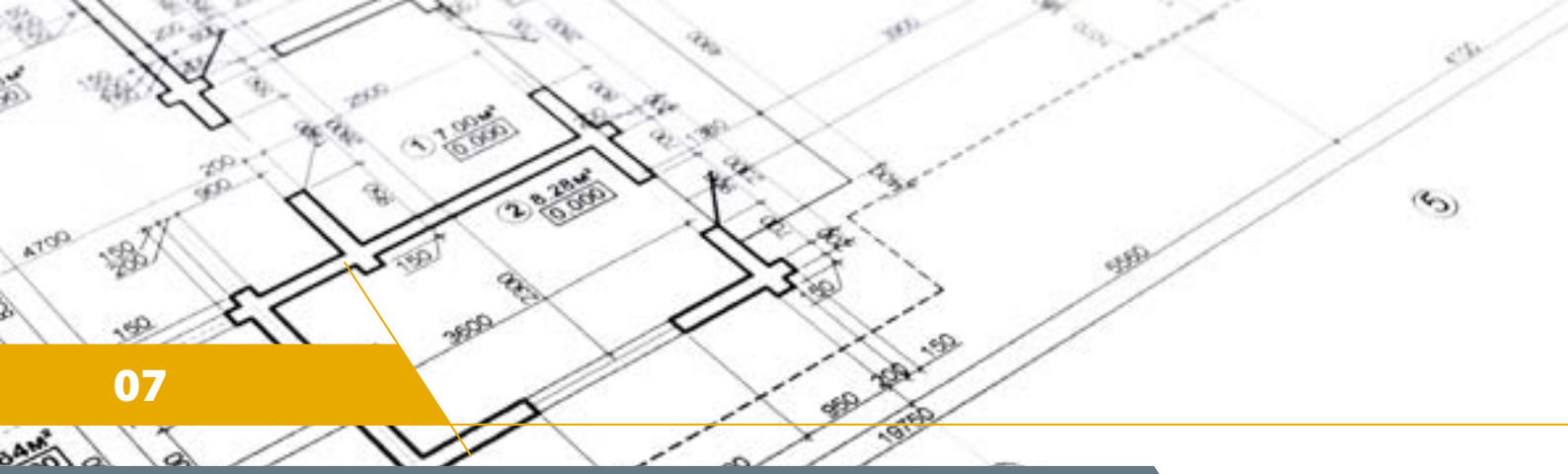
Assistive technology

Developments in assistive technology present new opportunities for increasing independence at home while at the same time they present challenges in relation to maintaining some level of privacy and control for the individual.

Telecare is one form of assistive technology that is designed to offer remote monitoring and rapid response to minimise risk and provide reassurance. Sensors can include fall detectors, gas/heat cooker sensors, flood detectors, and motion sensors to detect lack of movement over a period of time or periods of over-activity. These services aim to promote independence through immediate detection of adverse events, thereby providing reassurance to the individual and family members. In mental health this technology may be additionally useful in relapse prevention in that it may provide information on changed behaviour at an early stage.

Independence at home can also be supported using 'stand-alone' devices, such as technology that does not need to be linked to a monitoring centre. These include memory aids, e.g. medication reminders and voice recorders, orientation aids, electronic calendars and safety devices such as gas cooker sensors that shut of the gas supply when left running.

It is important that the use of technology is tailored to the needs and preferences of the individual. The effectiveness of the technology depends heavily on the perceived usefulness of the system and the ease in which it can be integrated into everyday life. The user should therefore be consulted in designing the appropriate package to ensure that it will be useful. The timing of when technologies are introduced in the context of the person's own personal milestones may also be important.



07

Why specialist design?

There are several arguments against having specialist design for people with mental health conditions. The following are typical questions that have been raised:

Why not any home?

Good quality, secure and appropriate housing is a key factor in facilitating recovery. For most people with mental health conditions an ordinary home is sufficient. However, some will face particular challenges and have a quite distinct set of needs. These guidelines aim to increase the likelihood that this group succeeds in living independently. Suggestions are given as to how the features of the person's home environment can help avoid many of the difficulties (cognitive, social and physical) people come across on a daily basis.

Is it stigmatising to have 'special' dwellings for people with mental health conditions?

While the dwelling would be tailored around the person's specific strengths and needs, there is nothing in these guidelines that would make a home substantially different.

Is the reason people with severe mental health conditions don't have a home of their own financial?

While financial barriers are a significant factor in people continuing to live with their parents or being placed in congregated settings, there are other cognitive, physical, environmental and social barriers, many of which are addressed in this document.

Should people who have such 'difficulites' have their own home?

In previous eras, similar arguments were given for people who had difficulties functioning due to physical impairments. However, these arguments have proved to be unfounded for a majority of people formerly living in care. When the environment is changed to optimise peoples' functioning, a huge amount of independence can be gained.

CHAPTER 2

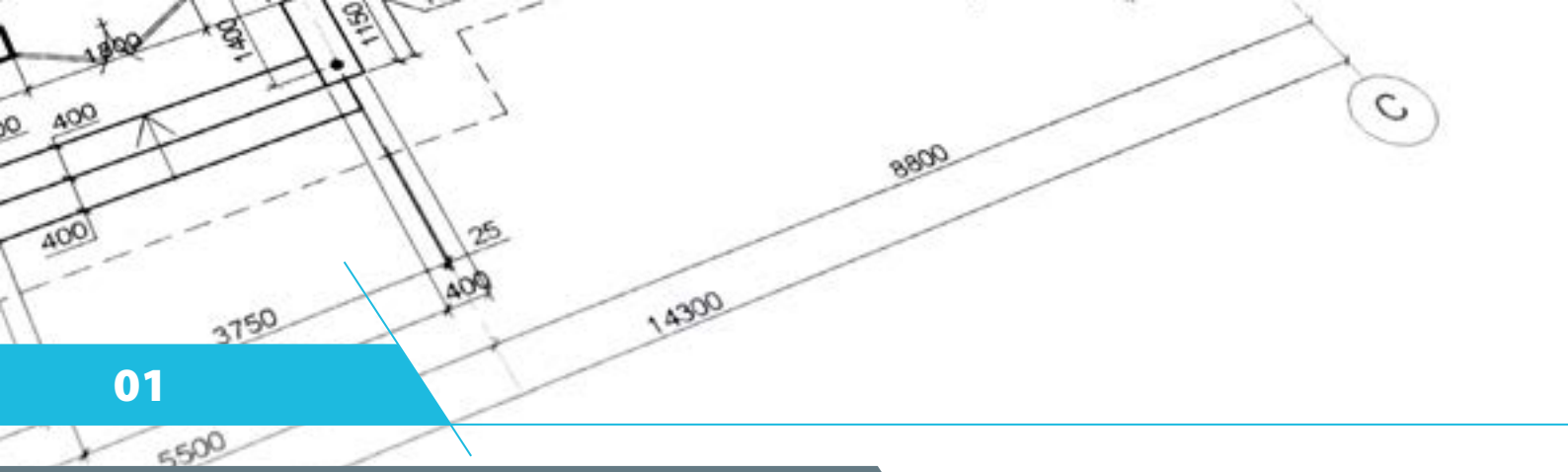
Addressing Specific Needs

Designing to address specific barriers

This chapter focuses on some of the specific barriers to independent living that can be improved by good design. Based on the experience of the authors, the following six issues may cause difficulty for service users and their carers:

1. **Personal care**
2. **Managing the home**
3. **Social vulnerability**
4. **Physical difficulties associated with mental health conditions**
5. **Environmental stressors**
6. **Low income**

The difficulties people experience in these areas are listed and possible design and assistive technology responses to these difficulties are outlined. This is not an exhaustive list and other common concerns such as fire risk are addressed in a separate chapter and in other guidance and legislation.



01

Personal Care

Common difficulties

If a person has specific executive functioning difficulties, they may:

- Have problems initiating actions, like getting up out of bed and getting dressed.
- Not intuitively choose appropriate clothes, e.g. they may not select matching, seasonal, correct size, clean or aired clothing,
- Not sort clean and dirty clothes or separate winter and summer clothing.
- Have trouble finding items from poorly organised storage.
- Not react to seasonal changes in temperature.
- Find complex water temperature controls particularly problematic and discouraging.
- Become distracted in the middle of tasks and hence do not complete, or take much more time to complete, such tasks.

Physical difficulties may mean that the person might:

- Have difficulties with stamina, bending and reaching and manual dexterity which can interfere with personal care.
- Have difficulties with vision, which can also interfere with personal care.

Design response

Environmental supports

Executive functioning

- Having an environment that prompts specific tasks can be really helpful to people when they have difficulty initiating such tasks. A bedroom that is bright in the morning can cue getting up, or having clothes in clear view can cue getting dressed. **It is important to note there is a difference between not wanting to do a task and not being able to initiate it. These recommendations only apply to the latter situation.**
- Having clearly delineated, customised storage can help. For example, if a person has a habit of wearing winter clothes in summer it might be useful to have a separate wardrobe for winter and summer clothes.
- An appropriately placed mirror may allow a person to check whether all steps in dressing and grooming have been completed.
- If a person becomes easily distracted it may be useful to remove as many distractions as possible from the environment, keeping only the necessary task items to hand may keep a person focused. For example; only have the necessary items for showering in the bathroom.
- Checklists may be useful prompts. See Appendix D for an example.

Physical

- Using a chair for dressing may be useful for people with low stamina.
- Low, high and deep storage should be avoided for those with difficulty bending and reaching.
- Adequate task lighting may be helpful if visual acuity is a problem.

Assistive technology options

- Devices that prompt or remind a person to carry out a task at a particular time can be very useful.
- A telecare system that allows the temperature of the living space to be remotely monitored may be useful if the person has difficulty noticing and responding to changes in temperature.
- Medication dispensers can (with the permission of the person) be linked up to a telecare system to provide an alert if the person forgets to take their medication.

Managing the Home

Common difficulties

- Some people experience difficulty in sorting and classifying items, such as identifying what should be disposed of and/or what should be stored and, as a result, the home may become cluttered and disorganised. For example:
  a) Sorting out the post, and dealing with junk mail.
  b) Organising the sorting of things, like hanging and storing, coats and bags.
  c) Sorting and putting out waste.
  d) Managing laundry.
  e) Managing food (including shopping and dealing with out-of-date items).
- Some people with mental issues may be less able to transfer their skills to new situations or devices than the general population. Changes in routine or systems, like new alarm codes, new waste collection schedules, replacement appliances and keys, can cause disruption.
- Some may have diminished attention at times, like forgetting a cooker has been turned on, or failing to notice that they have left a fridge door open.
- Occasionally individuals may not respond when the environment changes, like dawn to dusk or heat to cold and so may not do things like draw curtains or adjust heating.
- A person may not respond to emergencies like flooding.

Maintaining the dwelling

- Certain individuals may not be able to respond to the maintenance demands of their accommodation, particularly if these are outside their regular routine, such as noticing an empty oil tank or an appliance breakdown.
- Some may not be able to respond to maintenance demands of garden and external areas. If that person has difficulty planning and organising gardening tasks the garden may quickly grow out of hand.
- A person may find problem-solving challenging, such as not knowing how to respond to an overflowing sink, a blocked toilet or certain appliance malfunctions. In response, they may do nothing and allow the problems to continue.
- In some cases, people may be unable to recognise the right time to do certain necessary tasks.

Physical difficulties such as manual dexterity, poor stamina, difficulty bending and reaching, and difficulties with vision can also interfere with a person's ability to look after their home.

Design response

Environmental supports

Low maintenance accommodation and garden will reduce the need for support, using the following aids:

- Ample, well designed storage (see Chapter 18) may help keep clutter at bay.
- A system of clearly identifiable/delineated storage for different items may be useful (this would need to be put in place in collaboration with the resident).
- Timed, thermostatically controlled central heating might avoid the need for constant adjustment.
- Mechanisms that avoid constant adjustment to items, such as net curtains, can be useful, so that minimum effort is required to obtain privacy.
- A good visible coat rack can cue coats being hung up.
- A key rack can help keep keys organised.
- A 'no junk mail' sign can reduce unwanted post.
- A well thought out system for dealing with post may stop it building up or important mail being missed.
- Direct debits can eliminate the need to respond to regular bills.
- It may be useful to have clearly marked waste bins in every room. Different bins should be easily distinguishable and clearly marked.
- Electrical sockets should be plentiful and well dispersed to enable portable appliances to be sensibly located and dispersed to avoid unnecessary cluster.
- Choose slow-growing plants in the garden, avoiding high maintenance lawns.
- Appliances with cues such as a whistling kettle and a light when the kettle turns on, and ceramic hobs that turn red immediately when switched on, can alert somebody if they fail to notice its operation.
- Appliances should be high quality, as breakdowns can be very disruptive.
- People with cognitive difficulties may need extra support to adjust when setting up a new system or if an existing system changes.

Assistive technology options

- Use of prompts and cues, such as setting task reminders.
- Tele care offers monitored smoke, gas, extreme heat and flood detection.
- Automated systems such as heating, light, curtain closing and ventilation may reduce environmental demand.

03

Social vulnerability

Common difficulties

- Some people may have difficulty monitoring and regulating their personal safety.
- This population tend to be more likely than a member of the general public to be a target of antisocial behaviours.
- Some people have weaker social networks than the rest of the population.
- Little mistakes, often caused by cognitive problems (such as forgetting to close curtains while undressing) can sometimes cause social offence and misconceptions.
- There may be difficulties setting alarms, manipulating keys and operating safety chains, due to poor fine motor skills.
- A poorly maintained, conspicuously overgrown garden makes a house stand out negatively and marks it out for unwanted attention.
- Loneliness and social isolation can be a huge problem for people with severe mental health conditions.

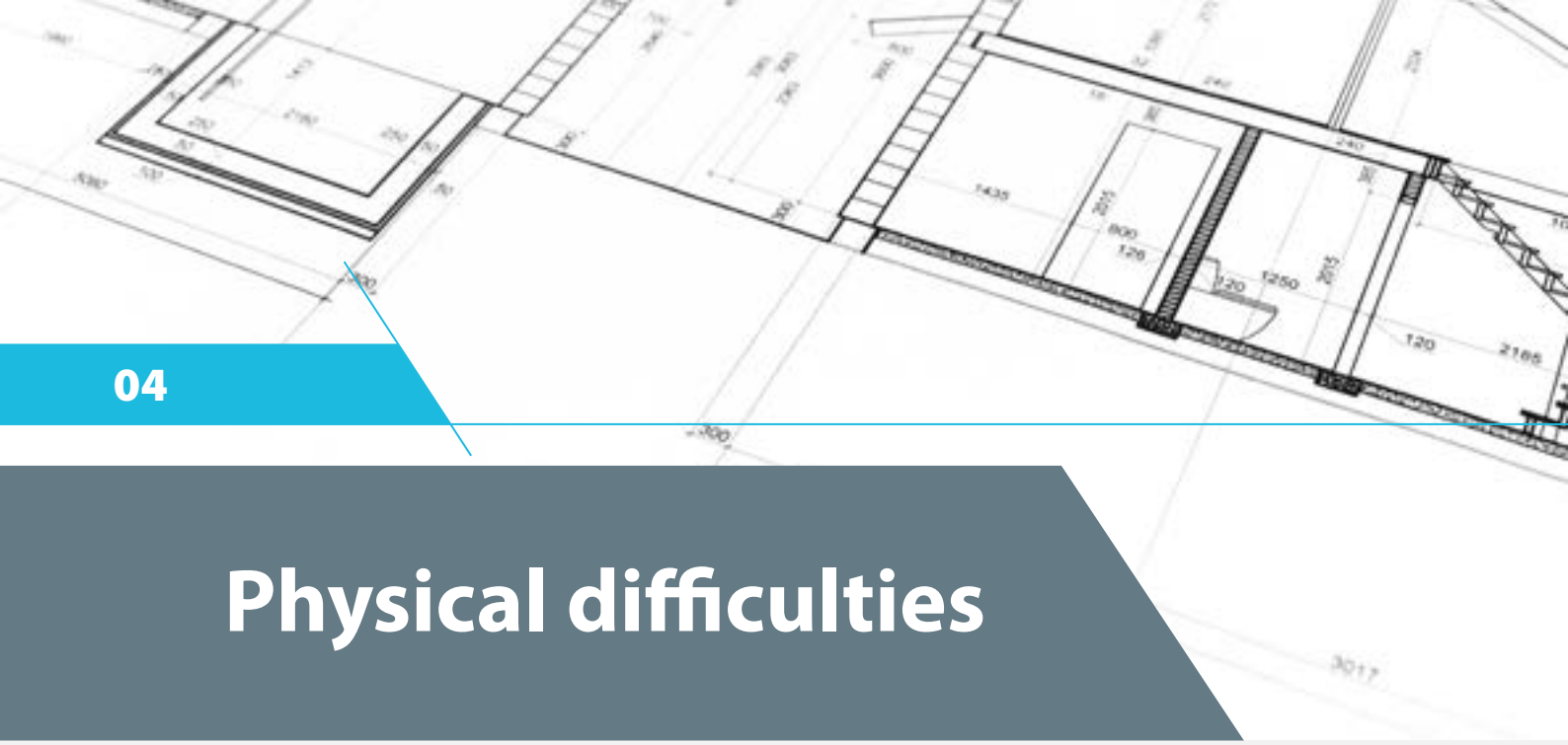
Design response

Environmental supports

- People do better living in communities that are inclusive, diverse and supportive.
- If a person has a weak social network, disrupting access and connection to existing social supports may substantially diminish their quality of life.
- Locating housing within gated communities may increase security. However, it also may act as a barrier to outreach services (consider this if a person tends to disengage with society or isolation has been a concern in the past).
- Locating housing beside greens or other places of congregation may expose the person to a higher risk of antisocial behaviour. Backyards that adjoin alleyways and corner sites also may increase this risk.
- External areas should not encourage unwanted attention, e.g. walls at seat height might encourage loitering.
- Privacy can be an important consideration when deciding the house layout.
- Concentrating a large population of people with mental illness in one location can result in increased stigma and the formation of ghettos.
- Accommodation should fit in with neighbours. No identifying features should cause the house to stand out.
- A simple door chain means a resident can talk to callers without fully compromising security.
- An internal porch or double door entry system is worth considering if security is a concern.

Assistive technology options

- Sensor-activated external lighting.
- Caller recognition without opening the door such as an intercom that will assist people in making a judgement before opening the door. A clear glass screen or door viewer can also help.
- Fob opening and closing systems on entrances and gates – these may be simpler to use and therefore reduce the risk of entrance doors and gates being left open.
- Security systems: note that these will only be used if they are relevant to the individual and easy to use.
- Telecare may assist services and families to remotely monitor security. Useful devices include bogus caller alarm and property exit sensors.



04

Physical difficulties

Common difficulties

- Bending and reaching, this can make high, low and deep cupboards problematic.
- Getting in and out of low armchairs or sofas can be challenging for some.
- Stamina problems will cause difficulties such as using stairs, or walking long distances to a bus stop or shops.
- Reduced visual acuity may result in an inability to notice changes in terrain, poorly maintained surfaces and other trip hazards.
- Manual dexterity may hinder operating controls.

Design response

Environmental supports

- Proximity to services is an essential element in bypassing difficulties with stamina. Locating housing close to shops, services and transport facilities will minimise the impact that poor stamina may have on a person's functioning.
- Large button and easy-to-use devices may help bypass difficulties with physical dexterity.
- Appliance controls are easier to see when they contrast with the form of the appliance.
- Lighting schemes should provide a good level of consistent light around all pedestrian routes and communal areas after dark.
- Incorporating dedicated task lighting in work areas of kitchen, bathroom, bedroom and entrance, will assist an individual in completing the many tasks of daily living.
- Trip and slip hazards should be considered when choosing floor coverings and when designing thresholds and mat wells.
- A table next to a front door can be very helpful for putting down shopping bags for those with low stamina levels.
- Seating with increased heights and armrests may assist if somebody has difficulty standing up from a seated position.

Assistive technology options

- A telecare monitored personal trigger alarm will enable a person to automatically summon help in the case of a fall or such an alarm can be manually triggered in case of another emergency.
- Telecare systems can also monitor enuresis (involuntary urination), epilepsy and bed occupancy.
- A stand-alone device can automatically turn on a light to reduce the risk of falling in the dark when a person gets out of bed during the night.

05

Environmental stressors

Common difficulties

- The lack of control over stressors in the environment, such as noise and overcrowding, exacerbates the symptoms of mental health conditions.
- Insufficient daylight can contribute to low mood.
- Poor quality environment can contribute to psychological distress.

Design responses

- The ability to control noise levels using good sound insulation or glazing can be particularly important to people with certain types of symptoms.
- Living areas should be orientated to maximise natural lighting.
- A person may find noisy elements such as ventilation systems difficult to tolerate, and may switch them off.
- Having access to a safe outdoor space can promote well-being.
- Exposure to nature can reduce stress and fatigue.

06

Low income

Common difficulties

- If somebody is dependent on social welfare payments, they may not be able to afford the maintenance costs of an old house.
- Heating a large, poorly insulated dwelling may cause financial distress.

Design responses

Environmental supports

- Low maintenance accommodation should be considered (and may reduce the need for financial support).
- Dwellings with low BER ratings will require less money to heat.

SECTION 2

THE HOME

CHAPTER 3

Location

Principle

This chapter examines items to consider when deciding on an appropriate location for a dwelling or where a person living with a mental health condition may best live.

1. Location is a fundamental consideration.
2. Location can influence independence, security, social inclusion and a sense of belonging.
3. Local amenities should be accessible and housing should not be separate from other housing in the local community.

Considerations

Social

- People with mental health conditions have historically been separated from the rest of the population in large institutions.
- People with mental health conditions are more vulnerable to the impact of antisocial behaviours and are more likely than the rest of the population to be victims of violent crime. They are not more likely to be perpetrators.
- In the past there have been public objections to group homes. There should be less opposition to individual housing.
- In Ireland, public mental health services are geographically organised. A move in location may mean a change of service provider, causing problems for service users.
- Loneliness and social isolation is a major cause of relapse of mental health conditions.
- Some of this population will have weaker social networks and will have a reduced ability to establish their own network.

Environmental

- Neighbourhood quality factors such as crime rates and new or unsettled or incomplete developments can cause greater psychological distress and leave a person more exposed to antisocial behaviours.
- The number and quality of amenities can have a positive impact.
- Noisy locations may be difficult for some people to tolerate.

Physical

- Some people experience poor stamina due to weight gain, inactivity or smoking. Hence proximity to public transport and amenities is important for this group.

Cognitive

- If a person has cognitive difficulties, he or she may not automatically adapt or transfer their skills when moving to a new area. He or she may need extra support and training.
- A person may have difficulty engaging in their new community.

Recommendations

Social

- Personal choice is a prime consideration in the location of any accommodation. Housing options in urban, suburban, and rural settings should be available to accommodate the preferences of individuals. Like the rest of the population, people with mental disabilities may want to choose an area to live with which they feel a connection. Displacement only aggravates lack of integration.
- Living in a person's place of origin or place where a person has previously lived can be an advantage in that it limits the amount of new learning and maintains access to existing social supports.
- Connection to their mental health service provider's catchment area is also an important consideration.
- Where there is a risk of antisocial behaviours it may be wise to avoid:
  - Homes beside greens or other places of congregation.
  - Backyards with adjoining alleyways/ laneways.
  - Corner sites.
- Accommodation should fit in with neighbours. No identifying features should cause the house to stand out.
- Gated communities may increase security; however, this factor may act as a barrier to outreach services (only of concern where social withdrawal has been problematic).
- A community where a high tolerance for diversity is prevalent may be favourable.
- Sites should be in a neighbourhood considered relatively safe and secure. High levels of noise can be particularly stressful for some people.
- A high density of mental health housing in any one location can lead to ghettoisation.
- Having the right social support for the person is paramount in overcoming loneliness and isolation.
- Knowing a person over a period of time (depth of knowledge) is very important in matching a person to a house.
- Locally based positive awareness campaigns can help support communities in including their members who experience severe mental health conditions.
- Architecture as a mechanism for social inclusion has been explored in another body of literature that is highly relevant to this work (e.g. CABE 2008).

Physical

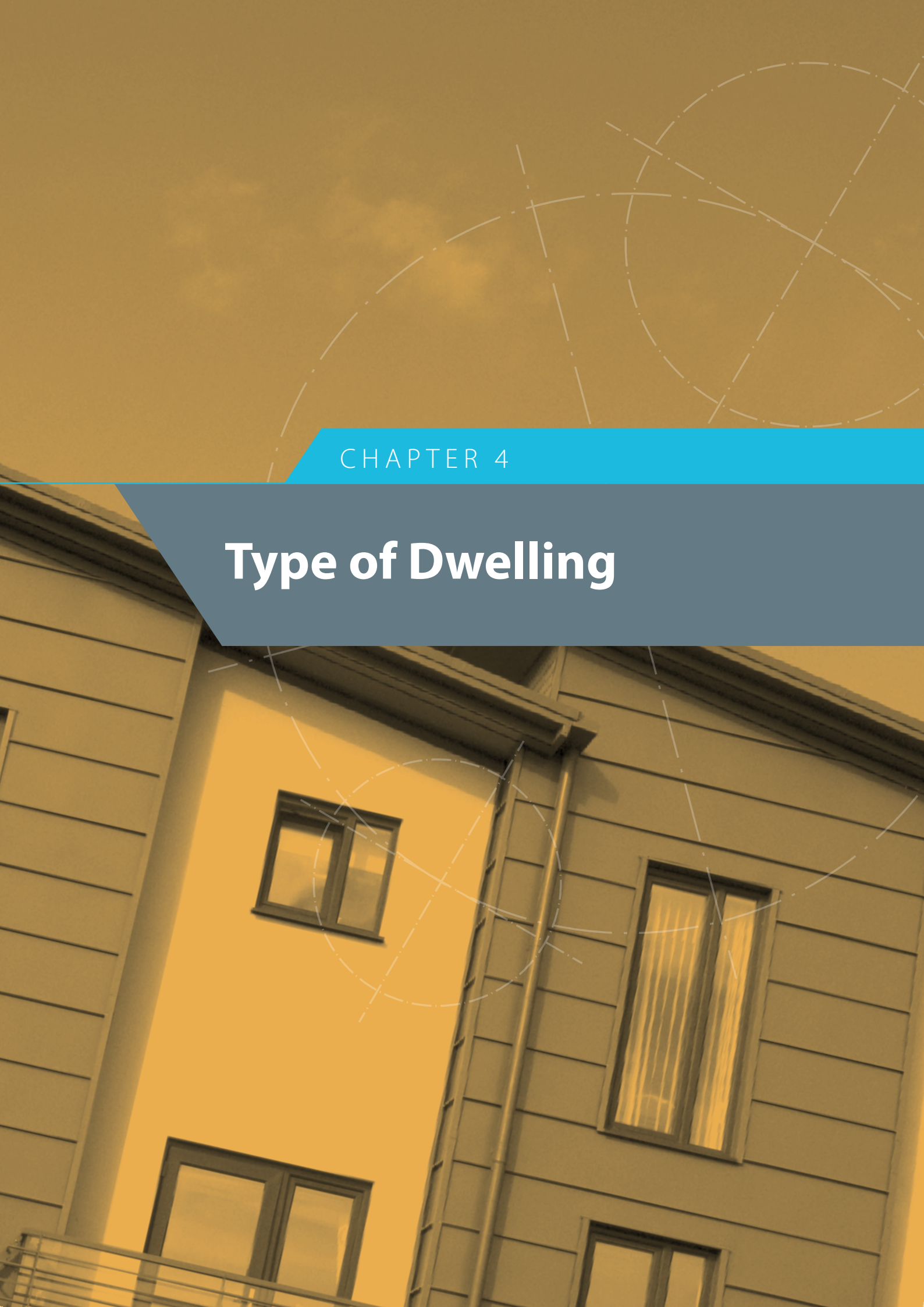
- Locating housing close to shops, services and transport facilities will lessen the impact that poor stamina will have on a person's functioning.

Key Points

- **Personal choice**
- **Community connection**
- **Security and safety**
- **Connection to mental health service catchment area**
- **Impact of noise**
- **Demographic mix**
- **Concentration of housing types**
- **Accessibility**
- **Proximity to facilities**

CHAPTER 4

Type of Dwelling



Principle

The type of dwelling is another important consideration.

1. A dwelling that is too big, too isolated, too noisy or too high maintenance can have a significant impact upon a person's ability to cope.
2. Tenure type and security of tenure are also crucial considerations but are beyond the scope of this design guide.

Considerations

Cognitive /Sensory

- Some people may be less well able than the general population to respond to the maintenance demands of his or her accommodation.
- In some cases, people may under-use some of the space available to them in their accommodation. For example, they may occupy only one floor of their two storey house or one or two rooms within their accommodation.
- Some may not automatically adapt or transfer their skills and routine from one environment to another. They may need extra support and/or training in changing from a house to apartment living.
- Lack of control over stressors, including environmental stressors, may cause the symptoms of mental health conditions to increase.

Physical

- Difficulty using stairs (particularly several flights of stairs) is common with people with low stamina.

Social

- If a person is dependent on social welfare payments, he or she is often limited in their housing ownership options. Therefore, what is offered will determine their lifestyle – hence the need to be sensitive to their particular needs.
- The financial burden of the maintenance and heating costs of an old large house may be high.
- Tenure type may determine what a person can and cannot do to modify their environment to suit their needs.
- People have a different set of needs at different times of their lives, hence sharing accommodation with peers may be desirable in their youth, but may be less appropriate as they age.

Environmental

- Having adequate privacy and being able to control when and with whom people interact is important for everybody's mental health.
- Poor quality environment and/ or housing can contribute to psychological distress.
- Insufficient daylight can contribute to low mood. As people spend much time in their homes, having a well-lit unit can be of considerable advantage.
- The number and quality of amenities can have a positive impact.
- Noisy locations may be difficult for some people to tolerate.

Recommendations

Unit Type

- Personal choice is the central factor regarding a decision on unit type.
- An accommodation type that a person is familiar with may reduce the need for new learning.
- Low maintenance accommodation will reduce the need for support.
- Size and energy rating are important in reducing running costs.
- Privacy and light should be optimised when room allocation is being considered.
- 'Easily read' design will give the person the cues they need to function.
- Ability to control noise levels, such as good sound insulation and glazing can be particularly important to people with certain types of symptoms (see Chapter 16 for further details).
- Private, unexposed and peaceful outside areas can be of particular benefit.

Location within apartment complex

- Ground floor flats may have more exposure to unpredictable behaviours or situations.

Security of Tenure

- Security of tenure allows long-term stability and control of personal space.

Key Points

- **Choice**
- **Privacy**
- **Familiarity with dwelling type**
- **Easily maintained dwelling**
- **Size and energy rating**
- **Quality of light**
- **Easily read layout**
- **High quality**
- **Low running costs**
- **Easily accessible**
- **Impact of noise**

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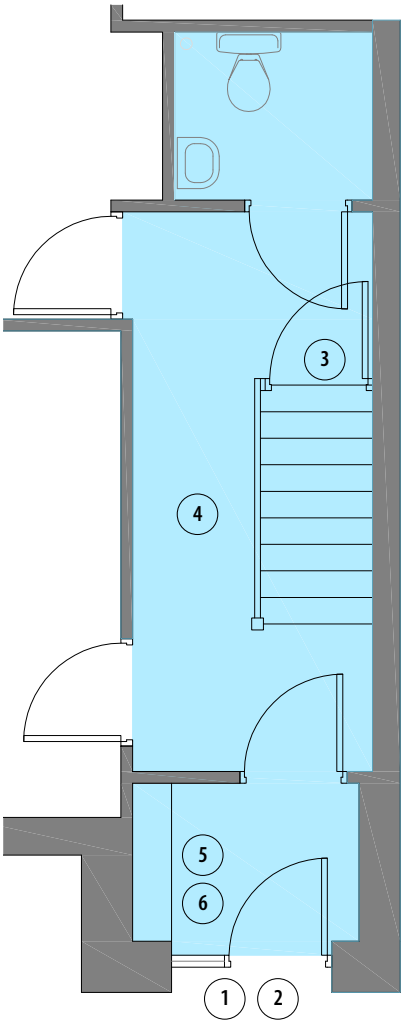
SECTION 3

SPACES WITHIN THE HOME

CHAPTER 5

Entrances, Hallways and Stairs



Entrance, Hallways and Stairs

1. Security including a strong front door with a good, easily used, locking mechanism
2. Lighting at entrance
3. Storage
4. Good Layout
5. Internal porch (where possible)
6. Set down area at entrance

Principle

To provide:

1. A high level of security and privacy that is easy to operate, both for those with physical and or cognitive impairments.
2. Clear, simple, well lit, durable circulation routes.
3. Adequate space for storage and set-down.

Considerations

Cognitive

- A person may have reduced ability for on-the-spot evaluations and selecting task-appropriate rules, thereby reducing their ability to monitor their own safety or manage unexpected situations like an unfamiliar alarm going off.
- A person may have trouble sorting out the post and dealing with junk mail, as well as organising coats and bags.
- A person may have difficulty dealing with changes such as using new alarm codes or using complex systems.
- Some people may have problems knowing about or monitoring if their appearance is appropriate before they leave their house.

Physical

- Some people may experience difficulties setting the alarm, manipulating keys or operating a safety chain due to poor fine motor skills.
- A person may be susceptible to trips and falls for a variety of reasons, including impaired vision, weight gain, reduced stamina and gait changes.

Social

- If a person is socially vulnerable, controlling access into their house should be taken into consideration.

Environmental

- Obstructions may occur on narrow hallways.

Recommendations

Layout

- Hallways and circulation routes should be as short, as direct and as simple as possible. They should be well lit, preferably with some natural lighting.
- A large 'set down' area, just inside the hall door might be useful to the person to help with organisation. Adequate storage (see Chapter 18) would also assist.
- Thresholds and mat wells: Designers should seek to eliminate trip hazards. All thresholds should be level and where doormats are necessary these should be set into mat wells so that the finished surface of the mat is level with the surrounding floor, especially if shuffling gait is a concern.

Surfaces

- Surfaces should be non-slip and low maintenance (Recommendations in Chapter 17);

Lighting

- Adequate lighting provision at the entrance door to enable identification of features, key-finding and general security is an essential requirement.
- Strongly contrasting lighting levels at entrances can be disorientating for some people.

Colour and contrasts

- Ensuring adequate variation in the light reflectance of colours used e.g. colour contrasts such as contrasting handle colour with door colour, can assist in differentiating individual objects and can make the environment easier to read (see Chapter 17 for details).

Security

- Locking mechanisms to entrance doors should provide good security while being easy to operate.
- A means of caller recognition without opening the door should be provided, such as an area of clear glazing or a door viewer or an intercom.
- Any alarm or security system should be simple to use (avoid small controls and multi-step codes).
- A 'double door' entrance system could also be considered if security is a concern.
- Telecare systems could allow a vulnerable person's security to be remotely monitored.

Ironmongery

- All ironmongery should be easy to use, should have a comfortable feel to operate and should be consistent throughout the dwelling.

Stair contrasts and finishes (see Chapter 17 for further information)

- All handrails should contrast in colour against the wall on which they are fixed;
- Highlighted stair nosings should be considered if the person is a fall risk.

Recommendations (continued)

Fixtures and fittings (that can help bypass some of the cognitively based functional difficulties)

- A key rack or basket (as a place to consistently put keys).
- Post sorting system.
- Good coat rack or coat hanging area may cue coats being hung up.
- A table near the entrance may be useful for putting down shopping bags and other items.
- Mirror to check appearance before leaving the house.

Assistive technology. There are many different telecare options for remotely monitoring a vulnerable person's security

Telecare (see chapter 21)

- If the person is anxious or unsure when dealing with callers or feels uncomfortable or threatened by a person at the door, a bogus caller alarm positioned next to the main entrance might be useful. When pressed by the resident it allows the monitoring centre to listen in on the conversation and speak to the caller or call for help if necessary.
- Assistive technology, such as a door exit monitor allows notification when a person leaves the house.

'Stand-alone' devices

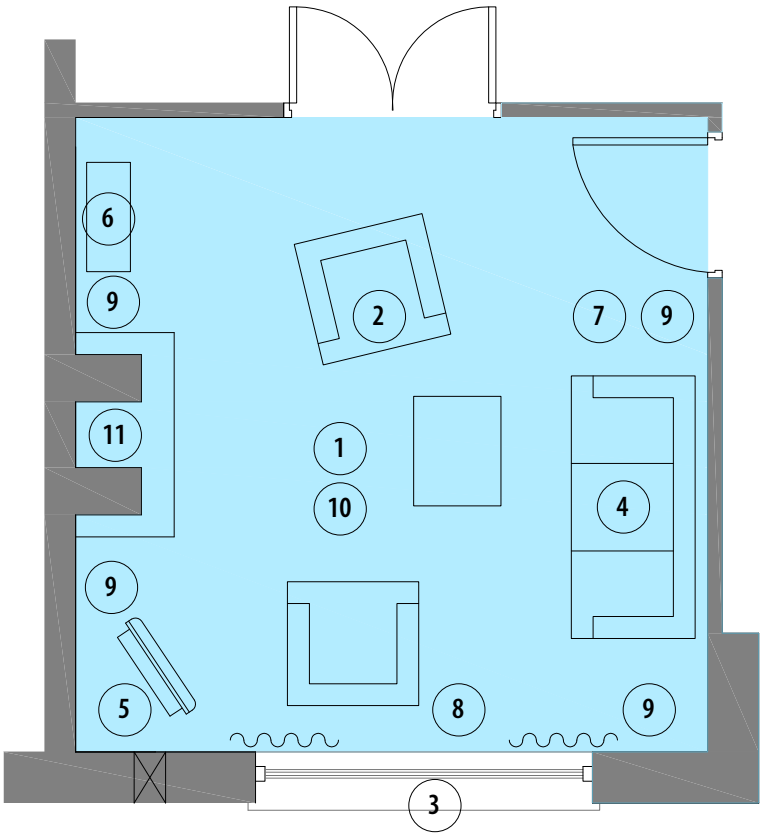
- A means of caller recognition without opening the door should be provided, such as an area of clear glazing or a door viewer, CCTV or an intercom.
- A fobbed door lock with automatic closing mechanism may be useful to ensure the door is always shut and locked.
- Keyless digital door entry with keypad so that the resident does not need to remember their keys when going outdoors.

Key Points

- **Security**
- **Strength of front door**
- **Locking mechanism**
- **Lighting at entrance**
- **Storage facilities**
- **Layout of circulation space**
- **Provision of internal porch**
- **Fixtures and fittings to suit resident.**

CHAPTER 6

Living areas



Living Room

1 Logical and convenient furniture layout
2 Seat tailored to person's physical needs and social preferences
3 Good natural and artificial lighting
4 Easily maintained furniture
5 Good ventilation
6 Storage – good, clearly labeled
7 Fireproof waste baskets for smokers
8 Blinds and net curtains provide privacy - consider also automated blinds and assistive technology
9 Adequate number of suitably located sockets
10 Consider impact of colour
11 Create a focal point

Principle

1. To provide comfortable spaces that allow people space to relax and socialise.
2. To make sure that the functional demands of the room (like operating devices and cleaning) take account of the person's abilities.

Considerations

Cognitive

- Some people experience difficulty sorting and classifying items. For example, identifying what should be disposed of and/or what should be stored, and where. For this reason, a room may become cluttered and disorganised.
- Occasionally people may not respond when the environment changes, such as dawn to dusk and heat to cold, and so may not draw curtains or adjust heating.
- A person may confine their living environment to one or two rooms. The special functions of each room then becomes lost, such as a person sleeping in a living room.
- Complex controls such as remote control devices may cause particular difficulty.

Physical

- Difficulty in bending and reaching – hence high, low and deep cupboards can be problematic. Also getting in and out of low armchairs or sofas can be challenging for some.
- Due to reduced manual dexterity a person can experience issues operating small or fiddly controls as found on remote controls and telephones.
- Visual issues (whether physical or cognitive) can cause problems, such as not noticing obstacles and terrain changes, increasing the risk of trips, slips and falls. Obviously, visual issues also impact on the ability to read.

Social

- Due to reduced social opportunities some individuals may spend a lot of time at home. It is therefore important that their living areas are as pleasant as possible.
- A person may have difficulty with social interaction or feel uncomfortable when their personal space is being invaded.

Environmental

- A poor quality environment can contribute to psychological distress, such as an increase on a person's stressors, and so things like appliance breakdowns, disorganisation and poor hygiene can contribute to diminished mental health.
- For smokers, ventilation may be an important issue.

Recommendations

Location

- Living areas should be orientated to maximise natural lighting.
- Kitchen and living areas should be separate or clearly delineated.

Lighting

- Natural lighting should be maximised. Room orientation, window size and positioning are important considerations (see Chapter 11 for further details).
- Where task locations are known, fixed-task lighting would be useful (see Chapter 12 for further details).
- It may help to provide switched sockets for task lighting (probably lamps) as sometimes people have difficulty using diverse controls. (see Chapter 12 for further details).
- Avoiding dimmer switches may be useful, as they are not compatible with many modern bulbs and they can be awkward for some people to use.

Electrics

- Electrical sockets should be plentiful and well dispersed to enable portable appliances to be sensibly located and to avoid unnecessary clusters (see Chapter 14 for further details).

Ventilation (see chapter 15 for further details)

- Ventilation may need to be automatic for consistent air quality.
- If the person is a smoker one smoking area, if possible outside, should be arranged in collaboration with the smoker to contain tobacco-related refuse. As a minimum a no smoking policy in the bedroom should be encouraged to reduce the risk of fire.
- If a person is a smoker, ventilation provision may need to be enhanced.
- Noisy ventilation may be difficult to tolerate and therefore may be switched off (see Chapter 15 for further details).

Furniture

- Increased height chairs and armrests may be useful for leverage from seating.
- Good quality, fire retardant, stain resistant and durable soft furnishings.
- Having personal space invaded can be uncomfortable for some people, so having a single seat option available should therefore be considered.
- The environment can be used to encourage social interaction, like arranging seats to face each other.

Storage (see Chapter 18 for further details)

- Ample storage can help avoid clutter.
- Storage should be easily accessible and contents should be easily visible.
- A system of clearly identifiable or delineated storage for different items may need to be put in place in collaboration with the inhabitant.

Waste and refuse

- Waste bins should be provided in all rooms. They should be clearly marked and easily identifiable. Fireproof options may also enhance safety.

Recommendations (continued)

Window dressings

- A simple ring and pole option for curtains may be preferable to hooks which easily become disconnected and the person may not be able to replace them.
- Mechanisms not constantly needing adjustment or alteration, such as net curtains, may be useful (even if not in vogue) where minimum effort is required to ensure privacy.

Assistive technology (See Chapter 21)

Stand-alone devices:

- An automated ventilation system may be beneficial if the person smokes indoors.
- Thermostatic-controlled heating may avoid under or overuse of heating. A person may need assistance to set this up.
- Automatic window dressings that close during darkness hours may be useful if a person fails to respond to the night drawing in.
- An electronic clock and calendar will help with time orientation, if this is a problem.
- Item locator devices to help find everyday items (such as wallets, keys and glasses) that are frequently misplaced. Handheld device can provide audio/visual cues to track devices.
- Large button and easy-to-use devices, such as single button radio, large button phones and simplified TV remote controls.

Telecare

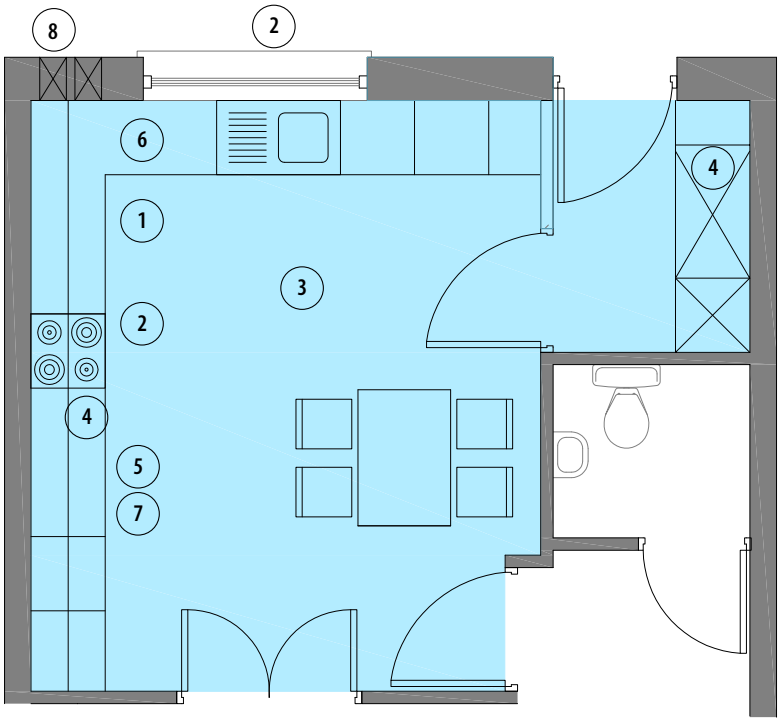
- An externally monitored room thermometer located in a hallway or living space would provide early warning of extreme low or high household temperatures. A monitored CO2 detector could prevent the danger of not responding to a home alarm.
- Automatic medication reminders and dispensers to monitor when medication has been taken from a pill dispenser. These can also initiate an alarm call if pills are not taken within a set period.

Key Points

- **Well-designed storage**
- **Good natural lighting**
- **Privacy**
- **Adequate ventilation**
- **Quality layout**
- **Fire safety**
- **Low maintenance**

CHAPTER 7

Kitchens



Kitchen

1. Clearly defined and easily identifiable work, waste and storage areas
2. Good natural and artificial lighting
3. Colour contrast to highlight functions
4. Simple and easy to use appliances
5. Easily maintained and cleaned work, wall and floor surfaces
6. Continuous work surfaces
7. Use of prompts and cues and automated functions
8. Good ventilation

Principle

1. To provide the environment and equipment to assist the person in cooking and food preparation.
2. To ensure the functional demands of the kitchen (cooking, storage, waste management and cleaning) match the person's abilities by:
   - Designing the kitchen so that it is 'easy to read'
   - Organising and structuring the environment around the tasks of the room
   - Enhancing environmental prompts and signifiers (specific instructions)
   - Ensuring devices are easy to use and tolerant of error
3. To maximise safety.

Considerations

Cognitive

- A person may experience issues planning and organising such as:
  - disposal of waste
  - appropriate storage of food
  - locating implements
- Diminished attention, such as failing to notice that he or she left the fridge door open.
- Diminished short term memory such as forgetting that they have turned on the cooker.
- Difficulty in prioritising activities, so if two things are happening at the same time deciding what to do first (like competing cooking demands).
- Difficulty problem solving, dealing with non-routine events, or transferring skills, such as when a sink is blocked or a new system of waste recycling is introduced.
- Uncertainty as to when to start or stop tasks, like needing a prompt when a floor needs cleaning or alternatively, not recognising when they've mopped or hovered enough.
- A general reduction in speed response.

Physical

- As for other rooms, restricted bending and reaching, hence high, low and deep cupboards can be problematic for some.
- Poor stamina when standing for long periods.
- Poor dexterity, like difficulties manipulating small objects such as switches and remote controls.

Environment

- Poor quality environment can contribute to psychological distress. Therefore, appliance breakdown, disorganisation and poor hygiene can contribute to impaired mental health.

Recommendations

Layout

- A logical and convenient working layout that enables unobstructed movement between functional equipment and surfaces is essential.
- The fridge/food storage, sink, hob, oven and ample functional work surfaces should be positioned to enable easy movement between each with a logical food preparation, cooking and serving sequence. This is a major safety consideration as well as a practical issue. The sink and hob should be as close as permitted to assist safe transfer of things like hot pans.
- Clearly delineated work spaces may assist a person with visual processing (see chapter 17 for more details).
- Locate the cooker away from the exit door.

Lighting

- As people spend considerable amount of time in their kitchens this area should be prioritised for natural light. Natural daylight can be simulated using a seasonal affective disorder (SAD) light box or a SAD lamp (colour temperature of 6500 K). These should be used only in specific areas and not where people wish to relax. (See Chapter 12 for further details.)
- Incorporating dedicated task lighting in addition to general lighting may assist individuals in performing kitchen activities. (see Chapter 12 for further details).
- Over counter task lighting should also be wired back to a switch on the wall.
- Cool White (4000k) used for tasks.
- Warm White (2700k) ambience background light left on at night as a nightlight.

Electrics

- Electrical sockets should be ample and well-dispersed, enabling portable appliances to be sensibly located and dispersed to avoid unnecessary clusters which may be confusing and may clutter up work surfaces (see Chapter 14 for further information on electrics).

Surfaces

- Surfaces and finishes should be hard wearing, slip resistant and make the environment easier to differentiate and read (see Chapter 17 on colour, contrasts and surface finishes).

Storage (See Chapter 18)

- Units should be easily accessible and contents easily identifiable. Labels may be useful.
- Ample storage should be provided to facilitate organisation.
- Storage should be logically organised around the tasks carried out in the kitchen.
- A small, separate broom cupboard is useful so that cleaning products can be separated from food and beverages.
- The system of storage should be agreed with the person involved, as it may be hard for some people to organise independently.

Taps

- Taps with levers are preferred as they are easiest to use when somebody's dexterity is compromised. Alternatively, the tap design that the person is most accustomed to might be the best option.
- Taps throughout the house should of consistent design.

Recommendations (continued)

- Hot and cold labelling should be readily apparent and easy to distinguish (red/blue).
- Mixer taps may be difficult to manage.

Waste and refuse disposal

- Recycling, organic and rubbish bins should be clearly marked and easily distinguishable. Labelling or colour coding may be useful.
- Waste should be easily accessible and easily transferred to corresponding wheelie bins outside the house.
- It may be useful to agree a system of waste disposal in advance as this may be hard for some people to organise independently.

Laundry

- Washing machines and driers should be easy to operate (See Chapter 19 for advice on appliances).
- Washer/drier combinations can be too difficult to use and prone to faults, hence should be avoided if possible.

Ventilation

- See Chapter 15 for ventilation measures additional to Part F of the Building Regulations that may be useful.

Assistive technology (See Chapter 21).

Telecare

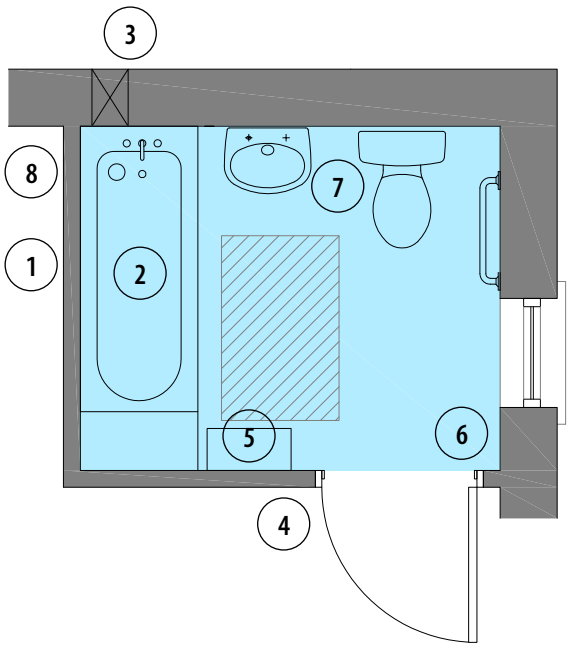
- Ensure that there is a heat alarm sensor in the kitchen.
- Gas and rapid temperature increase sensors can be used to alert occupant and a call centre of risky situations.
- Flood detectors on the floor or skirting board below the sink can detect a flood and transmit an alarm to the call centre.

'Stand-alone' devices

- Environmental cues can assist people with executive functioning issues in initiating and stopping behaviours like remembering to take out bins.
- Assistive technology can be used to improve safety, e.g. fridge alarms or linked sensors where a rapid rise in temperature can trigger the shutting off of the cooker.

CHAPTER 8

Bathrooms and WCs



Bathroom

1 Comfort – ensure bathroom is warm
2 Safety – non-slip surfaces, automatic temperature controls
3 Automatic ventilation
4 Near bedroom, consider direct access.
5 Cues such as open shelves to prompt actions
6 Maintenance – easily cleaned surfaces
7 Good lighting
8 Walls are strong enough to support handrails and similar fittings

Principle

1. Improved self-care impacts positively on somebody's overall well-being, while poor self-care is frequently associated with enduring mental health conditions.
2. Good design can enable independence and encourage proper bathroom use by:
   - reducing environmental demand
   - simplifying, shortening and cueing tasks
   - minimising anything that makes the bathroom difficult, cumbersome or unpleasant to use.

Considerations

Cognitive

- Complex water temperature controls may be particularly problematic and discourage use, for example, operating mixer taps may be difficult for some people.
- A person may not be aware that a floor surface is wet and this could increase the risk of slipping and injury.
- A person may find problem-solving challenging. For example, they may not know how to respond to an overflowing sink, a blocked toilet or appliance malfunctions.
- A person may have difficulty commencing the next step of a bathroom task, such as getting out of the shower or having clean clothes ready.

Physical

- Difficulty in bending and reaching, hence high, low and deep cupboards can be problematic.
- Poor stamina may cause difficulty standing for long periods.
- Poor dexterity may cause difficulty manipulating small objects such as switches and controls.
- All of the above difficulties can make getting in and out of a bath difficult and unsafe.

Environment

- Cold bathrooms are particularly discouraging to use for those with low motivation.
- A poor quality environment can contribute to psychological distress. Hence appliance breakdown, disorganisation, poor hygiene and such like can contribute to poor mental health.

Recommendations

Location

- Bathrooms should be located close to bedrooms, with simple unobstructed routes between these rooms. Where a person has reduced mobility a door directly connecting the bedroom to the bathroom should be considered.

Layout

- Adopting a universal design approach will ensure that the facilities can be accessed and used, or adapted in the future for use, no matter what the situation.
- Logical layouts, appropriate colour contrasts, suitable finishes and optimum lighting can all assist in the easy and safe use of the bathroom.
- The bathroom door should be outward opening so that the user is more easily accessible in the case of an emergency.

Lighting (see Chapter 12 for further details)

- Dedicated task lighting may assist or enable individuals to better perform the numerous bathroom activities.
- Avoid glare.

Colour, contrasts and surface finishes (see Chapter 17 for further details).

- Toilet, shower and sink should contrast against their background and floor finish.
- The door and drawer handles should contrast with the doors and drawers
- Controls on appliances should contrast with the appliance itself.
- Slip resistant floors are always preferable in bathrooms.
- Walls in bath or shower rooms and WCs can be fully tiled for easy cleaning

Ventilation

- See chapter 15 for measures in addition to Part F of the Building Regulations that might be useful.
- Bathroom mirrors could be heated electrically so that moisture does not condense on them.

Sanitary ware

- Sanitary ware should be high quality and durable
- Where a person's stamina is limited, a shower seat should be considered.

WCs

- Some people find a toilet paper dispenser that dispenses a small number of sheets at a time useful for waste management and keeping toilets unblocked.

Showers

- Shower controls should be large and respond easily to the touch, with large push button controls recommended for the principal on/off operations.
- Water supplied to hot taps should be linked to a thermostatic control that prevents the water reaching scalding temperature, or alternatively provide a shower with pre-set temperatures.
- The shower head should be durable and easily adjusted in both height and direction.
- It may be useful to have a shower jet that is adjustable to accommodate different sensory preferences.
- Shower doors should be as simple as possible (a single hinged shower door has worked well for some).

Recommendations (continued)

- Showers above baths should be avoided if mobility is a concern as there is a risk of injury by slipping.
- Wet room or level access showers reduces trip risks and or more suited for people with reduced mobility.

Taps

- Taps with short levers are preferred as they are easiest to use when somebody's dexterity is compromised. Alternatively, the tap design that the person is most accustomed to might be the best option.
- Taps throughout the house should be of consistent design.
- Hot and cold labelling should be readily apparent and easy to distinguish (red/blue).
- Mixer taps may cause difficulties for some people.

Storage (See Chapter 18)

- Storage should be ample, organised around the tasks of the bathroom and easily accessible.

Laundry and waste

- This may be difficult for people to manage. A clear system of laundry and refuse may need to be put in place.
- Easy to use, well placed and labelled bins and/or laundry baskets can facilitate this process.

Assistive technology (See Chapter 21)

Telecare

- Flood detectors on the floor or skirting board below the wash hand basin or sink can detect a flood and transmit an alarm to a call centre.
- Personal trigger alarms, such as pull cords or large button switches mounted on the wall low to the ground will initiate an alarm to a call centre after a slip or fall.

'Stand-alone' devices

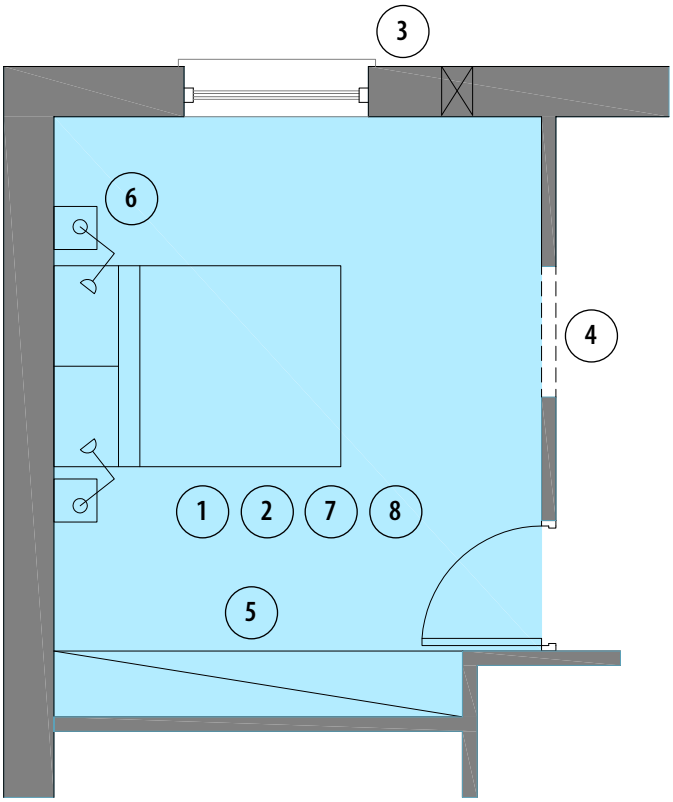
- Specialist bath plugs that automatically open to allow water out when the level exceeds a threshold may help avoid flooding which is more likely to happen and more difficult to deal with if the person has executive functioning difficulties.
- Anti-scald bath and sink plugs designed to change colour at a temperature above 36 degrees centigrade help to prevent scalding by giving the person the specific instruction that the water is too hot.
- Devices that pre-set water temperature, volume and rate in taps and showers are available.
- Environmental cues such as simple signs and reminders.

Key Points

- **Location (easy access to bedroom)**
- **Ergonomic**
- **Safety through use of non-slip surfaces**
- **Ease of use through use of large controls with clear labelling**
- **Automatic ventilation**
- **Storage – including open shelves and laundry baskets**
- **Cues like open shelving prompt actions**
- **Maintenance – easily cleaned surfaces**
- **Comfort and warmth**
- **Good quality lighting – natural and artificial**

CHAPTER 9

Bedrooms



Bedroom

1 Quiet space
2 Personalised
3 Well ventilated
4 Near bathroom
5 Well designed, logically organised storage
6 Well designed, accessible lighting
7 Fire retardant
8 Durable and low maintenance

Principle

1. To create a private environment for optimising rest and sleep.
2. To provide adequate space and facilities for dressing, grooming and for storage of clothes and other personal belongings.
3. To simplify and reduce environmental demands in carrying out these tasks.

Considerations

Cognitive

- If the person has specific executive functioning issues they may:
  - Battle with getting up out of bed and getting dressed.
  - Labour with choosing appropriate clothes, e.g. selecting matching, seasonal, correct size, clean or aired clothing;
  - Find sorting clean and dirty clothes and separating winter from summer clothes challenging.
  - Have trouble finding items from busy storage.

Physical

- Trips and falls may be more likely, particularly at night.
- A person may grapple with operating small controls due to difficulty with physical dexterity.

Social

- Little gaffes, often caused by cognitive problems such as forgetting to close curtains while undressing, can sometimes cause social offence and misconceptions.

Environmental

- Noise at night may be very stressful for a variety of reasons, people with mental health conditions need to avoid stress as it frequently causes an increase in symptoms.
- If a person smokes, they may smoke in their bedroom, compromising personal safety and impacting on air quality.
- A person may not react to seasonal changes in temperature.

Recommendations

Location

- Bedrooms should be located close to bathrooms with simple unobstructed routes between these rooms.
- Bedrooms would be best located in the quietest part of the building, such as facing the back garden rather than a busy road.

Layout

- Provide clear uncluttered pathways – linked to storage.
- Provide designated grooming and dressing spaces where all necessary objects are to hand. This may help to cue the inhabitant to undertake these activities.

Colour, contrasts and surface finishes (see Chapter 17 for further details).

- Colour and contrast can be optimised to make the environment easier to read.
- Colour can be used to enhance the bedroom's environment.
- Surface finishes should be non-slip.

Lighting (See Chapter 12 for further details).

- A light switch by the bed or that switches on automatically when a person gets out of bed may prevent accidents and falls at night.
- A 'night light' (e.g. low intensity LED) may assist the person in path-finding, avoiding accidents at night.

Electrics (See Chapter 14)

- Electrical sockets should be ample and well dispersed to enable portable appliances to be sensibly located and dispersed to avoid unnecessary clusters.

Ventilation (See Chapter 15)

- If he or she smokes in the bedroom, automated ventilation should be considered.

Storage (See Chapter 18)

- Ample, well designed storage can significantly enhance a person's functioning.
- Artificial lighting in the wardrobe may be useful.

Furniture and fittings

- A chair for dressing may be useful for people with low stamina.
- A full-length mirror may allow a person to check whether all steps in dressing and grooming have been completed.
- Furniture (including window dressings) needs to be durable, of high quality, stain resistant and easy to maintain.
- Furnishings and linens need to be fire retardant. This is particularly important if a person smokes in their bedroom. Fire proof sprays and treatments may reduce the chance of bed linen and other soft furnishing catching fire.

Laundry

- A clearly defined and labelled laundry system may cue and assist the person to successfully sort out laundry.

Recommendations (continued)

Assistive technology

Telecare

- A monitored bed occupancy sensor can be useful in certain circumstances.
- Some physical health problems, such as enuresis and epilepsy can be remotely monitored by specialist sensors.
- 'Stand-alone' devices include:
  - Curtains connected to a light switch which automatically close when the lights go on.
  - Bed occupancy and floor mat sensors that detect when a person has got out of bed and automatically switches on a light (in the bedroom, hallway and toilet) to reduce risk of falling in the dark.

Key Points

Storage

- Well designed
  - Ample (a place for everything)
  - Logically organised, e.g.
    - task items grouped
    - similar items together
- Consider labelling items, e.g. contents of drawers and containers.
- Consider some open shelving (allowing important everyday items to be easily seen).
- Internal lighting in wardrobe can make items easier to see.

Ventilation

- A well ventilated room aids sleep.

Safety

- Fire retardant furnishings and linens (especially if a person is a smoker).
- Externally monitored fire alarm.

Lighting

- Lighting Levels
  - Task Lighting for reading and dressing room
  - Night Light
  - Blackout blinds may assist a good night's sleep
- Controls
  - Easy to use
  - Accessible (e.g. light switch beside bed)

Assistive Technology

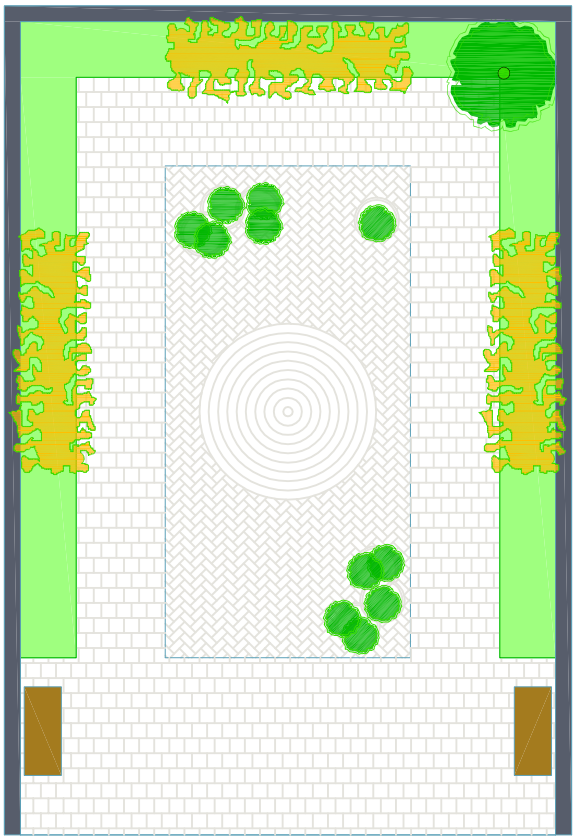
- Tele care: Externally monitored fire, carbon monoxide alarms; epilepsy, enuresis or fall sensor.
- Bed Exit Sensor (can automatically turn on night light or alert carer).
- Medication Reminders.
- Automated Curtain Closure (sensitive to light being turned on or lighting levels outside).

Dressing/Grooming

- Chair (aids those with low stamina).
- Mirror (gives feedback, assists person to check steps).

CHAPTER 10

Gardens and outside spaces



Rear Gardens

1. Low maintenance
2. South east to south west orientation, if possible
3. Private with solid boundaries
4. Accessible
5. External lighting
6. Consider therapeutic value of colour, seasonal variation and scent
7. Durable materials

Principle

1. A garden can provide a safe, private, therapeutic, outdoor space to promote mental well-being and the enjoyment of a rich sensory experience.
2. Generally low maintenance is preferable unless a person has the aptitude and motivation for gardening.
3. Outsides spaces should be clearly defined, secure, and fit in well with surrounding housing. They should incorporate a high level of security and privacy.

Considerations

Environmental

- Safe private therapeutic outdoor spaces promote mental well-being and can be a real asset in enhancing quality of life.
- Exposure to nature reduces stress and fatigue.

Cognitive

- If a person has difficulty planning and organising, a garden can quickly grow out of hand.
- Some may be unable to recognise the right time to do the necessary tasks.
- A person may be less able to notice changes in terrain, or poorly maintained surfaces or other trip hazards (visual processing issues).

Physical

- A person may have difficulty with stamina and agility and hence may have difficulty with the physical labour required to maintain a garden (bending, lifting, and digging).

Social

- A poorly maintained, conspicuously overgrown garden makes a house stand out negatively and can earmark it for unwanted attention.

Recommendations

Location

- As far as is practicable access to a garden or private or semi-private outdoor space should be provided for every dwelling.
- Minimise intrusions; noise and street lighting should be screened or buffered.
- Consider orientation of garden with regard to daylight and privacy.

Boundaries

- People have reported issues when dwelling entrances face directly onto a thoroughfare with no private boundary demarcation. There should be a transition space between private and public spaces. Front gardens with a clear boundary between the garden and the street are the preferred method for defining the boundary between public and private or semi-private space.
- External areas should not encourage unwanted attention, such as sitting on a wall. Walls at seat height may encourage loitering. Some people find this intimidating and it can impinge on the privacy of the individual.
- Walls should be solid, especially in the rear garden, to provide privacy and security.
- If gating is electronic, a simple to operate system, allowing a clear identification of visitors is to be preferred.

Paths

- All paths should follow logical, simple routes and provide access to all facilities.
- Paths should be laid out and constructed in such a way that hazards are minimised or eliminated.
- Paths should be low maintenance. Materials such as printed concrete can help to keep them weed free.

Layout

- The garden can be used to maximise the potential for sensory stimulation via aromatic planting and gentle water features. There is a huge amount of information available on sensory gardens.
- Seating should be secluded, sheltered and shaded if possible.
- A smoking area may be useful in reducing indoor smoking. A fireproof butt bin is essential if the resident is a smoker.
- Waste and refuse disposal should be secure, convenient and adjacent to the dwelling.
- Waste should be clearly labelled or colour coded as to the waste disposal purpose used in the kitchen.
- Bins should be positioned so that they do not infringe the footpath, impede views and are easy to manoeuvre to the exit.

Lighting

- Low maintenance solar lighting can provide ambience and prolong the usage of the garden.
- The lighting scheme should provide a good level of consistent light around all pedestrian routes and communal areas after dusk.
- Side paths and rear garden paths should be provided with sensor-activated security lighting.

Garden furniture

- Maintenance-free durable furniture will be easiest to manage.
- Coloured items of furniture and decorative items could make up for lack of colour in planting.

Recommendations (continued)

Planting

- Planting should be soft, robust, fragrant and low maintenance.
- Choose insect and disease resistant plants.
- Raised beds may be useful for people who have poor flexibility or stamina.
- Low level planting, unless contained behind a low wall, should not be provided next to a footpath as it may grow into a trip hazard.
- In front gardens consider buffer planting to screen off view of indoor areas.
- Tree choice should take into consideration potential slip hazards due to leaf fall from overhanging trees and fast-growing trees blocking light to living space.
- Slow-growing planting may cut down on the need for maintenance.
- Lawns need a high level of maintenance – consider avoiding them.

Assistive technology (See Chapter 21)

Stand-alone devices

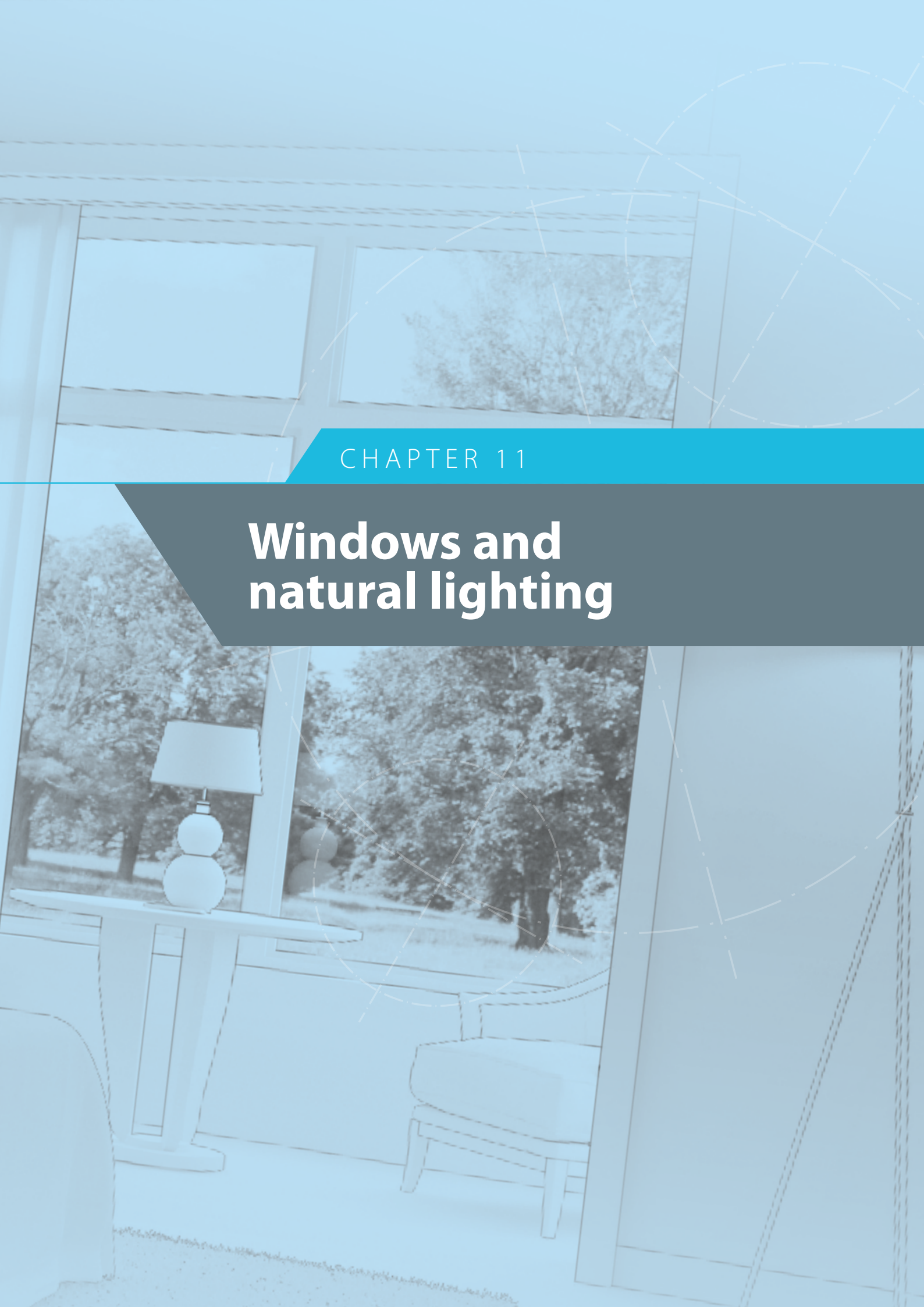
- Sensor-activated lighting on external pathways.
- Fob opening and closing systems may be easier to use and reduce the risk of anything being left open.

Key Points

- Quality of outdoor spaces – orientation towards sun, low maintenance clearly designated areas for bins, areas for sitting outdoors, good quality landscaping and secure boundaries
- Quality of communal spaces (if applicable)
- Location of bins
- Adequacy of external lighting
- Visibility of main entrance/access to main entrance
- Need for transition space between private and public areas
- Quality of boundary treatments
- Vulnerability to antisocial activities

SECTION 4

DETAIL DESIGN



CHAPTER 11

Windows and natural lighting

Principle

1. Maximise natural light while ensuring privacy and security. Make all systems as easy as possible to use.

Considerations

Research indicates that lighting has a positive impact on mental health. Not only does it allow us to see; light stimulates us and influences our moods and activity levels. Our physiological response to light depends on the light's characteristics, such as colour spectrum, intensity and timing. Light is well recognised as a therapy in itself. Researchers have discovered that when bright light enters our eyes it causes chemical reactions to occur which control our daily rhythms and moods. In winter especially, the reduction in light has an adverse effect on both the body and mind. Seasonal affective disorder (SAD) is a periodic form of depression that tends to occur in winter and can affect us all to a greater or lesser extent.

The integration and maximisation of lighting in housing is standard practice today, even when compared to houses built twenty years ago. It is therefore imperative to prioritise and integrate natural light into dwellings designed for those vulnerable to mood disorders and other associated mental health issues.

Recommendations

Windows should have the following characteristics:

Light. Natural light should be maximised, particularly in task areas, and in areas that are most frequently used in the house.

Ventilation. Provide a good ventilation facility that does not rely on opening windows.

Privacy. Windows should afford people the maximum amount of privacy and be frosted where appropriate.

Security. These features should be simple to operate (e.g. avoiding multiple locks and keys). Optimally windows should not directly interface onto street level (some older city cottages have windows directly onto footpaths which may be unavoidable).

Consistency. Be consistent in their forms and opening mechanisms throughout the building.

Simplicity. Opening and closing mechanisms should be simple to use, both physically and cognitively. The colour of the ironmongery should contrast against the frames on which it is fitted for clarity.

Durability. Maintenance free. Controls/fittings should be robust (not be prone to malfunctioning and breaking).

Glare. Windows should have a means of excluding low elevation sunlight such as blinds, curtains or awnings (if these are automatically adjusted it reduces the risk of them constantly being kept shut).

Assistive technology. Environmental control devices to open/close windows and curtains might be helpful for some.

CHAPTER 12

Internal lighting

Principle

1. Achieve optimum levels of general lighting in each room for sight but also to support overall well-being.
2. Provide optimum levels of task lighting at relevant locations.
3. Ensure lights are easy to switch on and off.

Considerations

Cognitive/sensory

- A higher proportion of people with mental health issues have difficulty with visual acuity caused by visual processing issues or other visual problems.
- On occasions a person may not respond appropriately when the visual environment condition alters, such as when the season changes or when daytime changes to night time.
- Adequate lighting can reduce and simplify environmental demand when carrying out tasks.
- Bulbs blowing may be difficult to manage for a person with executive functioning issues.

Physical

- If a person has a history of trips or falls providing additional lighting may help.
- The characteristics of the artificial light may will be of significance if we spend a lot of time indoors.

Recommendations

- Harsh lighting, e.g. fluorescent lights can be too intense. Avoid glare.
- Control of lighting level is important (for everybody).
- Incorporating dedicated task lighting in addition to the general lighting infrastructure may assist or enable individuals to perform the numerous activities, e.g. cooking and reading.
- A 'night light' may assist the person in path-finding/avoiding trips at night.
- Storage should be well lit.
- Long life bulbs should be considered for energy saving and convenience.
- Bulbs chosen should be easily available in common retail venues.
- Light switches should be simple to use and consistent throughout the house.
- It might be helpful to wire the task lighting back to a separate switch on the wall as sometimes people have difficulty turning on and off individual lights.
- Avoiding dimmer switches may be useful as they are not compatible with many modern bulbs and they can be awkward for some people to use.
- Task and ambient lighting should have have the following characteristics:
  - Cool white (4000k) used for tasks.
  - Warm white (2700k) ambience background light may be left on at night as a night light.
- Natural daylight can be simulated using a Seasonal Affective Disorder (SAD) light box or a SAD lamp or LED (colour temperature of 6500 K). They may be useful where people have little or no daylight and where they spend much of their time indoors. These should be used only in specific areas and not where people wish to relax.
- Human Centric Lighting; artificial light that changes in colour and intensity according to the time of the day to be in sync with people's bio-rhythms is becoming more commonplace and may be useful with this group.

Assistive technology

- Consider sensor-activated lighting.

CHAPTER 13

Heating systems and general plumbing

Principle

1. Provide fail-safe central heating and plumbing systems and controls.

Considerations

Cognitive/sensory

- Due to specific cognitive difficulties experienced, some people with mental health issues may not respond to seasonal changes in temperature, so automated controls may be useful.
- Tasks that are non-routine, such as ordering of heating oil, may be missed. This is due to executive functioning difficulties.

Physical

- Some individuals who have difficulties with physical dexterity may find fiddly controls difficult to operate or may have visual acuity problems and may not be able to see precise controls.

Recommendations

Heating systems should have the following characteristics

Simplicity

Easy to understand settings, seasonal / day /night icons. Boilers, timers and temperature valves, should have controls that are accessible, approachable face on, easily identifiable and have clear, coloured unambiguous instructions. A folder or manual for all appliances with simple instructions and emergency contact numbers might be useful.

Durability

Maintenance-free (low maintenance as possible). Controls/fittings should be robust (not be prone to malfunctioning and breaking).

Consistency

Systems and controls should be consistent throughout the dwelling.

Safety

Avoid open fires, unless chosen, due to their high maintenance. Tamper-proof controls can in some cases be useful. Carbon monoxide alarms are essential (externally monitored will improve safety).

Cueing

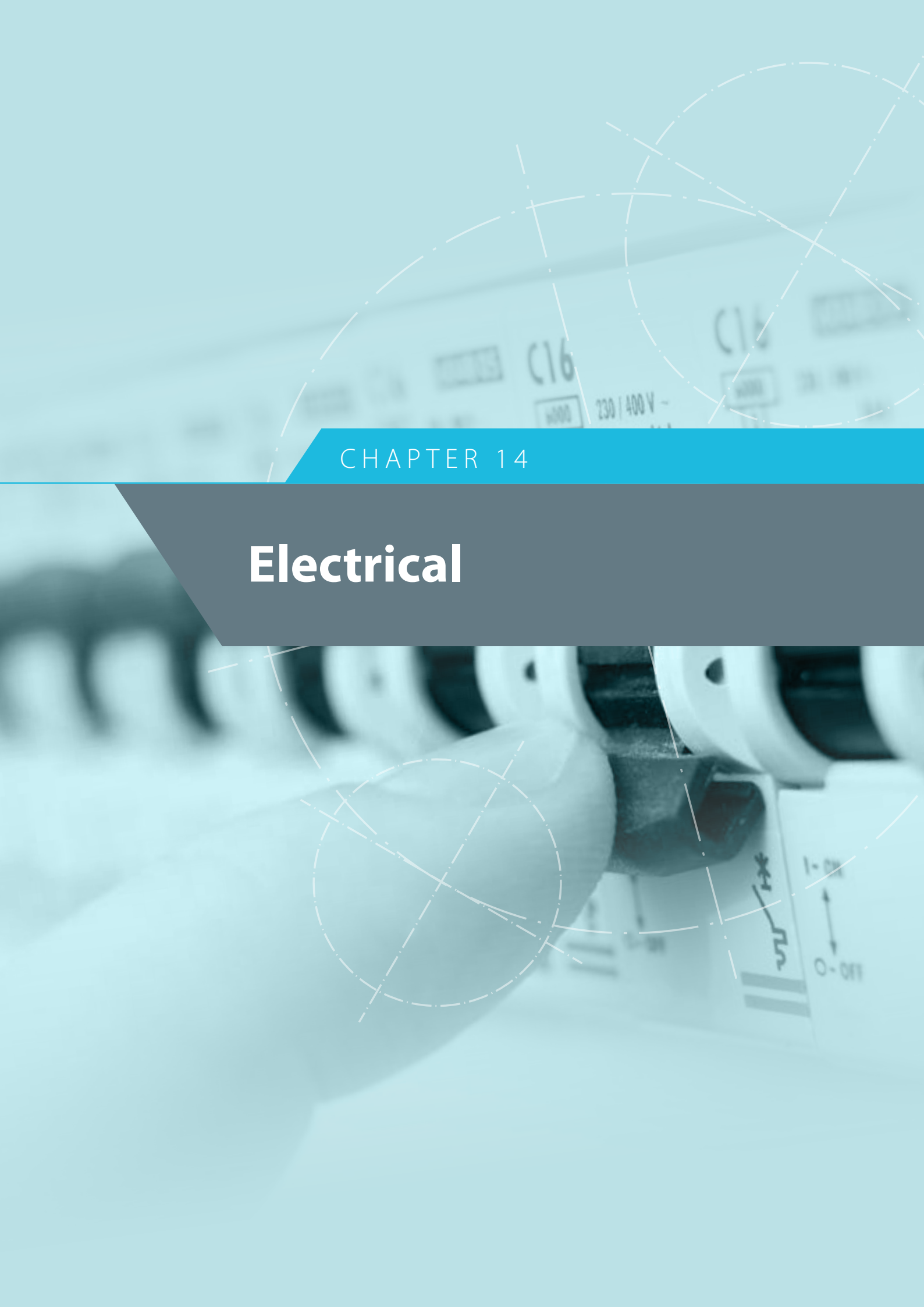
Consider simple labels and cues such as 'press here for heat downstairs'. A person may need a prompt to carry out non routine tasks such as arranging the servicing of a boiler or a heating oil refill.

Assistive technology

Be capable of being set to run automatically (timing, temperature and location within the house). Alarm when fuel refills such as heating oil is necessary.

CHAPTER 14

Electrical



Principle

Make all systems and controls such as switches, sockets, door entry systems, intruder alarm, fire alarm and immersion heaters, as straightforward and unambiguous as possible to use.

Considerations

Cognitive/sensory

- Some people may be less efficient at forming a mental model of devices, switches and systems.
- Devices, switches and systems may not stimulate the actions they 'afford' as automatically as they would for others.
- Using devices and switches may be more mentally demanding (particularly unfamiliar ones).

Physical

- Some people may have difficulties with physical dexterity and hence may find complex 'fiddly' controls difficult to operate or may have visual acuity problems, and may not be able to see specific controls.

Recommendations

Consistency

Where practical, all controls and switches should be of a similar design and be at a similar height throughout the dwelling.

Simplicity

Should be easy to operate. All switches within sockets should have an easily recognisable on/off switch (ease of error detection). Clear cues as to the use of every control needs to be considered throughout the dwelling. This applies equally (and is arguably even more helpful) in controls not used regularly, such as circuit breakers. If dexterity/ fine motor skill/ tremors are a problem, switch types can make a huge difference.

Durability

Long-life batteries/bulbs/fuses may be considered. Choose high quality to minimise breakdown.

Availability

Batteries/ bulb/fuses should be easily available in common retail venues. Controls should be placed at locations considered accessible, having regard for a person's daily routine.

Labelling

Consider simple labelling and cueing such as 'fuse box here' as this can be useful in problem solving situations.

Assistive technology

Consider a wide range of switches for each user to meet individual needs and preferences, such as large button switches mounted on a wall.

CHAPTER 15

Ventilation

Principle

1. To sustain good air quality throughout the dwelling by limiting the moisture content and the concentration of harmful pollutants in the air within the dwelling.

Considerations

- Indoor air pollution in the home causes and exacerbates many health problems. A large number of people with mental ill health smoke. The smoking rate in the general population is just over 20% (Glassman 1999), while the proportion of people with schizophrenia who smoke may be as high as 90% (Glassman, 1993). Those who smoke tend to smoke heavily, and, in addition, smoke cigarettes with a high nicotine content.
- Due to specific cognitive issues, some individuals may not respond to changes in air quality. Manually controlled ventilation options (including opening a door or window) may be less effective as the person may not use them.
- While the health benefits of improving indoor air quality may be tempered by the smoking behaviour of the person, improving air quality will have beneficial effects on sleep quality and general cognitive skills. The health benefits of limiting moisture content are not counteracted by smoking.
- Non routine tasks such as servicing the boiler, sweeping the chimney or changing batteries in carbon monoxide alarms may be difficult for people with specific cognitive difficulties.
- Some people may find noisy ventilation systems stressful and switch them off.

Recommendations

In addition to the measures outlined in Part F of the building control regulations the following measures may be useful.

- 'Extract ventilation rates' in the kitchen, bathroom, utility room and other wet areas of the house may need to be increased as remembering to open the window for 'purge ventilation' may be difficult for the person.
- Extract ventilation in these areas needs to run automatically and be triggered by levels of moisture in the air.
- Extract ventilation may need to be considered for other habitable rooms (living room or bedroom) as the person may be less likely to operate manually controlled systems due to specific cognitive issues. This may be particularly important if the person is a smoker and smokes in the dwelling or keeps pets.
- Demand controlled ventilation systems which turn on in response to increasing CO2 levels or levels of other pollutants may be a useful option in these rooms.

Recommendations (continued)

- 'Source control methods' of improving air quality such as educating the person and helping them set themselves up to smoke outside would be helpful.
- Quiet ventilation systems may be less stressful for some people.

Assistive technology

Telecare

- Remotely monitored, temperature, smoke, heat and carbon monoxide (CO) alarms may be necessary if the person has executive functioning difficulties.

CHAPTER 16

Sound

Principle

1. To suppress unwanted noise to make the home a pleasant, productive and comfortable place to live.
2. To allow a person maximum control over the sound level in their environment
3. To optimise the reverberation rate and acoustic quality.

Considerations

- When somebody experiences the positive symptoms of schizophrenia (such as auditory hallucinations – hearing voices) they may find intrusions by external noises very stressful and/or overloading.
- Due to their cognitive profile, people with schizophrenia may be more strongly affected by poor acoustics and/or high reverberation rates.

Recommendations

Houses should have the following characteristics:

- The building skin envelope should minimise sound transmission from external to internal space, particularly in noisy areas.
- Interior space noise control measures should be put in place to limit transmission from apartment to apartment or from room to room within the building.
- Mechanical equipment noise can be reduced by vibration isolation measures, sound trapping and sound masking measures.
- Interior space acoustics should aim for a reverberation rate that optimises sound intelligibility.

CHAPTER 17

Colour, contrasts and surface finishes

Principle

1. To use colour and contrasts to make the home easier to interpret and understand.
2. To provide suitable non-slip non-trip quality flooring materials.
3. To best use colour to enhance a person's living space.

Considerations

Environmental

- Results of studies indicate that the use of good colour design might contribute to a more positive mood. (Kuller, 2006).

Cognitive

- Colour contrasts (ensuring adequate variation in the light reflectance of colours) can be used to make furniture and equipment easier and safer for the person to use and thereby reduce environmental press and help mitigate the impact of cognitive issues.
- Colour blocking can help define different functional areas in a dwelling.

Physical

- Good quality surface finishes are important as issues such as shuffling gait, poor stamina, problems with vision and such like can make people more prone to trips and falls.

Social

- A good use of colour can set a positive tone and provide low-cost improvement to a living space.

Recommendations

Contrast

- Colour blocking can clearly delineate work spaces, which may make it easier for the person to read the environment. This does not necessarily need to consist of highly contrasting colours.
- Colour contrasts can be useful in helping people to both see and read the environment. A subtle contrast is often all that is needed. A simple way of identifying colour contrast levels is to take a black and white photograph of a room and see how easy the features stand out against their surroundings. Light Reflectance Value (LRV) is a measure of visible and useable light that is reflected from a surface. Adequate visual contrast is provided if the LRV of the contrasting areas differ by at least 30 points. This value is frequently given on colour cards and paint pots.
- Skirting boards and door frames should contrast with walls and ceilings.

Recommendations (continued)

- A clear contrast should be made between floor and wall finishes and between grab rails and the wall behind them. Also between light switches and the wall behind.
- Cognitive demand is reduced if all handles on doors and gates are in contrast with the background colour to increase distinctness and if the colours used are consistent in design and operation throughout the dwelling.
- Controls on appliances where possible should contrast with the appliance.

Finishes

- All finishes should be hard wearing and resistant to damage.
- All finishes in kitchens, bathrooms and other wet areas should be non-slip.
- Changes in finish should provide a smooth and flush transition which will not wear or fray so that they become a trip hazard.
- Avoiding trip and slip hazards should be considered when choosing floor coverings.
- All surfaces should be durable and easy to clean.

Glare

- Surfaces should be non-reflective.

Patterns

- Strong patterns should be avoided unless the person is accustomed to and likes them.

Colour selection

- Personal choice is a hugely important factor in determining colour in a person's home, therefore the consumer should be involved in the choice of colour.
- Colours can be stimulating or calming. Warm colours have been shown to be more stimulating, while cool colours tend to be more calming and restful.
- Predictability and order can be achieved in the environment through having the same colour systems throughout, such as having the same colour for all floors and the same colour for all contrasting handles.
- Visual art depicting restorative nature scenes can have a powerful impact on well-being and provide a positive distraction.

CHAPTER 18

Storage

Principle

1. To provide enough logical, clear, understandable places to put belongings.
2. A system of storage can be used to structure the environment so that it assists the person in by-passing their cognitive issues and in planning and organising tasks.

Considerations

Cognitive

- Where a person has difficulty with executive functioning (planning and organising), good quality storage systems can be of assistance in making planning and organising less demanding and in reducing the impact of these issues on day-to-day functioning.

Physical

- Reaching and bending can be difficult for people whose stamina has been compromised.

Recommendations

Cognitive

- Ample storage is essential throughout the house to support all aspects of daily living (see Velligan (2013) for further details).
- Storage should be logically organised around the tasks of the room. The person may need some assistance in organising a system of storage as it may be difficult for them to organise this independently.
- Labelling of storage areas may be useful in providing a visual prompt about contents.
- Separate storage for different categories may be useful, such as having separate winter and summer wardrobes. Difficulties in executive functioning can make these judgements difficult to make on a day-to-day basis.
- Having the contents of the storage area visible, using glass-fronted units and open shelving, will be particularly useful for some individuals with executive functioning difficulties.
- Having most essential items easily accessible will reduce demands on the person (See Cognitive Adaptation Training Guidelines (Velligan et al 2013) for a more detailed description of how to use a system of environmental cueing to bypass cognitive difficulties.

Physical

- For people who have difficulty bending or reaching high, low and deep cupboards should be avoided.
- Adequately lit storage may be of assistance for people with sight/visual impairment difficulties.

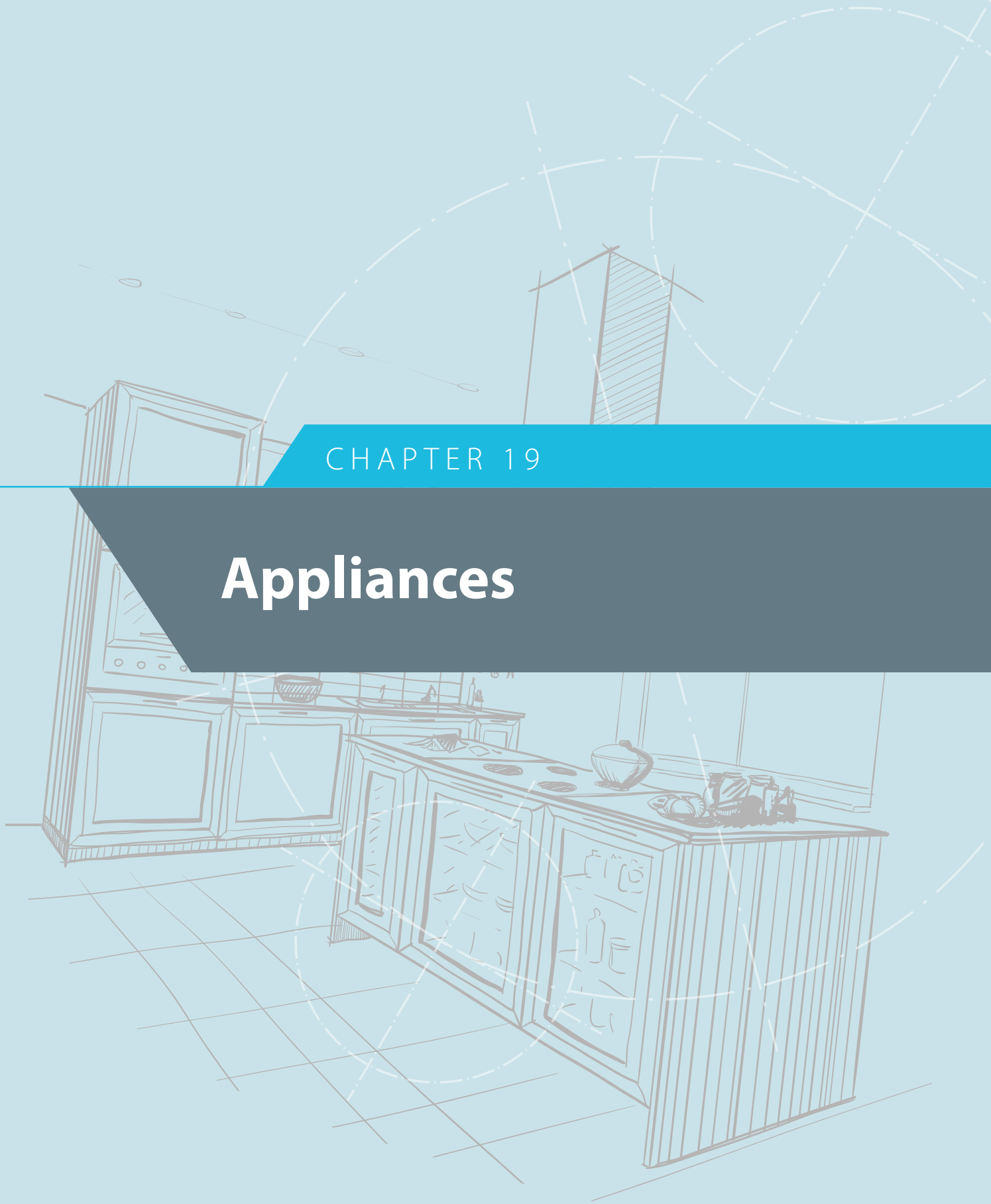
Assistive technology

Stand-alone devices

- Automated lighting can be useful in all storage areas.
- Reminders for food spoilage can help keep food storage organised.

CHAPTER 19

Appliances



Principle

To reduce mistakes and the frustrations associated with using poorly designed devices. The appliance should be easy to control but forgiving if accidently misused.

Considerations

Cognitive

- Memory issues mean that the more there is to remember when using a device, the less likely it is that the person will successfully operate it.
- Issues with executive functioning can mean that the relationships between the device's features and its use may not be obvious.
- The threshold for engaging with complex devices can be lower for people with mental health conditions than it is for the general population. This may result in the person avoiding the appliance and the associated task.
- Getting to grips with new appliances can take time and effort.

Physical

- Small, complex or 'fiddly' controls can be very difficult to use for people with dexterity issues or tremors.
- People with poor vision will have difficulty reading small controls.

Social

- Low energy rated appliances cost less to run. If a person has a limited income this will be an important consideration.

Recommendations

Appliances should be undemanding and straightforward to operate.

The following features tend to make appliance easier to understand and use (See Norman 1998 and 2013 for further detail)

- One action to turn on and off.
- Devices should give good feedback, such as an indicator light that makes it easy to see whether a device is switched on or off.
- Clear, explicit, simple labelling can help prompt correct use.
- Indicators, controls and labels should be clear and readily apparent.
- The controls and the workings should be easy to link (e.g. it should be easy to match the hot plate with the correct control in a cooker).
- Have one action allocated to one control.
- It may be useful to have the controls contrasting in colour with the appliance.
- Having controls with audible and touch-based clues may also be useful, such as raised surfaces and audible clicks giving extra feedback.
- Electronic, touch button controls are excellent for people with reduced strength but are problematic for people with hand tremors.
- Easy to clean is an important consideration.
- Appliances should be of high quality as devices malfunctioning are particularly disruptive for people with executive functioning issues.

Recommendations (Continued)

Cookers – common safety concerns

Type	Common concerns	Suggestions
Electric	Scalding, burns and fire resulting from • Saucepans being allowed to boil dry. • Oil in frying and chip pans being allowed to reach excessively high temperatures. • Papers and tea towels being placed on hot surfaces. • User forgetting that there is something in the oven.	Cooker guard system which learns the cooking patterns of the service user and switches off the cooker while raising the alarm to the tele care system. Extreme temperature tele care monitors placed on the wall or on a ceiling above a hob may raise an alert if the temperature exceeds 35 degrees Celsius for a couple of minutes or if the temperature increases rapidly as in a flash fire.
Gas	Scalding, burns and fire resulting from the activities described above, though note that lit hobs tend to be more visible than with many electric units. Hobs being turned on but not ignited (causing suffocation, or leading to an explosion if ignited).	As above. Dangerous levels of methane can be detected using a sensor which can provide an alarm through the tele care system and which can also link to an automatic shut off to make the situation safe.

Microwaves – pros and cons

Pros	Cons
Can be placed at any height for people who have difficulty reaching and bending. Can be placed in any room so would suit people who live mostly in one room. Controls can be easier to operate than on a conventional cooker so could suit people with cognitive issues or who have painful or limited use of their hands. Encourages the use of frozen or prepared meals that can be easily heated in a microwave oven.	Potential for accident through • Overcooking or burning. • Placing metal objects in the microwave. • Scalding (e.g. using micro to heat a cup of water). Accidents are most likely when people who haven't used a micro before. Ready meals for microwaving represent a move away from traditional purchase and preparation of food and can deny the service user the opportunity to participate in activities such as shopping, peeling and cutting, that for some people can be important for their quality of life and is nutritionally better.

CHAPTER 20

Fire Safety

Principle

To maximise safety in the event of fire.

Considerations

Cognitive

- A person may not respond to a fire alarm.
- Night-time medications may dull a person's response.
- Issues with organisation and sequencing may make managing an unexpected situation particularly challenging.
- A person may not remember to check that fire alarms are in working order.

Physical

- There is a high prevalence of smoking in this population group.
- A person's stamina may be reduced and they may not be able to escape a fire as quickly.

Recommendations

- Provide metal bins exclusively for cigarette butts.
- Provide fire retardant furniture.
- Provide non-toxic fire retardant sprays for furniture, soft furnishings and bedding, for people who are a fire risk.
- Although not a design feature, limits on smoking in the house and bedroom could be negotiated with the person.

Fire drills

- Fire drills should be negotiated and practised in advance.
- Clear exit and escape routes should be carefully considered.

Fire alarm

- Monitored, smoke alarms, heat detectors and CO2 alarms are necessary where there is any uncertainty about the person's ability to respond appropriately to these alarms.
- Provide wired-in smoke alarms, heat detectors and CO2 alarms.

Note: All relevant applicable statutory regulations and codes must be adhered to.

CHAPTER 21

Assistive Technology

Principle

1. Assistive technology offers many tools that can be used to increase independence and safety in the home.
2. Assistive technology ranges from 'tele care' devices which make it possible to remotely monitor the dwelling and detect emergencies as they happen to 'stand-alone' devices such as memory aids and simple safety devices.
3. Assistive technology devices play an important role in enabling people to live in their own home, supported by informal carers, home care services, and a formal response team.

Considerations

General (stand alone and tele care devices)

- Assistive technology includes a very broad range of equipment and should be tailored to suit the individual's needs (see an example of an assistive technology assessment in Appendix C).
- Assistive technology requires collaborative working and must include the person and all involved in supporting them.
- Technology is not a substitute for care or support but can be used to enhance a care package by the more effective management of risk.
- Regular reviews of the system's effectiveness is essential for its success.
- Technology should be simple to use and accessible.
- Devices requiring electric sockets should not impede the functioning of existing sockets or switches. If re-wiring or constructing a new dwelling, ensure that adequate outlets are provided in appropriate locations.

Tele care specific considerations

- If tele care monitoring is being used, this must include ethical considerations and informed consent should be discussed and agreed.
- A robust operational framework is needed which should include an individual protocol for each sensor installed and for each type of emergency.
- Some emergencies will require standard protocols and some may depend on time of day, such as door exit at night.
- Robust, clear escalation procedures and out-of-hours arrangements are essential (see Appendix C for an example of a response protocol).
- All involved in supporting the user must have an understanding of the equipment and its applications and limitations, such as who responds and who checks the batteries?
- By involving the equipment manufacturers (employing them as the installers and providers of the monitoring services) it may be possible to fine tune the equipment to meet individual needs, without introducing system errors.

Recommendations

- Assistive technology can manage risks to independence using:

a) stand-alone devices to make useful and safer adaptations to the home environment, such as simple memory aids like a fridge open alarm

b) linked sensors which can control other devices, e.g. rapid rise in temperature triggers shutting off the cooker

c) devices which can communicate an early alarm to a remote support team, e.g. monitored fire or flood alarm

- Descriptions of these devices and how they might be used in the context of independent living for mental health service users are placed throughout this guide.

CONCLUSION

This guide aims to provide guidance in ways of designing and fitting out dwellings that will enhance the capacity of people with disabilities caused by mental health conditions to live comfortably in their own homes and communities. The aim is also to provide direction on how to design dwellings that minimise disability and augment strengths and abilities.

Research on other disability groups indicates that a well-organised, needs-driven, tailored, living environment is very useful in facilitating independent living. A well-designed home environment has the potential to compensate for, or bypass, many of the cognitive and physical difficulties that hamper daily living. It can also make the person less socially vulnerable and make the dwelling less demanding and expensive to run.

Government policy on mental health in Ireland, and in most other countries, is strongly committed to community care and recovery principles. However, no specific design guidance on home environments that foster independent living for this group exists. In this project a group consisting of mental health professionals, architects, experts in assistive technology and housing providers came together to pool expertise and to develop guidelines.

We identified factors associated with independent living difficulties from the academic literature and from professional experience. We also looked more broadly at environmental influences on mental well-being. We reviewed current thinking on mental health recovery and disability. We also looked to the design literature for information on how the house or objects in the house might impact on the person using it, such as how the home might cause some difficulties or create barriers.

We compiled the many ways that housing design and assistive technology can support people with a variety of mental health conditions living in the community by compensating for disability and maximising independence and integration into the community.

The guide is structured to be simple, succinct and easy to implement. The technical guidance is divided into four main categories.

1. Designing for specific difficulties.
2. Dwelling type and location.
3. A room-by-room guide.
4. A system-by-system guide.

This enables the guide to be used if looking for design solutions to help with a particular problem, if tackling one room in a house or if old systems such as the wiring or plumbing are being upgraded. It can be used whether building a new home or retrofitting an older one.

The guidelines can be used by individuals and their families or by state providers, whatever housing model is being used. If a 'housing first' approach is being used the guide should help overcome some of the obstacles, and reduce the amount of assistance required for the person to maintain and run their home. If a more traditional 'transitional' approach is being used, providing transitional accommodation that closely approximates to a dwelling in the community, as outlined in this document, it will give the person the best possible chance of success when moving into their own home.

The design guidelines aim to inform and support the design process but to not be over prescriptive. The importance of end-user participation and choice cannot be overstated.

The design response needs to be tailored to the individual and their individual needs.

The recommendations in this guideline are based on literature review, on multidisciplinary expert opinion and anecdotal evidence. This represents a first step in what needs to be done to advance research in this area. The next step

would be to try to implement the guidelines to assess their usefulness.

The scope for further research is considerable, and could include:

- Evaluation of overall outcome
- Evaluations of improvements in independence
- Recovery impact
- Impact on relapse rate and hospitalisation
- Economic impact
- Life satisfaction
- Family/carer satisfaction
- Long-term impact
- Identification of the best ways to foster design participation.
- Further exploration of the application and usefulness of some of the concepts such as affordance, environmental press etc. in designing for people with specific disabilities.
- An investigation of the use and usefulness of assistive technology.
- The timing of when technologies in the context of the recovery trajectory are most effective.
- The ethics of assistive technology in this group.
- The optimal combination of design, technology and personal support.

As stated in the introduction, one of the most basic needs of every person is to have a suitable home. There is no place like home - As the traditional Irish saying goes 'níl aon tinteán mar do thinteáin féin' there is no hearth like your own hearth. Living comfortably in your own home and community has the potential to transform the experience of living with a disability.

HOUSING DESIGN GUIDELINES

APPENDICES

Appendix A
Recommendations: quick guide

There have been several key recommendations that have emerged during the preparation of this guide. In order to summarise the most frequent recommendations we have compiled the following quick guide.

Factors for consideration

1. Choice

It's obvious that a person's choice is the foremost consideration to be factored into planning for a person's housing needs. This is sometimes overlooked for this population and tenancy selection often comes after the commissioning of a property. In studies consumers consistently reported that they would prefer to live in their own house or apartment, to live alone or with a spouse or partner and not to live with other mental health service consumers.

2. Design participation

Involving the person (and their family or carer if appropriate) in the design process and fully understanding their needs and preferences is essential. As well as a thorough understanding of the person's personal preferences and functional difficulties, the therapist/designer also needs an understanding of how that person might react to potential solutions. Often solutions that should work in theory remain unused as they are not seen as useful by the person or they don't integrate well into their everyday routine.

3. Cognition

Cognitive skills are the mental capacities or underlying skills required to process and learn information – to think, remember, read, understand and solve problems. Many people with health conditions may find it difficult to think clearly, pay attention and remember. For some people cognitive problems are only evident during episodes of illness, for others the cognitive problems are more persistent. Mental illness is an invisible disability – while mental illness is commonly understood to cause emotional and behavioral problems, cognitive difficulties are less commonly understood and are often misperceived as, for example, laziness.

A well designed environment (one that uses principles of universal design and elements of assistive technology) can help people with cognitive disability to overcome some of their specific difficulties.

Familiarity and straightforward products

Use appliances and equipment that are already familiar to the person you are designing for; this increases spontaneity and avoids the need for new learning. Keep appliances simple and avoid complex and multi-use products. A clear example of this is a pre-set shower for temperature and volume as it's much easier to operate than one that requires multiple-actions to regulate. For some people this may influence participation in their activities of daily living. The ability to pre-set heating systems and / or sensor lighting can have added usefulness to the environment. Overall these small steps increase confidence and influences ability.

Cueing and feedback

Simple prompts and signage can be enabling for the person in question. These can be discreet and are often a low-cost way of triggering certain behaviours. For example, storage can be labelled to help with processing a system of organisation and can improve better sequence and thought. Keep cues close to the activity concerned to trigger the commencement of an action. The general public already has adapted these principles with *No Junk Mail* signage on letterboxes to decrease waste. Assistive technology can be useful in this area. Consider electronic prompting devices to initiate actions. The most common device nowadays is the mobile phone, which can have pre-set reminder alarms

set for appointment times or refuse collections. Stand-alone memory aids (such as medication reminders and voice recorders) orientation aids (such as electronic calendars) and safety devices (such as gas cooker sensors that shut of the gas supply when left running) may increase everyday independence.

Defined task areas

Keep the design layout logical, with clear demarcation of a room or areas for their desired function. The environment can be helpful in keeping tasks in focus, and limits distractions, while cuing helpful behaviours. For example, in a more open plan environment, a change of floor covering can define the kitchen activities from the resting or living room area. Colour blocks can be used to separate and organise functions in a kitchen. Provide storage for items in one area that are associated with a particular task, such as a cupboard with room for a sweeping brush, cleaning products and mop. This can help a person to structure a task and limits distractions, while enhancing performance.

Low maintenance

A common concern is that a person's property can fall into disrepair. The choice of products purchased in the first instance is central to the person's ability to maintain their personal space to a good standard. Highly durable fabrics and low maintenance finishes can have a lasting positive impact on the dwelling and environment.

4. Physical health

Many people with a mental health condition have also got coexisting physical ailments. This can often lead to decreased stamina or dexterity restrictions. Designers should be fully aware of the necessity to create accessible environments to meet the totality of a person's needs.

5. Social factors

Location

Independence and social inclusion and a sense of belonging are all affected by site location. Staying connected with family and friends are vital to a person's circle of support. The right location can be key to success and avoid displacement and allow existing supports to be maintained. Local amenities should be accessible; as social isolation can be a barrier to well-being. Connection to their mental health service provider's catchment area is also important and not often taken into consideration, especially in urban areas. Housing should not be separate from other housing in a community.

Antisocial behaviours

Long-term mental health services users are one of the most vulnerable groups in our society, despite commonly held beliefs that people with mental health conditions are more exposed to the impact of antisocial behaviours. They are more likely than the rest of the population to become victims of violent crime. They are no more likely to be perpetrators. Choose areas with low levels of crime and be mindful of integrating good quality security features into the design.

Social Integration

Every effort must be made to ensure the property conforms to the general standards in the area. A person's anonymity and privacy must be protected.

6. Environmental factors

Colour and light

As well as being recognised as mood enhancing, colour can improve the environment positively, as can works of art in general. It is agreed that the use of prints of nature for example, can have a positive effect on mood and anxiety levels in healthcare settings. The integration and maximisation of light into housing design is standard practice today even compared to houses built twenty years ago. It is therefore imperative to those vulnerable to mood disorder and other associated mental health illnesses that natural light is prioritised and integrated into any design, making for a healthier home.

Appendix B
Cognitive and sensory aspects of schizophrenia

What is cognition?

'Cognition' refers to the way a person processes and uses information from the world around them. People constantly take in information and process this in a way that is specific to their needs and circumstances. They automatically capture, make interpretations of, and store everything they see, hear, touch and feel. While the person has control over some of what they pay attention to, most information is automatically processed. They retrieve this information when it is needed. This process colours all of a person's experiences and allows people to respond safely and efficiently to the environment around them. Furthermore, it allows people to learn from these experiences and to label them with private meanings.

Using information from the world around us involves mental processes that includes attention, memory, producing and understanding language, learning, reasoning, problem solving, decision-making, awareness, perception, and judgement.

What specific cognitive difficulties are associated with schizophrenia?

Many people with schizophrenia have specific information processing difficulties. Up to 75% show some deficits on neuropsychological tests. Very specific areas are affected, though there is a great variance in the extent of its impact. In general, difficulties in cognition are not progressive and hence remain relatively static over time.

Reduction of capability in the following domains is most common:

- Attention (ability to focus attention on a task or event).
- Memory (ability to organise, store and retrieve information).
3. Information processing speed.
4. Executive functioning (a group of higher order cognitive abilities which allow people to plan and carry out goal-directed behaviour, enabling adaptive behaviour, independent living and productivity).
5. Visual processing abnormalities (perception of contrast, motion and detection of physical contours, control of eye movement and recognition of faces and facial expressions).

Why are they disabling? How do these cognitive difficulties impact upon a person's daily functioning?

Research has shown that cognitive impairment is related to social and functional outcome. This is to say that the higher the level of cognitive impairment, the more difficulties a person has with processing information from the world around them, and the greater the impact on daily living, work and the social life of the person.

The following are examples of difficulties that may occur when a person's information processing system is curtailed.

- Developing an action plan will be made less efficient if a person's ability to retrieve stored information (remember what was said, or remember what he or she did in the past) is reduced, so any plan developed will be based on incomplete information.
- Implementing the plan (if it is made) will be hindered if the person has any difficulty initiating new activities and by difficulties with working memory (holding the plan in mind).
- Getting organised will be less efficient if the person cannot tell what is an important/relevant detail and what is not.

- Problem solving may be weakened – for example, due to difficulty prioritising what to pay attention to, or difficulty sustaining attention a person may fail to notice that a problem exists.
- The person may be less efficient in forming mental models of objects/devices/ situations (particularly new ones).
- Objects may not stimulate the actions they 'afford' as easily as with the general population.
- Everyday life can be more mentally demanding.

Most of the basic daily living skills such as personal grooming, home maintenance and safety awareness depend to some extent on the skills mentioned above.

How can design reduce the impact of these difficulties?

'Humans do make mistakes; with proper design the incidence of error and its effects can be minimised' (Norman 1998).

All people make mistakes carrying out tasks. People with cognitive difficulties associated with schizophrenia tend to make a specific set of mistakes. Environments can be designed to help compensate for a person's difficulties. Good design can enable independence and encourage use by:

- Reducing environmental demand.
- Simplifying, shortening and cueing tasks.
- Minimising anything that makes the task difficult, cumbersome or unpleasant.

Living spaces can compensate or bypass an individual's particular needs by:

- Automating - to reduce the need for the person to respond to the environment (have heating set up on a thermostat).
- Reminding - to cue behaviour (text messaging to take out the bins).
- Organising - to reduce the steps involved in any tasks (store all products necessary for washing in a basket in the shower).
- Streamlining - to reduce distractions.
- Simplifying – to allow easy completion of tasks.
- Feedback – to compensate for mistakes (fridge open alarm).
- Make explicit – plan of action already in place (fire drill, unknown person at the door).

Appendix C

Assistive technology assessment and response protocol

Telecare Assessment Example
CROYDON TELECARE ASSESSMENT TOOL- Version 7
from the work of Barbara Dunk e.g. Dunk (2006)

Service user name:	Address: Telephone:
DOB:	Date survey completed:
Assessment completed by:	Others present/involved in assessment:
Service (i.e. SLAM, PD, SI, ACOT etc.)	Main carer details:
Other health and social care professionals involved in service user's care, including contact details:	Other agencies involved:
GP details:	Swift number:

BASIC PROPERTY DETAILS		
Type:	**Ownership:** (NB: Is landlord permission required?)	
Access and lay-out: (NB: external/internal issues, over one/two levels, stairs, steps, garden, external lighting areas used by client etc…)		
General state of repair: (NB: Evidence of damp, poor electrics, excessive clutter, obstructions, foul smells etc…)		
Smoke alarm? (Yes/No, position, working?	**Carbon Monoxide Alarm?** (Yes/No, Working?)	**Burglar Alarm?** (Yes/No, Working, location)
Telephone facilities: Yes/No. Specify telephone provider, number of phones, main socket, whether service user has broadband.		

Type of Heating: (NB: Gas Central Heating, Combi-boiler, Gas fires, Storage Heaters, Oil filled radiators, Electric heaters, Electric Fan Heating System. How is system controlled? By client, carer, thermostats, set on timer etc…)
Sources of Hot Water: (NB: Immersion tank, Combi-boiler, Back-boiler (behind gas fire), Over sink heater etc…)
How are the bills paid? (NB: List how each amenity is paid – i.e. Gas, electricity, phone - by Direct Debit, client/carer, electricity 'Top-up' Key etc…)
Battery Management: If appropriate, identify who will manage batteries.

Health Factors	
Specify diagnosis, relevant physical, sensory and cognitive issues affecting independence and/or safety.	

Medication			
	Yes	**No**	**Details**
Is the service user able to manage own medication?			
Is the service user willing to take medication?			
Does the service user have adequate support in medication management?			
Would the service user benefit from prompting to take medication? Refer to medication guidelines.			

Support network			
	Yes	**No**	**Details**
Does service user live alone? If no, give details, including the presence of children where applicable			
Are others/carers living with the service user able to respond to an alert (consider carer's ability to manage a pager if appropriate)			
Are there potential responders who do not live with service user?			
If yes, are responders acceptable to the service user? Specify details below.			

Does the primary carer have specific needs which are not being met? If yes, specify, and discuss carer assessment, support with technology, etc.			
Does the service user have pets? If yes, specify if aggressive, or any risk to responders or others.			
Does client have a care line installation in situ?			

Informal responder details			
Name, relationship	**Address**	**Telephone Numbers**	**Times that responders have agreed to be contacted**

Medication	
Specify service user's community based routines, identified as important for their wellbeing: e.g. shopping day, centre attendance, visiting friends/family, other.	
Specify service user's chosen home based routines identified as important for their wellbeing, e.g. leisure, domestic and other activities.	
Are there any risk factors associated with service user's chosen routines, e.g. smoking, abusing alcohol, drugs, etc. Specify if any unsafe practises.	
Are there any behavioural trends relevant to telecare installation, or response, i.e. restlessness, periods of agitation, verbal of physical aggression, passivity, etc.	

Risks: Personal Care			
	Yes	**No**	**Details**
Does the service user bath/shower independently and feel safe doing so?			
Does the service user leave water taps on or history of flooding? If yes please specify location.			
Is service user able to operate taps?			
Is the water excessively hot, with potential for or history of scalding			
Does service user have continence problems? Specify detail, including how managed.			

Risk: Mobility/Falls			
	Yes	**No**	**Details**
Are there trip hazards within the property, i.e. rugs, clutter, other. ? If yes, specify.			
Does the service user have a history of falls? State number, reason ("blackouts" or mechanical), location, circumstances, frequency, outcomes (hospital admissions, injuries).			
Does the service user get up during the night, for example for using the WC?			
Does the service user turn on lights as needed during the night?			
Is lighting adequate? Specify.			
Has service user insight and ability to activate a pendant alarm if he/she falls?			
For risks related to epilepsy, specify type (tonic-clonic?), pattern and frequency of seizures (night or day-time occurrence, experience of aura?).			

Risks: Preparing food and hot drinks			
	Yes	**No**	**Details**
Does the service user use a gas cooker? if yes, detail purpose, frequency & unsafe practices. Detail cooker type, i.e. hob, free-standing, etc.			
Is there a history of service user leaving gas appliance on unlit?			
Does the service user use electrical appliances e.g. cooker, kettle, microwave other. If yes, detail appliances, purpose and frequency.			
Is there evidence or history of burning food/pans?			
Do visiting carers use gas or electric appliances? If yes, specify carer and appliance used.			
Are there domestic tasks which the service user has identified as important which they are not currently able to carry out? Please specify.			

Risks: "Unsafe walking" / Becoming "Lost"			
	Yes	**No**	**Details**
Is the service user's orientation (place, time, person) affected? If yes, please give details, including orientation inside & outside the home (i.e. ability to find their way home).			
Is the service user at risk when entering any part of the property alone? Specify location, risk factor, etc.			
Is the service user at risk if leaving their property alone? Specify related history, including night/day, frequency, regular destinations & patterns.			
Is the property located on a busy road with heavy traffic?			
Does the service user leave external doors open?			
Would a Just Checking system be appropriate to provide a more detailed assessment?			
Could a photograph be provided?			

Home safety			
	Yes	**No**	**Details**
List gas appliances in property, location and how they are lit (automatic igniters, ignite gun, matches) consider making arrangements for Home Safety Check.			
Are appliances serviced regularly/annually? (gas)			
Is a gas fire used in a room that the service user sleeps in/spends considerable amount of time in?			
Are the gas or electric appliances safe to use? If not, specify i.e. bare wires, loose plugs, overloaded sockets, burn marks, etc.			
Is there evidence or history of unsafe practice, if "yes", specify i.e. iron marks, heater covered up, tampering with controls, cigarette burn marks, scalding, etc.			
Has there been "DIY" electrical work undertaken?			
Are there sufficient sockets? (Relevant to Telecare installation).			
Is heating system used appropriately by the service user?			

Is the heating system adequate?			
Are there any environmental hazards, e.g. blocked access, fire hazards, availability of poisonous substances which could be a risk to service user?			
Does the client let in strangers?			
Are there any other risks?			

Security / Access for response			
	Yes	**No**	**Details**
Issues relating to access, intruders and key safes: Specify type of external door, communal entrance, types of locks, keys, bolts, door chains, night latch.			
Can duplicate keys be provided and by whom?			
Is a key safe the preferred option? If no who will be key holders in addition to care line?			

Link and communication with monitoring centre via Lifeline and telephone			
	Yes	**No**	**Details**
Is service user able to communicate needs reliably?			
Is service user able to activate pendant when required? (Consider physical, sensory and cognitive abilities)			
Is service user able to use the telephone appropriately?			
Does the service user have language requirements? If yes, specify preferred and first language (where different).			
Is the service user's speech impaired? If yes, please provide details.			
Does the service user have a sensory impairment? If yes, indicate type and level of impairment.			
Would the service user be able to communicate via the lifeline?			
Should the lifeline be silenced due to cognitive or other impairment?			
Is there a barring system on the phone line to prevent unknown callers with-holding their number?			
Is a telephone landline in situ? If yes, how many telephone sockets are there?			
Is a power supply within 2m of telephone socket?			

Are there sufficient sockets?			
Has the service user been involved in the assessment process, including discussion of options available?			
Does the service user understand the purpose of the recommended technology, and agree to this? (In situations where the service user lacks capacity to make an informed decision, every effort should be made to involve and explain the recommendations).			

Capacity			
	Yes	**No**	**Details**
What is the service user's degree of insight and extent to which user is able to be involved in the telecare process?			
Does service user have capacity to make a decision with regards to telecare? (Refer to the ethical framework for technology, and complete mental capacity assessment if not already undertaken).			
If the service user lacks capacity, who would be involved in the best interests assessment?			

Escalation Plan
Specify escalation plan in the event of service user becoming unwell, or as a result of a technical failure of the technology system.

Service user's views and wishes of recommendations

Carers view of telecare/technology installation
Has the primary carer been involved in the assessment process, including discussion of options available? What are the carer's views of the potential for telecare? Ensure all relevant carer's views are noted.

Funding telecare service
Discuss Council charging policy with client/carer as appropriate. Identify if substantial or critical assessed need under FACs? Refer to Social Services Charging Policy. Discuss potential charge with client/carer, and indicate if client/carer wish to fund the package privately or if financial assessment to be processed. Inform client/carer that they may be required to pay a contribution, dependant on the outcome of the assessment. Agree with client/carer if the financial assessment is to be completed before the telecare package is installed.

Alternative to provision at time of assessment
Specify implication for client/carer in the event of telecare/technology not being installed.

Telecare review
To be held 6 weeks following installation, and held jointly with referrer and telecare assessor. Further reviews to be planned according to situation, calls histories, etc. Minimum standard is yearly.

Name of service user.....

Date of review.....

Review undertaken by.....

Others present:

Current system: review and test of existing technology		
Sensor	**Test (indicate if operational)**	**Degree to which needs are being met.**
Lifeline/pendant		

Changes to situation or additional risks identified at review:		
Change of situation/risk	**Recommendations/options**	**Plan**

Review of responder situation	
Responder	**Changes to responder agreement**

Date of next review .....

Example of Response Protocol

Sensor and Alert	Telephone Advice to Service User	Action (Mon-Fri, 9 to 5)	Action (Out of hours)	Escalation procedure (Based on daily incident reports)
CO monitor Elevated levels	Check well-being of service user. If service user is able to understand and follow verbal instructions, advise service user to switch off gas appliances (specify which to avoid confusion) and open windows. Otherwise, advise them to wait in a safe place away from gas appliances and that help will be with them shortly.	Inform informal and/ or formal carer of situation. Call Transco 0800-111999, who will make situation safe by switching off the gas supply. Advise Transco on gaining access to property – urgently contact responders to ensure a familiar person is available when emergency services arrive. Contact Careline. If gas is off ensure service user has heating. Ensure corgi engineer tests appliances.	As per 9- 5. Respond-ers including Careline to be contacted	A second alarm from same sensor indicates appliance is not safe – ensure it is checked urgently by corgi engineer - or contact 3399Transco. If sensor is faulty – arrange for test and replacement.
Gas detector (without valve) High levels of gas due to gas leak or unlit appliance	Depending on assessment and service user's mental state, ask service user if they were cooking or had the gas fire lit (dependant on which alarm activated). If service user can respond to instructions ask to switch appliance off, open a window, not to switch on any lights, and not to smoke. Re-assure that help is coming. Otherwise, more appropriate to instruct service user to wait in a safe place away from the appliance and wait for assistance.	Contact responders to check situation, and to ensure that gas appliances have been switched off. Instruct responders to take care. Ensure windows have been opened. If the gas detector re-activates after fresh air has been let in, and the windows shut once more, contact Transco to ensure the situation is made safe (Transco will switch the gas off, but not repair). Follow up with a corgi engineer to check the appliances. Instruct responders to check doors and windows. (security)	As 9-5	SLAM staff review case history. Review functional assessment, mental state and technology needs, Other environmental adaptations might be required; These measures will also require a corresponding review of the care package.

Sensor and Alert	Telephone Advice to Service User	Action (Mon-Fri, 9 to 5)	Action (Out of hours)	Escalation procedure (Based on daily incident reports)
Flood Kitchen floor wet	If service user can follow instructions, ask service user to switch off taps in kitchen/bathroom and be careful of slipping. If he/she can't follow instructions, don't contact them, but ensure rapid responder attendance.	Inform responders of situation, need for urgent attendance, and advise them of need to mop up water and ensure the property is made safe. Warn of the potential to inform neighbours.	As per 9- 5 response according to responder agreement	Review situation and consider other technology options.
Smoke Property on fire or full of smoke	If a carer is usually present, contact carer first as it might be a false alarm. In situations when the service user is known to be alone, call the FIRE BRIGADE immediately.	If service user lives alone or spends considerable time alone, contact FIRE BRIGADE immediately. Contact informal responders according to responder agreements and Careline to ensure service user's safety.	As per 9- 5 response	Review activation cause. If alarm is due to cooking, it may be confusion, needing treatment for an infection.
Extreme temp detector Very hot in kitchen	Contact service user or /carer. If carer can verify situation, take no action, but request details of alarm situation. If service user is alone, and can understand that there was a problem while they were cooking ask them to switch cooker off. Generally, appropriate to instruct them to wait for help in safe place	(If smoke alarm is activated follow smoke alarm procedure) inform responders urgently to visit to ensure the cooker is switched off, and made safe.	As 9-5 action.	Technology coordinators to review.

Appendix D

Checklist for evening routine for a student

Things I need to do in the evening to get ready for tomorrow (Tick)	Sun	Mon	Tue	Wed	Thur
Have a shower					
Shave					
Leave out clothes for the morning					
Leave out bowl, spoon and coffee spoon					
Check for milk					
Check for clean coffee mug					
Check that phone is recharged					
Check for phone credit					
Brush teeth					
Make a shopping list to bring with me if needed					

Things to put in my bag in the evening to get ready for tomorrow (Tick)	Sun	Mon	Tue	Wed	Thur
2 file folders					
Spare t-shirt					
Polo t-shirt					
Jumper					
Pens					
Jacket with inhaler in the pocket					
2 clean and filled electronic cigarettes					

HOUSING DESIGN GUIDELINES

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