



Ministry of Housing,  
Communities &  
Local Government

# Research into Access to and Use of Buildings:

PRP Innovate were commissioned by DCLG, now MHCLG, to carry out this research to support the evaluation of Part M and Approved Document M of the Building Regulations.

## Part 1: The benefits of accessible housing

Part 1 evaluates what evidence is available on the benefits of accessible housing, and where further evidence is needed.

## Part 2: The effectiveness of current guidance for buildings other than dwellings

Part 2 looks at what evidence is available to understand how well current guidance in Part M is meeting the needs of disabled people.

Part 2a: Analysis of data forming basis of Statutory guidance for Part M: Buildings other than dwellings

Part 2b and c: Views on Part M: Buildings other than dwellings

20 January 2021



© Crown copyright, 2021

*Copyright in the typographical arrangement rests with the Crown.*

You may re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence visit <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

This document/publication is also available on our website at [www.gov.uk/mhclg](http://www.gov.uk/mhclg)

If you have any enquiries regarding this document/publication, complete the form at <http://forms.communities.gov.uk/> or write to us at:

Ministry of Housing, Communities and Local Government  
Fry Building  
2 Marsham Street  
London  
SW1P 4DF  
Telephone: 030 3444 0000

For all our latest news and updates follow us on Twitter: <https://twitter.com/mhclg>

January 2021

# Contents

## Part 1: The benefits of accessible housing

Executive Summary	8
0.1 Introduction	8
0.2 What are the benefits of accessible housing?	8
0.3 Where are the gaps?	9
0.4. Recommendations	9
Chapter 1 - Introduction	<b>10</b>
Chapter 2 - Methodology	<b>11</b>
Overview	11
Chapter 3 - The Benefits of Accessible Housing	<b>13</b>
3.1 Introduction	13
3.2 Primary benefits	13
3.3 Assessing robustness of the data	14
3.4 Reduced delayed hospital discharges	15
3.5 Avoiding temporary residential costs (rehabilitation or re-ablement care)	19
3.6 Reduced residential care costs	22
3.7 Reduced cost of care assistance at home	24
3.8 Reduced cost to NHS (trips/falls/injury to caregiver)	26
3.9 Reduced cost /need for aids and adaptations	30
3.10 Reduced cost of removing adaptations	37
3.11 Reduced admin costs of rehousing	39
3.12 Secondary benefits	40
Summary	43
3.13 Findings	45
<b>Chapter 4 - Summary and Conclusions</b>	<b>48</b>
4.1 What are the benefits of accessible housing?	48

4.2 What is needed to better understand the nature of the benefits of accessible housing?	49
4.3 Research Findings	51

## Part 2a: The effectiveness of current guidance for buildings other than dwellings

<b>Executive Summary</b>	<b>54</b>
<b>Chapter 1 - Introduction</b>	<b>57</b>
<b>Chapter 2 - Methodology</b>	<b>58</b>
2.1 Overview	58
2.2 Research Questions	58
2.3 Literature Review	58
<b>Chapter 3 - Analysis of existing anthropometric, ergonomic and mobility data that relates to or forms basis of statutory guidance for Part M: Buildings other than dwellings</b>	<b>61</b>
3.1 Aim of chapter	61
3.2 Summary	61
3.3 Analysis	62
3.4 Research data for ramps: gradients, cross falls and need for accompanying steps	68
3.5 Surveys and research on sanitary facilities	71
3.6 Design for visually and hearing impaired people: Colour, Contrast and Perception Design Guidance for Internal Built Environments	77
3.7 Approved Document M 2015: Comparison of selected elements with guidance developed in other countries	80

3.8 Our comparison of guidance across the selection of countries suggests commonalities across the following areas:	87
3.9 Conclusions	88
<b>Chapter 4 - Summary and Conclusions</b>	<b>91</b>
<b>Part 2b and c: Views on Part M: Buildings other than dwellings</b>	
<b>Executive Summary</b>	<b>95</b>
1. Introduction	95
2. Has AD-M Volume 2 been effective in meeting disabled people's needs in buildings other than dwellings?	95
3. Recommendations	97
<b>Chapter 1 - Introduction</b>	<b>98</b>
<b>Chapter 2 - Methodology</b>	<b>99</b>
2.1 Overview	99
2.3 Research Questions	99
<b>Chapter 3 - Stakeholder views on the effectiveness of the requirements for Approved Document M, Vol 2: Buildings Other than Dwellings</b>	<b>108</b>
3.1 Aim of chapter	108
3.2 Summary	108
3.3 Analysis	109
<b>Chapter 4 - Findings from Social Media research: the building user perspective</b>	<b>124</b>

4.1 Methodology	124
4.2 Section 1: Site access issues	124
4.3 Section 2: Entrances and entrance routes, and Section 3: Horizontal and vertical circulation issues	125
4.4 Section 4: Facilities issues	126
4.5 Section 5: Sanitary accommodation issues	126
4.6 Conclusion	127
<b>Chapter 5 - Summary and Conclusions</b>	<b>129</b>
5.1 Has Approved Document Volume 2 been effective at meeting disabled people's needs in buildings other than dwellings?	129
5.2 It was felt it that there were some weaknesses in the guidance	130
5.3 Key Issues emerging, relevant to future review	131
5.4 Stakeholder Views.	132

## Appendices

Appendix I - Evaluating the Robustness of Evidence	134
Appendix II - Initial Screening of Part M2, Volume 1	149
Appendix III - Initial Screening of Part M2, Volume 2	156
Appendix IV - Social Engagement - Research Material	165



Ministry of Housing,  
Communities &  
Local Government

## Research into Access to and Use of Buildings:

Part 1: The benefits of accessible housing

# Executive Summary

## Introduction

PRP Innovate have been commissioned by the MHCLG to carry out this work, which seeks to scope out existing evidence to support the evaluation of Part M and Approved Document M of the Building Regulations. The key objectives of this work were:

- To establish and analyse this available evidence on the benefits of accessible housing;
- To identify what further research is required to evidence the benefits of these standards.

There were two stages to the research:

- A desk-based review of existing literature, including academic papers, PhD dissertations, industry reports and established standards
- A gap analysis of the literature to identify where further research is required

## What are the benefits of accessible housing?

There is a significant body of commentary and qualitative (rather than quantitative) evidence of benefits to individuals in housing which have been adapted to make it accessible. There is less evidence available of benefits derived from non-adapted but purpose built accessible housing. Benefits identified include the following:

- Delayed hospital discharges cost the NHS about £285m per year, and the evidence suggests that up to 14% of these delayed discharges can be reduced by accessible housing through the reduction of the need to adapt homes (3%) and the need to supply assistive equipment (11%)
- Avoidance of temporary residential costs associated with rehabilitation of reablement care, through adaptations to the home, which can cost up to £1,722 per episode of care;
- Reductions in the need for residential care resulting from adaptations to the home, in the region of £25-80k per person;
- Reductions in the cost of care assistance at home ranging from £1,200 to £29,000 per year resulting from home adaptations;
- Reduced incidences of housing-related trips and falls resulting from adaptations

to the home, which costs the NHS an estimated £291m per year due to trips and falls on levels, and £130m per year due to visual-impairment related incidents;

- Reduced costs associated with the need for aids and adaptations and the cost of removing these adaptations in purpose designed accessible housing; and
- Reduced admin costs associated with rehousing, estimated to be up to £30k per incidence of rehousing.

## Where are the gaps?

There are overall gaps in terms of robust quantitative evidence establishing the cost and frequency of these benefits that arise from building accessible homes. Most of the data currently available is also gathered and analysed for a different purpose, and is often missing the context leading to the outcomes being described. Often the data available tends to relate to the costs and frequency of home adaptation, and it is often unclear as to the nature of the accessibility of the housing itself.

In most cases, data is available on the average cost per patient, but no data on how often these costs occur and how many patients are affected, making a wider assessment of the benefits challenging without additional evidence.

## Recommendations

There is a great deal of data on the benefits of adaptations, but much less on benefits derived from designing homes to be more accessible from the outset. Further dedicated research to understand the benefits of more accessible housing is needed.

Where data is being captured on the benefits associated with the accessibility or inaccessibility of housing, contextual aspects need to be more effectively captured to help assess how much benefit is derived from the accessibility of the property. This would include a wider range of data on personal circumstances, assisted or unassisted use of wheelchairs or other mobility aids (eg mobility scooters) and the age, design and features of the housing in which these people live.

The range of secondary benefits, as identified in the report, is also worth considering, and some of them may well be quantifiable. Quantifying these benefits could provide further evidence of the value of accessible housing and the frequency at which these benefits could be achieved.

# Chapter 1 - Introduction

PRP Innovate have been commissioned by the MHCLG to carry out this work, which seeks to scope out existing evidence to support the evaluation of Part M and Approved Document M, Access to and use of buildings, Volume 1: Dwellings of the Building Regulations.

The key objective of this work was:

- To establish and analyse available evidence on the **benefits of accessible housing standards** and carrying out a gap analysis to identify what further research is required to evidence the benefits of these standards.

This research looks primarily at finding evidence in relation to the benefits of accessible housing, and to identify what further evidence is needed in the future and to identify possible approaches and sources of relevant data to support this work.

In order to facilitate the search for evidence on the benefits of accessible housing and the effectiveness of the guidance for buildings other than dwellings, we carried out an initial literature review, looking at publications, academic papers, PhD dissertations and industry reports, and established standards.

# Chapter 2 - Methodology

## 2.1 Overview

In order to facilitate the search for evidence on the benefits of accessible housing and the effectiveness of the guidance for buildings other than dwellings the following research was carried out.

- An initial literature review, including a review of relevant publications, academic papers, PhD dissertations and industry reports, and established standards for ergonomics, anthropometrics and mobility.

## 2.2 Research questions

To guide our search for documentary evidence and stakeholder feedback to support the evaluation of Part M and Approved Document M, the following research questions were confirmed with MHCLG at the project kick-off meeting. These research questions provide the structure and framework for the desktop research and social engagement activities that underpin this research work.

### Research Phase Questions:

#### RQ1 - NEEDS

- **What evidence exists to characterise the nature of the benefits provided by accessible housing?**

#### RQ2 - BENEFITS

- **What evidence exists to characterise and quantify the benefits provided by the provision of accessible housing and accessible housing standards?**
- **Are there potential savings/costs to public and private sectors that can be achieved by changes to Part M? Do the existing measures already result in potential savings/costs to the public and private sectors?**

## 2.3 Literature review

Based on the research questions set out in 2.2 a desktop research exercise was carried out to search for references that provide evidence for each of the research questions, for both the domestic and non-domestic components of Part M.

### 2.3.1 Key References and Data Sources

Evidence for the two key research questions identified above are collected from a variety of sources, including government, disability groups, access consultants, housing providers, building owners (including Facilities Management teams), local authorities, designers and other stakeholders from across the industry. The references and data sources we have looked at include the following:

- as a starting point, a comparison of the current Part M and Approved Document M with the draft Part M and draft Approved Document M to give an indication of what evidence is required based on the proposed changes
- documentation from the Housing Standards Review of 2013
- papers and reports produced by UK-based disability groups and charities such as MENCAP, Guide Dogs, RNIB, British Deaf Association, Muscular Dystrophy UK, MS Trust, Restricted Growth Association and others
- articles, papers, reports and publications that provide measurable and quantifiable evidence on the benefits of accessible housing
- London Accessible Housing Register and other similar databases
- reports and papers from the access sector, including work by access consultants and occupational therapists, human resources, National Register of Access Consultants (NRAC), The Access Association; Housing Adaptations Advisory Service (HAAS).

### 2.3.2 Evaluating the Robustness of the Evidence

The following robustness measures were used in our evaluation of evidence:

- **sample size** – for statistical data, is the sample size reliable?
- **author or commissioning authority** – has the report been published by a highly reputable source?

A complete listing of the references used, including the robustness evaluation, can be found in Appendix I.

# Chapter 3 - The Benefits of Accessible Housing

## 3.1 Introduction

Guidance on minimum standards for accessibility in Approved Document M (Access to and use of buildings) is long established and has been mandatory in new development since 1998. There is an increasing trend for planning authorities to set higher, additional standards of accessibility by setting conditions on new development. As a result the design and production of accessible homes has some traction in the UK.

The focus of this study is less on the effectiveness of the specific clauses in the guidance but rather a search for evidence of the tangible benefits of the homes built to these higher standards of accessibility to date.

There is a significant amount of qualitative evidence written by lobby groups, housing providers and academics about the benefits of accessible housing for disabled and older people, but very little quantitative information. Housing studies and reports invariably concentrate on the relatively low costs of adaptations in providing or enabling independence of residents, without providing qualitative information on the types of adaptations or features which deliver benefits most effectively.

For these reasons, we have focused our research on data which is readily available, and which can give an indication of the value of savings that are possible and the frequency they are likely to occur. It is in establishing the frequency of benefits using statistically reliable data that the most significant gaps in evidence occur.

**Finding 3.1 – There is a significant body of qualitative evidence of benefits to individuals from living in accessible housing, but robust quantitative evidence establishing how frequently these benefits are derived from building to higher standards of accessibility are lacking to enable accurate assessment of overall social benefits at a national level.**

This data therefore relies heavily on Government and NHS statistics, and extrapolations in reports available.

## 3.2 Primary benefits

We have looked at the following primary benefits of accessible housing (a primary benefit in this case considered to be a benefit arising directly as a result of a home being designed and built to an established accessible standard) in terms of the nature of the benefit, the indicative value of the benefit, and the frequency of occurrence:

- reduced delayed hospital discharges
- avoidance of temporary residential costs
- reduced residential care costs
- reduced cost of care assistance at home
- reduced cost to NHS (trips/falls/injury to caregiver)
- reduced cost of/need for aids and adaptations
- reduced cost of removing adaptations
- reduced admin costs of rehousing
- secondary benefits.

We have also sought to identify the likely secondary benefits linked to these main benefits and these are discussed at the end of this chapter following the detailed discussion for each of the primary benefits. In this context, a secondary benefit is one which arises indirectly from a home being built to higher standards of accessibility and which may be heavily reliant on other factors (secondary benefits are typically not included in Government assessment of social benefits).

### 3.3 Assessing robustness of the data

It should be noted that the name and origin of the data reviewed and quoted in this chapter is identified in the footnotes. However, not all data is similarly useful because of the different sizes of the samples taken. The Evidence Review chapter includes information on the sample size of each of the references used, and therefore the validity of the data provided.

A sample size of 250 people or more is considered useful, while larger databases provide a more reliable and therefore more representative information. Smaller sample sizes are interesting but represent a more anecdotal level of data.

The data that is available also lacks detail in a number of respects, for instance the evidence we have identified typically does not distinguish between the needs of very large or very small people, and the number of users of motorised scooters, which both have an impact on how accessible users find homes. Additionally, the data identified rarely takes into account the needs of assisted wheelchair-users which are a sizeable proportion of the population of wheelchair-users.

In many studies and data sets it is also difficult to identify the age of housing, or the standards to which that housing has been built or adapted. This weakens the ability to evidence and understand benefits accruing from a more accessible housing stock.

**Finding 3.2 – where data is being captured on costs and benefits associated with the accessibility or inaccessibility of housing, contextual aspects need to be more effectively captured to help assess how much benefit is derived from the accessibility of the property. This would include a wider range of data on personal circumstances, assisted or unassisted use of wheelchairs or other mobility aids (e.g. mobility scooters) and the age, design and features of the housing in which these people live.**

### 3.4 Reduced delayed hospital discharges

A delayed transfer of care occurs when a patient is medically fit to depart from acute or non-acute (including community and mental health) care and is still occupying a bed. The cost to the NHS is significant (£287m annually), due to the very large numbers of patients occupying a bed when they have been assessed as well enough to move into more suitable accommodation, and the subsequent delay in catering for other patients, whose condition may deteriorate during the wait for a suitable bed.

It is argued that designing homes to be more accessible or more easily adapted could reduce delayed hospital discharge because patients' homes were immediately suitable for their return (or with minimal intervention / adaptation) and that this could be a significant saving to the NHS.

**Nature of benefit.** Suitable homes for patients to return to will decrease length of hospital stays, and increase access to hospital beds. Potential NHS cost savings originate from not requiring more hospitals/beds to deal with delayed hospital discharges.

**Value.** On 22 March 2015, the Independent on Sunday reported on newly released NHS England statistics that annual costs of bed blocking were estimated at £287m.<sup>1</sup>

A Centre for Health Economics (CHE) Research Study<sup>2</sup> testing the delayed discharge hypothesis found that:

- an increase in the number of care-home beds in a Local Authority by 250 (10%) reduces the number of hospital bed-days lost per month due to delayed discharges by 17 (6%)
- an increase in the number of people in a hospital catchment area aged 65+ by 1% increases the number of delays by 1.7%
- although increases in the supply of long term care beds reduces delayed discharges, the effect is modest so that an increase in the supply will not significantly reduce overall costs across hospital and social care sectors
- policies to reduce long term care prices may also reduce delayed discharges in

---

<sup>1</sup> Independent on Sunday report on NHS England statistics – 22 March 2015

<sup>2</sup> Testing the bed-blocking hypothesis: does higher supply of nursing and care homes reduce delayed hospital discharges, CHE Research Paper 102, 2014

addition to other effects

- Aspire, an organisation supporting people with spinal injury, found that an excess bed day at a Spinal Cord Injury Centre costs £354 per night.<sup>3</sup>

**Frequency.** 1,042,434 bed days were lost in 2015 due to delayed hospital discharges.<sup>4</sup> This is an increase of 19% on the previous year.

The number of delayed days has doubled from 55,332 in August 2010 to 103,776 in January 2015.<sup>5</sup>

20% of delays are due to patients waiting for further non-acute NHS care. 59% of delays were due to acute care delays.<sup>6</sup>

There were 159,100 total delayed days in January 2016, of which 103,500 (65%) were in acute care. The main reason for Social Care delays in January 2016 was “patients awaiting a care package in their own home”. This accounted for 16,800 delayed days (32.7% of all Social Care delays)<sup>7</sup>

Table 3.1 from the same document contains figures on the reasons for the delayed transfers of care. Most relevant to the current study are items F ‘awaiting community equipment and adaptations’ and E ‘awaiting a care package in their own home’. For the former, there is no distinction between the equipment and adaptations in the original data, but for the purpose of this study, both are relevant, but not all equipment will apply.<sup>8</sup> For the latter, interrogation of the data might reveal whether there were instances of a care package being necessary because the home was not accessible. For instance, help with emptying of a commode could be rendered unnecessary if there were a WC at entrance level.

Figure 3.1 illustrates the range of reasons for lost bed days due to lack of community provision. It shows that only 3% of delays were due to patients awaiting home adaptations, and 11% due to waiting for equipment to be provided. It is worth noting that 24% of delays appear to be related to waiting for staff assessments or for consultants to become available, indicating that procedures and/or organisation is as much in need of improvement as provision of equipment and/or home adaptations.

Table 3.1 Delayed Transfers of Care by Type of Care, Reason for Delay and Responsible Organisation, January 2016<sup>9</sup> Yellow highlights indicate benefits that can be directly related to accessible housing, while orange highlights indicate a potential relationship benefit to accessible housing.

Reason for Delay	Patients Delayed	Total Days Delayed
------------------	------------------	--------------------

<sup>3</sup> Wheelchair Accessible Housing: waiting for appropriate housing in England – Aspire 2014.

<sup>4</sup> NHS Bed Availability and Occupancy 2015-16 Change title to “NHS delayed transfers of care data Jan 2016”

<sup>5</sup> Independent on Sunday report on NHS England

<sup>6</sup> Delayed Transfers of Care 2012/13, NHS England

<sup>7</sup> NHS delayed transfers of care data Jan 2016

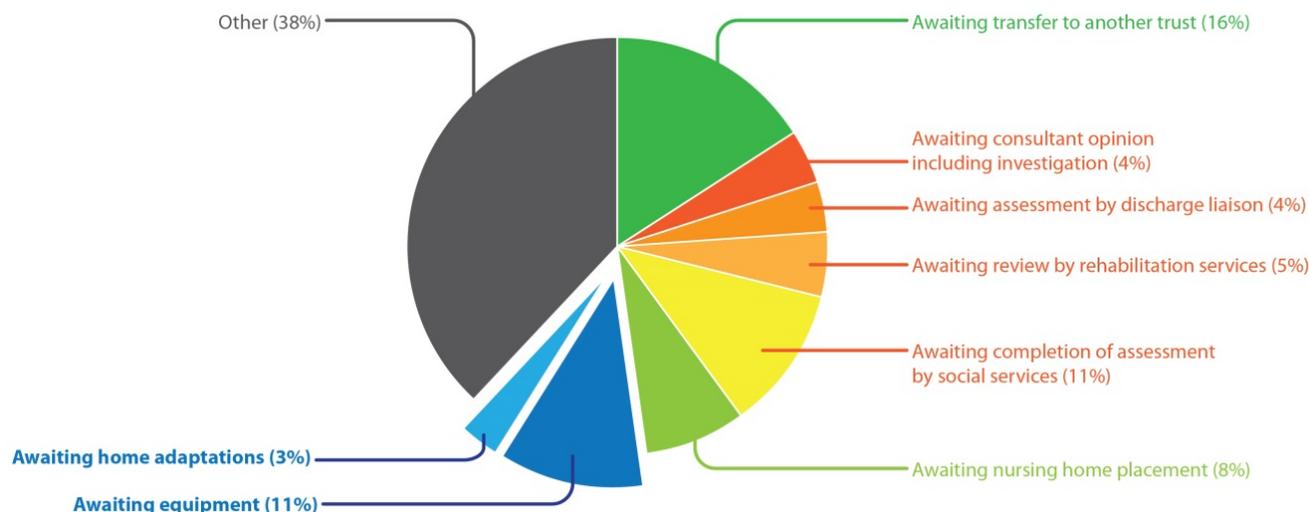
<sup>8</sup> Please refer to section 3.6 in this chapter for further discussion on the nature of these aids and adaptations.

<sup>9</sup> NHS delayed transfers of care data Jan 2016

Type of Care		NHS	Social Care	Both	NHS	Social Care	Both
Acute	A) Awaiting completion of assessment	439	241	81	10634	5885	2323
	B) Awaiting Public Funding	68	18	2	1668	422	73
	C) Awaiting further non-acute NHS care (including intermediate care, rehabilitation services etc)	920	NA	NA	26046	NA	NA
	D) Awaiting nursing home placement or availability	254	165	35	7195	4659	1064
	E) Awaiting care package in own home	209	360	82	5506	9446	2327
	F) Awaiting community equipment and adaptations	87	12	15	2405	314	195
	G) Patient or family choice	445	41	NA	12854	1218	NA
	H) Disputes	27	3	NA	852	87	NA
	I) Housing - patients not covered by NHS and Community Care Act	101	NA	NA	2787	NA	NA
	Non-acute	A) Awaiting completion of assessment	147	119	42	3841	3573
B) Awaiting Public Funding		35	48	24	1109	1341	706
C) Awaiting further non-acute NHS care (including intermediate care, rehabilitation services etc)		141	NA	NA	3859	NA	NA
Dii) Awaiting nursing home placement or availability		95	158	66	2626	4068	1868
Di) Awaiting residential home placement or availability		117	236	NA	3208	6805	NA
E) Awaiting care package in own home		69	27	27	2054	7364	724
F) Awaiting community equipment and adaptations		39	15	4	885	348	92
G) Patient or family choice		168	39	NA	4853	1325	NA
H) Disputes		11	13	NA	529	312	NA
I) Housing - patients not covered by NHS and Community Care Act		101	NA	NA	2787	NA	NA
All	TOTAL	3524	1897	378	96970	51426	10693

Figure 3.1 Bed days lost because of absence of community provision<sup>10</sup>

<sup>10</sup> Fully equipped: the provision of equipment to older or disabled people by the NHS and social services in England and Wales, Audit Commission, March 2000. Please note that the 44% stated for 'Awaiting consultant opinion - including investigation' should be 4%.



The NHS incurs substantial costs associated with delayed discharge. However, evidence suggests that only 3% of these delays are a result of the need for homes to be adapted, with a further 11% due to delays in providing assistive equipment. These statistics relate to the housing stock as a whole (not just more accessible housing types) and evidence from the English Housing Survey<sup>11</sup> suggests that only a small proportion of homes have critical accessibility features (level access, flush threshold, sufficiently wide doors and circulation space and WC at entrance level) equivalent to the minimum requirements in the Building Regulations.

This suggests that building homes to higher standards of accessibility is only likely to deliver marginal benefits in reducing delayed discharge from hospital. More significantly, lack of access to assessments or consultants results in 24% of delays.

**Finding 3.3 – The need to adapt homes was identified as the cause for only 3% of delayed discharges. Evidence is needed to determine whether accessible housing could help reduce the 32.7% of delays resulting from the need to put care packages in place. However, 35% of delayed discharge resulted from lack of assessment or consultant services (24%) or the need to supply assistive equipment (11%) suggesting that procedural and organisational changes are likely to be more effective in reducing these costs.**

**Gap: Further information is required to identify whether accessible housing would help reduce the delays caused by the need to put care packages in place**

Whilst mainly outside of the scope of this report, we would suggest that there is value in evaluating whether hospitals could build move-on accommodation for newly-disabled people or those needing to move onto acute care or to have assistive care packages. In the case – for example – of patients suffering spinal cord injury, this accommodation would also help to develop and maintain skills acquired in hospital for an independent life, accommodating family too, rather than suffer

<sup>11</sup> English Housing Survey 2013 Profile of English Housing report Chapter 2 Services, amenities and accessibility.

institutionalisation or other inadequate alternatives. This could occupy available hospital land and provide a temporary suitable home until appropriate permanent accommodation was available.

### 3.5 Avoiding temporary residential costs (rehabilitation or re-ablement care)

A place in a care home arranged as part of a package of 'intermediate care' or re-ablement care, where the patient has short-term therapy or treatment, may follow a period in hospital, or may be intended to avoid having to go into hospital. Such care is time limited, and not normally longer than six weeks. This is predominantly NHS-related so must be provided for free to the patient.<sup>12</sup>

It is important that hospital patients are able to leave hospital as soon as their condition has been treated sufficiently. The most important aspect for the majority of patients leaving hospital is being able to return to their own home. However, this depends on their home being suitable for their post-hospitalisation needs.

Those who have homes which are suitable for their condition (this can include an accessible bathroom/toilet, bed space downstairs, corridors and doors wide enough for a wheelchair or walking frame) or whose home can be adapted easily and quickly (such as the installation of grab rails in a bathroom) will avoid having to go into temporary residential care. An already accessible home will cater for many of the needs of people identified as needing to go into temporary residential care.

To summarise, temporary residential stays are typically arranged for the following reasons;

- to provide care while the individual recovers from an illness or a stay in hospital, if their home is unsuitable
- to provide support if the individual is newly disabled
- to provide a break (respite care) for the individual and/or their carer
- to provide a supported break with re-ablement care, if the individual lives alone but experiencing difficulties, to allow them to continue to live independently
- to provide an opportunity to get to know a particular care home that suits the individual's needs if they are thinking about permanent care.<sup>13</sup>

The situation for people with Spinal Cord injuries is particularly acute. Having a home to go to is at the forefront of a Spinal Cord Injured person's mind when they are ready to leave hospital after their life changing injury. Yet despite this obvious priority, Aspire's research (Understanding the health and Wellbeing of Spinal cord

---

<sup>12</sup> Paying for temporary care in a care home, Factsheet 58, Age UK, August 2015

<sup>13</sup> Northern Ireland Direct Temporary stays in a residential care or nursing home

injured adults in a care home <sup>14</sup>) can only confirm that 14% of people with Spinal Cord Injury are discharged to a permanent accessible property after completing their rehabilitation programme at a NHS specialist spinal cord injury centre. This means that 86% of people with Spinal Cord injuries are not able to return home, but need different solutions to their needs.

NHS, physiotherapists and Occupational Therapists (OTs) are training people with spinal injury to be self-sufficient, but their work is being undermined because the individual's home is inadequate, and they have to go into an unsuitable care home, leading to loss of independence.<sup>15</sup>

*“Linda Liebenberg did not expect to be in a home for older people at the age of 32. Nonetheless she spent 20 months living in one after being discharged from hospital, following treatment for a broken neck that had left her paralysed. ‘No [staff] in the home had any training in spinal injury at all,’ says Liebenberg, who had to give up her second-floor, rented home. Staff didn't know, for example, how to use the hoist and sometimes wouldn't take direction on tasks she needed help with, such as getting out of bed, washing and dressing. ‘I tried to explain what I needed but they didn't always listen.’ Most of the other residents were elderly. ‘There wasn't much of an opportunity to have regular conversations,’ she recalls. Her tiny bedroom was unsuitable for a wheelchair and she was only allowed to shower every other day when there were enough staff to help her.”<sup>16</sup>*

**Nature of benefit.** Cost savings for Local Authority/Social Care providers.

The Peter Harrison Centre for Disability Sport identifies the incidence of fewer emotional symptoms, such as depression, severe depression, suicidal thoughts and suicide attempts by the patient.<sup>17</sup>

Less stress on care home staff due to the lack of training to support the different needs of SCI residents.

Reduced need for retraining of SCI patients when skills have been lost due to inappropriate housing/care.

**Value.** Average costs for intermediate care have been reported by NHS England: - The National Audit of Intermediate Care 2014 to be as follows:

- home-based intermediate care - £1,045 per episode of care
- bed-based intermediate care (community hospitals and care homes) - £5,549 per episode of care

---

<sup>14</sup> Understanding the Health and Wellbeing of Spinal Cord Injured Adults in a care home. Peter Harrison Centre for Disability Sport 2012.

<sup>15</sup> Wheelchair Accessible Housing: waiting for appropriate housing in England – Aspire 2014

<sup>16</sup> Understanding the Health and Wellbeing of Spinal Cord Injured Adults in a care home. Peter Harrison Centre for Disability Sport 2012.

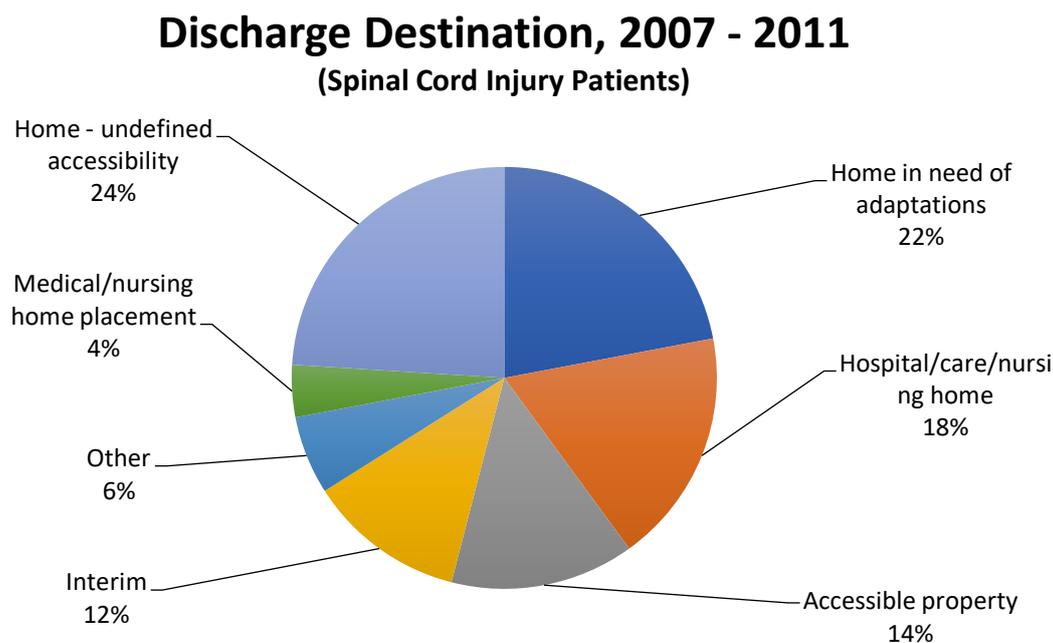
<sup>17</sup> Understanding the Health and Wellbeing of Spinal Cord Injured Adults in a care home. Peter Harrison Centre for Disability Sport 2012.

- local authority funded re-ablement services - £1,722 per episode of care<sup>18</sup>
- the monetary value of reduced emotional symptoms, less stress on care home staff and the retraining of SCI patients when skills are lost is not known.

**Frequency.** Data is available on the numbers of people going into temporary care<sup>19</sup>. However the data does not provide the relevant information to identify those who go into temporary residential care because their home is unsuitable (item 1), as opposed to those who need to enter temporary residential care for obvious reasons, or for the other reasons set out in this study (items 2 to 5 in the list above).

Regarding spinal cord injury, data is available from Aspire<sup>20</sup>. Nearly 22% of people with Spinal cord injury are discharged to nursing homes and other institutionalised settings. Only 14% of people with Spinal cord injury are discharged to an accessible home after completing their rehabilitation programme at an NHS specialist spinal cord injury centre. (24% were not known).<sup>21</sup>

Figure 3.10 Discharge destinations for SCI patients on leaving hospital for the first time



**Finding 3.4 – Accessible housing is likely to play a part in reducing the need for people with either temporary or permanent disability requiring re-ablement or rehabilitation care outside the home. However, there is little in the way of quantitative data as to what these savings are. Accessible housing is unlikely to reduce the need to provide residential stays to provide respite, training or assessment.**

<sup>18</sup> NHS England: - The National Audit of Intermediate Care (NAIC) 2014

<sup>19</sup> NHS England: - The National Audit of Intermediate Care 2014

<sup>20</sup> Wheelchair Accessible Housing: waiting for appropriate housing in England – Aspire 2014

<sup>21</sup> Wheelchair Accessible Housing: waiting for appropriate housing in England – Aspire 2014

**Finding 3.5 - While it can be seen that up to 86% of SCI patients on release from hospital are unable to go into an accessible home, there is no data for the level of mismatch between their needs and their homes, and what is available in terms of accessible housing.**

**Gap:** NHS data on the numbers of people who go into temporary residential care after hospital, and the number who take that route only because their home is unsuitable;

Where people enter temporary residential care because of an unsuitable home, data identifying how accessible that home was (eg to evidence whether more accessible homes reduce likelihood of temporary residential care and if so to what degree).

Evidence or data of reduced impacts on carers or disabled people resulting from homes being more accessible.

More research is required on how the needs of people with spinal cord injuries are being met and how the provision can be improved. Only 14% are discharged to an accessible home - what are the specific reasons for this not being possible in the other cases?

What is the cost of not providing the right move-on environment for SCI patients?

It could be beneficial to encourage hospitals to build move-on accommodation in their grounds for newly-disabled people to develop and maintain their skills for an independent life, accommodating family too, rather than suffer institutionalisation or inadequate alternatives. This could use available hospital land and provide a home until appropriate permanent accommodation became available.

### 3.6 Reduced residential care costs

If more hospital patients were able to return to their own homes or to a new accessible home immediately after treatment rather than go into residential care, the costs to the NHS and social care would be reduced. This is particularly relevant to new wheelchair-users whose original homes may have been unsuitable, and who are reliant on the ready availability of accessible homes in their current neighbourhood, or in their area of choice.

This in turn relies on local authorities having a stock of accessible homes, the ability to identify readily available accessible properties (eg in a local register of accessible homes) and be able to rapidly make any adaptations to suit individual need. This might also require local authorities to employ Occupational Therapists who can act quickly to assess people's needs and match them up with the relevant accommodation, wherever possible, or identify any adaptations required.

There are, however, a variety of additional influencing factors in providing suitable accommodation for people leaving hospital, because many of them will need ongoing support and guidance. Additionally, there may be the need for advice to

people who own their own home, whose needs may not so easily be met. If this is not provided, the benefit of moving to suitable accommodation may not be fully realised.

**Nature of benefit.** Residential care cost savings for Social care providers / local authorities.

**Value.** The Office for Disability Issues (ODI) and University of Bristol report, Better outcomes, lower costs, estimated cost of residential care for a seriously disabled wheelchair user was £700-800/week in 2007. This equates to a cost of approximately £40,000 per year.<sup>22</sup>

The Personal Social Services Research Unit (PSSRU) Unit Costs of Health and Social Care report states that there is also a £1,110 establishment cost<sup>23</sup> per permanent resident-week; or a £1,134 establishment cost plus personal living expenses per permanent resident week, for older people in local authority residential care.<sup>24</sup>

The 'Better Outcomes, lower costs' report<sup>25</sup> also cites the following anecdotal costs reported by individual wheelchair users:

- adaptation facilitated the ability of two wheelchair users to leave residential care (Cost to local authority = £72,800 per year, a saving of £30,000 per year per user). It was estimated that 1-2 similar cases per housing authority across England would lead to cost savings of £10 million per year
- the projected savings in residential care costs arising from an investment in home modifications for a 30-year old man in an Italian study was estimated at £1.6 million over a period of 20 years
- an equipment investment of £37,000 by a social care authority resulted in savings of £4,900 per week on residential care for ten people, and the costs were recouped in less than 8 weeks.

**Frequency.** Large scale data has not been found, apart from the anecdotal examples cited above, which range from saving of £25,480 - £80,000 per year per user. More data is needed on the number of patients leaving/avoiding residential care, their reasons for doing so, the amount invested in home adaptations or modifications, the added cost of moving into an accessible home, and the projected/actual savings in residential care costs.

**Finding 3.6 – there is evidence of significant savings arising from adaptations packages enabling – in particular – permanently disabled people to live at home, avoiding residential care. There is less evidence as to the frequency or extent that accessible housing reduces the need for residential care for the wider population, or people with a temporary disability or condition.**

---

<sup>22</sup> Better outcomes, lower costs, Executive summary - Office for Disability issues + University of Bristol (2007)

<sup>23</sup> Establishment costs include buildings and on costs, land, other capital costs, total local authority expenditure, agency overheads. See note 22 above.

<sup>24</sup> PSSRU Unit costs of Health and Social Care 2015 - Local authority residential care for older people.

<sup>25</sup> Better outcomes, lower costs - Office for Disability issues + University of Bristol (2007)

**Gap:** NHS data on the numbers of people leaving/avoiding residential care, the reasons for doing so, the initial cost of doing so, the amount of savings realised, and whether (and to what extent) these costs are materially reduced where a person lives in a home which is designed to be accessible at the outset.

### 3.7 Reduced cost of care assistance at home

Social Care is expected to provide care assistance in the home where it is needed. This may be in addition to care by family members, or in place of it, and will depend on the type of care and frequency required. Care assistance at home can be needed for a variety of reasons, including to:

- provide personal care, such as washing, going to the toilet, getting out of bed or dressing
- undertake housekeeping or domestic work, such as vacuuming
- cook or prepare meals
- provide nursing and health care (such as taking medication, dressing wounds, etc)
- provide companionship.<sup>26</sup>

Where people are able to undertake any or all of these roles without assistance, there is likely to be a commensurate reduction in cost of care. The need for care provision, in relation to washing and going to the toilet (item a) are particularly affected by the accessibility of the home. It logically follows that homes which are designed to be more accessible, or can be more easily or quickly adapted are likely to support reduced reliance on care or external support.

It is important to note, however, that even current types of accessible home – whether meeting Part M of the Building Regulations, Lifetime home or wheelchair accessible standards – still frequently require adaptation to meet individual circumstances. The primary benefit of higher levels of accessibility in this respect is where adaptations are not needed (because the property is already more accessible e.g. wider doors), or where the cost of adaptation is reduced.

In terms of companionship (item e), in some circumstances an accessible home would enable community companionship, rather than relying on a social service carer, where improved accessibility (level threshold, downstairs accessible WC, wide enough corridors, etc) allows family and visitors to provide companionship where otherwise they would not be able to do so.

**Nature of benefit.** Reduced costs arising from the decreased need for social care / local authority provision of care hours, loaning equipment, such as wheelchairs, commodes, special beds, etc.

---

<sup>26</sup> NHS choices: Your guide to care and support and Edinburgh Care and Support at home [http://www.edinburgh.gov.uk/info/20102/help\\_to\\_live\\_at\\_home/151/care\\_and\\_support\\_at\\_home](http://www.edinburgh.gov.uk/info/20102/help_to_live_at_home/151/care_and_support_at_home)

**Value.** In an example cited in the 'Better outcomes, lower costs' report<sup>27</sup>, a door-widening adaptation (costing £300) was delayed for 7 months for lack of funding, resulting in the need to provide an additional 4.5 home-care hours per week over 32 weeks, at a total cost of £1,440. The same report notes that adaptation and equipment normally pays for itself within the first year. However, it should be noted that benefits derived from adaptations and equipment are not primarily a result of the accessibility of the dwelling itself, but it would be useful to know if the level of home care is reduced or not required at all in homes built to accessible standards.

As of 2015, the mean hourly cost of all home care including LA-funded and independent provision was £17, the mean hourly cost of LA home care was £37 and the mean hourly cost was £15 for independent sector provision.<sup>28</sup> Just an hour of home care a day per person costs around £5,000 a year.

Adaptations that remove or reduce the need for daily care visits pay for themselves in a time-span ranging from a few months to three years and then produce annual savings, such as those in the cases reviewed<sup>29</sup>, varying from £1,200 to £29,000 a year.<sup>30</sup> Again, this evidence of benefits derived from adaptations, not the inherent features of the property itself. It is also not known whether the homes were accessible and needed only small adaptations (such as the installation of grab rails) or required more major adaptations.

"Better outcomes, lower costs" reports that significant savings in home care cost are mainly found in relation to younger (including younger old) disabled people (who have inherently higher care needs). Adaptations for older people will not routinely produce savings in home-care costs, because 83 % of those waiting for adaptations receive no homecare, whilst others are so frail that adaptations will not remove the need for care. In these cases, savings are still to be found but primarily through the prevention of accidents; deferring the need for admission to residential care, and in improved quality of life."<sup>31</sup>

Individual local authorities may have forecasts of future requirements for adult social care for budgeting purposes, which could be interrogated, but this line of enquiry has not been pursued.

**Frequency.** PRSSU data reports that, on average, individual service users in 2011/12 received 364 hours of care per year, or 7 hours per week.<sup>32</sup>

The Health and Social Care Information Centre provides information about the ability of people aged 65 and over in relation to their ability to perform activities of daily living.<sup>33</sup> Specifically, data is provided which looks at the ability of residents to go up and down stairs, have a bath or shower and use the toilet – all activities which could

---

<sup>27</sup> Better outcomes, lower costs - Office for Disability issues + University of Bristol (2007)

<sup>28</sup> PSSRU Unit costs of Health and Social Care 2015 section 11.6

<sup>29</sup> PSSRU Unit costs of Health and Social Care 2015 section 11.6

<sup>30</sup> It is not known whether the cost of loans/gifts of equipment is included in the figures provided above.

<sup>31</sup> Better outcomes, lower costs - Office for Disability (2007)

<sup>32</sup> PSSRU Unit costs of Health and Social Care 2015 section 11.6

<sup>33</sup> Health Survey for England, Health and Social Care Information centre, 2014, chapter 5.1

be made easier by an adapted or accessible home. The study found that 28% of men and 37% of women over 65 either could do these activities of daily living only with help, or could not do them at all, or only with difficulty. Interestingly, the trend shows that the proportion of men and women with these difficulties has dropped slightly since 2011, when records were first kept.

**Finding 3.7 – Available evidence linking reduced care cost with home accessibility primarily relates to benefits of adaptations (rather than the homes’ actual accessibility) and suggests that benefits are primarily concentrated amongst younger (and younger old) people with disability rather than the ageing population as a whole.**

**Gap:** Evidence is needed on the frequency and cost of care in the home which adequately identifies the difference in outcomes where homes are built to accessible standards (ADM, Lifetime home and wheelchair accessible standards) when compared with homes which are less accessible.

### 3.8 Reduced cost to NHS (trips/falls/injury to caregiver)

The Housing, Health and Safety Rating system describes the nature of housing-related falls including falls associated with baths, falling on level surfaces (including trips on steps, thresholds and ramps where the change of level is less than 300mm), falls on stairs and falling between levels.<sup>34</sup>

Injury to caregivers is described in a study For Age and Ageing carried out in 1997<sup>35</sup>. Injuries can occur when lifting or handling a patient in their home. Additionally, they can also suffer psychological health problems such as fatigue, anxiety and depression, which may be addressed by respite care offered by social care in a number of different formats: homecare services, residential or nursing care and day care.

**Nature of benefit.** Reduced housing-related injuries can lead to cost savings for NHS, including A&E departments in terms of the reduced demand for surgeons, hospital beds, follow-up appointments, physiotherapy, and cost of equipment. There will also be a reduced need for external assistance following release from hospital, and a reduced need for respite care and/or hospital treatment for informal caregivers and the provision of replacement care in the interim.

**Value.** The Hidden Housing Crisis, produced by Leonard Cheshire Disability in 2014 identifies the typical value of 1 trip incident equates to £1,800, 60% more than the cost of a stairlift.<sup>36</sup> In the same document, a hip fracture is described as costing over £28,000.<sup>37</sup>

---

<sup>34</sup> Housing Health and Safety Rating System, Guidance for landlords and property related professionals, DCLG May 2006

<sup>35</sup> Injuries sustained by caregivers of disabled elderly people. Age and Ageing 1997

<sup>36</sup> Leonard Cheshire Disability - The Hidden Housing Crisis 2014

<sup>37</sup> Leonard Cheshire Disability

Research into the Disabled Facilities Grants in England carried out by Astral Advisory in 2013 discovered that the total cost of hip fractures to the NHS in 2007 came to about £726m.<sup>38</sup>

The Office for Disability's report, *Better outcomes, lower costs*, reports that people fall while waiting for adaptations. The average cost to the State of a fractured hip is £28,665, which is 4.7 times the average cost of a major housing adaptation (£6,000) and 100 times the cost of fitting hand and grab rails to prevent falls.<sup>39</sup>

The LSE and PSSRU discussion paper, *Building a business case for investing in adaptive technologies in England*, quotes that a hip fracture "estimated to cost £10,170 in Payment by Results (PbR) tariff costs on average, with additional costs of £1,600 per community hospital admission (for around 20% of cases; each requiring an estimated stay of 8 days at £200 per day) and £400 per intermediate care referral (around 20% of cases, each requiring 20 hours of care at £20 per hour) (DH 2009b). Around one in ten cases will be discharged to a care home, and 60% will require additional home care."<sup>40</sup>

Evidence produced by Royal Society for the Prevention of Accidents (ROSPA)<sup>41</sup> reports that "the total annual cost to society of home accident casualties who are treated for their injuries at hospital - around 2.7m people per year - is estimated to be £45,63bn, based on an average cost of £16,900 per victim." This figure does not include the cost of accident deaths in the home, and does not include the cost of people who seek GP treatment after a home accident.

It is unclear whether this cost includes the cost of medical equipment loaned and single-use equipment given to patients - specialist beds (loaned), Darco shoes, splints, slings, air-cast walking boots, crutches, zimmer frames, external fixators (all single use), etc. It may be possible that these may be included as overhead costs within the cost of carers and doctors but this is not specifically stated

Evidence on the direct savings attributable to Lifetime Homes assessed by the BRE<sup>42</sup> suggests that, "compared to average homes, a new-build Lifetime Home has the potential to save the NHS a further £691 during its 60-year lifespan above. This is £194 more than an average new home built to current (*pre-2015*) building regulations."

If converted to its full extent, with grab rails, accessible shower, etc, the Lifetime Homes Standard home has the potential to save the NHS £515 over the designed lifespan of the building.<sup>43</sup>

When using the TRL figures for cost to society, "the Lifetime Homes Standard home has the potential to save £1,660 more than an average home built to current building

---

<sup>38</sup> Disabled Facilities Grants in England, Astral Advisory for the District Councils' Network, etc, 2013

<sup>39</sup> *Better outcomes, lower costs: implications for health and social care budgets of investment in housing adaptations, improvement and equipment*, Office for Disability.

<sup>40</sup> *Building a business case for investing in adaptive technologies in England*, LSE PSSRU 2012

<sup>41</sup> RoSPA and Transport research Laboratory, *re-valuation of home accidents* by LK Walter 2010

<sup>42</sup> The author's insert and italics

<sup>43</sup> *Assessing the health benefits of Lifetime Homes*, DCLG 2012

regulations, and a further £6,960 if converted, over the 60-year expected lifespan of the building.”

However, although these figures are the most specifically direct assessment relating to accessible housing, they are based on a theoretical assessment of risk rather than actual evidence of savings in practice.

**Frequency.** Falls are the most common accidents in the home. 55% of accidental injuries in the home involve falls.<sup>44</sup>

The Housing Health and Safety Rating system identifies falls on stairs accounting for around 25% of all home falls (fatal and non-fatal)<sup>45</sup>

The most serious accidents involving older people usually happen on the stairs or in the kitchen. The bedroom and the living room are the most common locations for accidents in general. The largest proportion of accidents is falls from stairs or steps with over 60% of deaths resulting from accidents on stairs. 15% of falls are from a chair or out of bed (on two levels) and a similar number are caused by a slip or trip on the same level, eg falling over a mat or a rug.<sup>46</sup>

The BRE's study of the impact of the poorest quality housing on the NHS <sup>47</sup> showed that there were 1.6m falls on stairs or between levels which would potentially have significant savings to the NHS of £291m per annum if the hazard were addressed (see Table 3.2).

Table 3.2 The costs, and benefits to the NHS, of reducing HHSRS Category 1 hazards to an acceptable level <sup>48</sup>

Hazard	Number of Category 1 Hazards	Average repair cost per dwelling (£)	Total cost to repair (£)	Savings to the NHS per annum if hazard fixed (£)	Payback (years)
Excess cold	1,325,088	4,574	6,061,192,123	848,398,538	7.14
Falls on stairs	1,352,837	857	1,159,516,031	207,099,936	5.60
Falls on the level	543,848	780	424,061,206	127,832,318	3.32
Falls between levels	239,930	927	222,382,484	84,308,287	2.64
Fire	128,590	3,632	466,975,191	25,082,026	18.62
Collision and entrapment	74,054	692	51,274,568	15,789,110	3.25
Falls - baths	78,132	521	40,679,153	15,739,628	2.58
Dampness	53,349	7,382	393,817,237	15,585,129	25.77
Hot surfaces	107,168	2,436	261,055,812	15,061,744	17.33
Lead	112,051	1,661	186,099,748	13,883,487	13.40
Entry by intruders	47,284	1,063	50,244,016	13,179,469	3.81
Radon	107,603	1,126	121,124,474	9,028,719	13.42

<sup>44</sup> RoSPA Delivering Accident Prevention factsheet

<sup>45</sup> Housing Health and Safety Rating System: Guidance for Landlords and Property Related Professionals, DCLG May 2006

<sup>46</sup> RoSPA Delivering Accident Prevention factsheet

<sup>47</sup> BRE Briefing Paper, The Cost of Poor Housing to the NHS 2012

<sup>48</sup> BRE Briefing Paper, The Cost of Poor Housing to the NHS 2012

<b>Sanitation (personal hygiene)</b>	35,222	1,154	40,639,168	4,086,230	9.95
<b>Food safety</b>	32,283	2,461	79,460,523	3,742,720	21.23
<b>Pests (domestic hygiene)</b>	28,355	1,921	54,481,109	3,401,754	16.02
<b>Overcrowding</b>	23,871	16,100	384,325,757	2,295,332	167.44
<b>Noise</b>	6,161	1,411	8,691,034	1,751,983	4.96
<b>Carbon monoxide</b>	15,336	506	7,753,023	1,489,008	5.21
<b>Structural collapse</b>	15,394	812	12,507,557	1,324,343	9.44
<b>Electrical problems</b>	9,204	2,360	21,722,172	1,230,900	17.65
<b>Ergonomics</b>	8,201	483	3,963,825	985,487	4.02
<b>Un-combusted fuel gas</b>	7,545	489	3,688,692	713,935	5.17
<b>Lighting</b>	5,453	1,947	10,619,508	624,548	17.00
<b>Water supply</b>	4,894	1,202	5,882,826	606,428	9.70
<b>Excess heat</b>	1,369	470	642,918	129,321	4.97
<b>All</b>	3,472,765	2,875	10,072,810,155	1,413,370,381	7.13

In addition, The Office for Disability reports that visual impairment leads directly to 90,000 falls per year in England and Wales, at a cost of £130 million. The chances of hip-fracture for those with poor depth perception are 6 times the norm. Poor quality lighting in the homes of older people puts them at greatly increased risk. Swedish research indicates large savings to be made through improvements to housing and suitable equipment for people with visual impairment.<sup>49</sup>

According to estimates provided by the Department of Health (DH 2009b), around one third of older people aged 65 and above will suffer a fall each year, with 2% of falls resulting in a hip fracture. Around half of those aged 80 and above will fall in a given year.<sup>50</sup>

Care and Repair England reports on a three year study carried out in New Zealand which was based on a sample of over 800 people living in similar property and in receipt of welfare benefits. Half of the sample received a package of home modifications (*including handrails for outside steps and internal stairs, grab rails for bathrooms, outside lighting, edging for outside steps, and slip-resistant surfacing for outside areas*) at the start of the trial. The other half had to wait three years. Because of the nature of the trial, there was a fairly standard package of relatively low cost adaptations installed at an average cost of \$850 (£375). There were clear positive results. The home modifications led to a 26% reduction in injuries attributable to home falls that needed medical treatment. Injuries specific to the home modification intervention were reduced by 39%.<sup>51</sup>

Finding 3.8 –Trips and falls in the home on stairs and between levels create significant costs for the NHS of more than £291m per year. Evidence suggests that low cost home modifications lead to positive results in terms of a reduction in injuries attributable to trips and falls at home, and that visual impairment leading to falls at home costs the NHS £130m per year. However, because the research does not specifically look at accessible housing the incidence of trips and falls in general, it is unclear

<sup>49</sup> Better outcomes, lower costs: implications for health and social care budgets of investment in housing adaptations, improvement and equipment, Office for Disability.

<sup>50</sup> Building a business case for investing in adaptive technologies in England, LSE PSSRU, 2012

<sup>51</sup> The cost benefit of home adaptations in reducing falls, Care and Repair England, 2015,

what proportion of these costs are due to the nature of the housing in terms of accessibility vs other causes.

**Gap:** There is a need for studies assessing the frequency and severity of slips, trips and falls in homes and which compare outcomes in Part M, Lifetime homes, and wheelchair accessible homes with less accessible house types. This needs to be a statistically robust sample in order to properly ascertain the value of benefits \ and savings that might be made.

### 3.9 Reduced cost /need for aids and adaptations

Hospital discharge often requires the supply of equipment and adaptations by social care in order to supply supported home nursing or independent living. This is because few homes were built to cater for the needs of someone who has limited mobility on leaving hospital.

Additionally, as people age their needs change, and they may require aids and adaptations to assist them in staying in their own home longer. An already accessible home may need the minimum of adaptations to become fully supportive of someone's changing requirements. For instance, an accessible home with a ground floor WC and shower, stairs which can easily have a stair lift fitted and reinforced walls which can readily take the installation of grab rails will require less disruption and less expenditure than many standard adaptations packages.

**Nature of Benefit.** Accessible housing needing less or cheaper adaptation could lead to Social care/Local Authority cost saving on the Community Equipment Services and Disabled Facilities Grant. There could be reduced expenditure on equipment to support a return to home or a change in physical ability, such as commodes to replace an inaccessible toilet, bath-lifts and hoists, etc., and less intervention would be needed from housing officers, doctors, social workers and occupational therapists in assessing care and addressing support needs.

The availability of accessible housing, combined with a mechanism for the timely matching of appropriate users with accessible housing would also mean less time spent waiting for the approval of expenditure **alue**. The Community Equipment Services funding pays for minor home adaptations up to a value of £1,000. The Disabled Facilities Grant (DFG) of up to £30,000 covers more substantial work, such as wheelchair access ramps, downstairs bathrooms or stair lifts. They are available for people in both social and private housing but are means tested against income.<sup>52</sup>

The Office for Disability Issues reports that the average cost of Disabled Facilities Grant is £6,000<sup>53</sup>, which pays for a stair-lift and level access shower - a common package for older applicants. These will last 5 years. The same expenditure would be enough to purchase average home care package of 6.5 hours per week for 15 months.

---

<sup>52</sup> Home solutions to our care crisis, Papworth trust, November 2012.

<sup>53</sup> Better outcomes, lower costs: implications for health and social care budgets of investment in housing adaptations, improvement and equipment. Office for Disability issues + University of Bristol (2007)

The Papworth Trust study, Home solutions to our care crisis, found that home adaptations can help prevent or defer entry into residential care, with just one year's delay saving up to £26,000 per person, less the cost of the adaptation.<sup>54</sup>

The Disabled Facilities Grants in England study identifies that adaptations that remove or reduce the need for daily home care visits pay for themselves in a time-span ranging from a few months to three years and then produce annual savings. In the cases reviewed, annual savings varied from £1,200 to £29,000 a year.<sup>55</sup> A recent study by the Northern Ireland Housing Executive of 70 adaptations<sup>56</sup> showed that the savings of adaptations would have been £275,000 if 69 residents had been able to move directly into appropriate accommodation instead of having their homes adapted. This does not include decanting costs of an average of £3,000 for an average 12-week period, or more with private sector decanting. Decant periods can be up to 20 weeks.

Table 3.3 Potential savings from DFG spend<sup>57</sup>

	<b>Cost of DFG</b>	<b>Cost of equivalent service</b>	<b>Basis of calculation</b>
<b>Home care</b>	1,500	12,500	Withdrawn commode cleaning visits after accessible bathroom installed, saving calculated over 10 years
<b>Residential or nursing care</b>	18,000	80,000	Delayed admission by 4 years
<b>Residential or nursing care</b>	6,500	280,000	Enabled discharge from residential care, saving based on 14 years further time in residential care
<b>Discharge from hospital care to home</b>	8,000	60,500	Saving based on 3 years in nursing care, saving would be higher if needed longer time in hospital

An PSSRU/LSE study<sup>58</sup> found that a client base of 45,000 individuals receiving interventions (at a total cost of approximately £270 million, broadly equivalent to the total annual expenditure on Disabled Facilities Grants used to fund major adaptations), is likely to generate reductions in the demand for health and social care services worth £156 million over the estimated lifetime of the equipment, and to achieve quality of life gains of £411 million over the same period.

Individual costs of specific adaptations have been identified in PSSRU studies, as shown in Tables 3.4 and 3.5.

<sup>54</sup> Home solutions to our care crisis, Papworth trust, November 2012.

<sup>55</sup> Disabled Facilities Grants in England, Astral Advisory for the District Councils' Network, etc. 2013

<sup>56</sup> Evaluation of the Adaptations Design Communications Toolkit, Northern Ireland Housing Executive, 2015.

<sup>57</sup> Disabled Facilities Grants in England, Astral Advisory for the District Councils' Network, etc. 2013

<sup>58</sup> Building a business case for investing in adaptive technologies in England, LSE and PSSRU, Nov 2012

Table 3.4 Major adaptations, including installation costs

	<b>Sample size</b>	<b>Lowest cost</b>	<b>Highest cost</b>	<b>Mean (median) cost</b>	<b>Mean (median) annual equipment cost (3.5% discount)</b>
Level access shower	21	£2,581	£12,390	£4,802 (£4,116)	£577 (£495)
Stair lift (straight)	21	£1,084	£2,920	£1,935 (£1,987)	£233 (£239)
Stair lift (more complex)	7	£2,375	£6,828	£4,712 (£4,749)	£566 (£571)
Convert room for downstairs WC / washroom	7	£2,891	£22,715	£10,176 (£10,192)	£1,223 (£1,225)
Build downstairs extension for WC / washroom	5	£12,390	£30,975	£23,296 (£25,812)	£2,800 (£3,103)
Build downstairs extension for bedroom	5	£12,390	£46,462	£26,582 (£26,582)	£3,315 (£3,195)
Build downstairs extension for bedroom and en suite facilities	6	£23,747	£46,462	£34,732 (£33,109)	£4,175 (£3,979)
<b>Total</b>	<b>52</b>				

59

<sup>59</sup> Unit Costs of Health and Social Care 2015, Curtis L, PSSRU 2015

The cost of minor adaptations is shown below:

Table 3.5 Minor adaptations, including installation costs<sup>60</sup>

	Sample size	Lowest cost	Highest cost	Mean (median) cost	Mean (median) annual equipment cost (3.5% discount)
Fit handrail - external	8	£17	£102	£42 (£28)	£5 (£3.40)
Fit handrail - internal	10	£10	£67	£28 (£20)	£3.50 (£2.40)
Fit handrail to bath	8	£9	£29	£18 (£20)	£2.20 (£2.40)
Fit over bath shower	6	£322	£1,859	£108 (£1,200)	£13 (£144)
Create step to front / back door	8	£21	£1,549	£481 (£90)	£59 (£10.90)
Create ramp to front / back door	5	£122	£700	£316 (£120)	£39 (£14)
Lay new path, per metre cost	3	£101	£124	£114 (£120)	£14 (£14.40)
Widen doorway for wheelchair access	6	£301	£683	£536 (£660)	£66 (£79.30)
Install lighting to outside steps / paths	5	£26	£620	£256 (£140)	£31 (£16.80)
Move bed to downstairs room	3	£31	£46	£40 (£45)	£5 (£5.40)
Raise electrical sockets / lower light switches	6	£41	£1,520	£80 (£75)	£10 (£9)

**Frequency.** Analysis of English house condition survey data indicates that the total amount required to cover grants for all of those who are theoretically eligible under the current rules is £1.9bn at 2005 prices. This is more than ten times higher than the total amount of DFG in England in 2009-10, at £157m.<sup>61</sup> In 1998, the Audit Commission<sup>62</sup> reported that the needs of only 1 in 26 eligible households would be met by available funding levels for disabled facilities grants. The report indicated that improved levels of funding would avoid waste and be a better value for money.

Another piece of research from the Papworth Trust sets out costs and qualitative benefits of different adaptations measures (Table 3.6)

<sup>60</sup> Unit Costs of Health and Social Care 2015, Curtis L, PSSRU 2015

<sup>61</sup> Disabled Facilities grant allocation methodology and means test – final report BRE, February 2011, reported in Disabled Facilities Grants in England, Astral Advisory for the District Councils' Network and Society of District Council Treasurers, April 2013

<sup>62</sup> Better outcomes, lower costs, ODA and University of Bristol

Table 3.6 Adaptations: Costs and Benefits<sup>63</sup>

		<b>Cost</b>	<b>Changes</b>	<b>Benefits</b>
	<b>Bathroom conversions</b>	£3,500- £5,000	Providing safe and accessible washing facilities for a person to use independently.	Reducing or even eliminating the need for carer or family assistance in washing or toileting.
	<b>Grab rails</b>	£30 - £200	Fitting grab rails for safety in baths, showers, toilets or stairs.	Reduced need for assistance to get around.  Prevents slips and falls on wet surfaces where people are particularly prone to accidents.
	<b>Kitchen alterations</b>	£5,000	Making work surfaces accessible by adjusting height.  Better positioned switches and cooking facilities.  Wheelchair knee clearance.	Reduced need to pay for a carer to come in and cook food.  Improved nutrition by eating fewer ready meals and takeaways.
	<b>Ramps and level access</b>	£800 - £8,000	Making outside entrances accessible with level access or ramps for unassisted wheelchair and walking frame use.	Getting in and out safely and independently means that disabled and older people can continue to be involved in life outside their home, reducing isolation.  Reduces trips and falls.

<sup>63</sup> Home solutions to our care crisis, Papworth trust, November 2012

	<b>Widening doorways</b>	£300 - £1,000	Making doorways wider for wheelchair users to access parts of their home and prevent injury to their hands from door frames.	Allows full use of all rooms of the home independently.
---	--------------------------	---------------	--	---

The length of time that it takes to implement adaptations is a major consideration and can be the cause of delayed discharge from hospitals, and the cause of trips and falls, as has been seen in previous sections. The Papworth Trust cites anecdotal feedback from users that under the DFG process, it took 2 years to produce an 'acceptable' proposal, and others reported that they had just carried out bathroom adaptations themselves because 'the DFG took 8 years.'<sup>64</sup>

The average time taken by staff involved in the process of providing minor and major adaptations is shown in Tables 3.7 and 3.8 below:

Table 3.7 Mean average time inputs for staff involved in the process of providing minor adaptations<sup>65</sup>

	Average time in minutes			
	Initial enquiry	OT	HIA administrator	Total time
Fit handrail - external	9.8	84	30	123.8 (2.06 hours)
Fit handrail - internal	9.8	72	30	111.8 (1.7 hours)
Fit handrail to bath	9.8	42	24	75.8 (1.1 hours)
Fit (handrail) over bath shower	9.8	84	42	135.8 (2.1 hours)
Create step to front / back door	9.8	132	30	171.8 (2.7 hours)
Create ramp to front / back door	9.8	360	30	399.8 (6.5 hours)
Lay new path, per metre cost	9.8	192	48	249.8 (4 hours)
Widen doorway for wheelchair access	9.8	456	42	507.8 (8.3 hours)
Install lighting to outside steps / paths	9.8	318	12	339.8 (5.5 hours)
Move bed to downstairs room	9.8	78	42	129.8 (2 hours)

<sup>64</sup> Home solutions to our care crisis, Papworth trust, November 2012.

<sup>65</sup> Unit Costs of Health and Social Care 2015, Curtis L, PSSRU 2015

Raise electrical sockets / lower light switches	9.8	156	36	201.8 (3.2 hours)
---	-----	-----	----	-------------------

Table 3.8 Mean average time inputs for staff involved in the process of providing major adaptations<sup>66</sup>

	Initial enquiry	Average minutes					Total Time
		OT	LA grants officer	HIA Technical officer	HIA case worker	HIA administrator	
Level access shower	9.8	210	462	420	287	168	1,557 (26 hours)
Stairlift (straight)	9.8	72	186	120	474	120	982 (16.4 hours)
Stairlift (more complex)	9.8	156	756	306	96	120	1,444 (24.1 hours)
Convert room for downstairs WC/ washroom	9.8	498	792	672	276	313	2,560 (42.7 hours)
Build downstairs extension for WC/ washroom	9.8	816	1,188	1,578	144	174	3,910 (65.2 hours)
Build downstairs extension for bedroom and en suite facilities	9.8	1,068	1,356	1,272	372	234	4,312 (71.9 hours)

Northern Ireland's Housing Adaptations Services reviewed the extent of adaptations with the aim of streamlining decision-making, expenditure and installation of minor adaptations in order that residents' requirements could be addressed as quickly and effectively as possible.<sup>67</sup> This was achieved through setting up standardised and robust occupational therapists formats, financial governance, specification and follow-up. Through electronic formatting, it also facilitated timely and consistent inter and intra-agency communications.

This is a creative response to what is generally a bespoke, long-winded and multi-agency process. It is one which could be emulated in England to great financial benefit to the local authorities and social care, and physical benefit to disabled and older residents.

**Finding 3.9 - Whilst there is good evidence on the cost and frequency of adaptations, and the benefits that accrue from adaptations, it is difficult to disaggregate available data and research to identify the actual reduction in cost of adaptations in a property which is more accessible when compared to a less accessible property.**

<sup>66</sup> Unit Costs of Health and Social Care 2015, Curtis L, PSSRU 2015

<sup>67</sup> Adaptations Design Communications Toolkit, Northern Ireland Housing Executive, 2014

**Gap:** Research is needed to identify in practice how the cost of subsequent adaptations is reduced by investment in more accessible and adaptable properties.

### 3.10 Reduced cost of removing adaptations

The existence of adaptations in the home, such as grab rails, hoists, stair lifts, etc, can make a home look clinical or institutional, and underline the dependency or frailty of the resident. It is therefore not surprising that subsequent residents of the same property when it becomes void should wish to have adaptations removed before or soon after they move in. This is inevitably the case where there is no local register of accessible homes, with the ability to match future occupants to existing homes. The removal of adaptations is a waste of resources, but this can be counterbalanced to a certain extent by the design of an accessible home which needs fewer adaptations.

**Nature of benefit.** The cost of removing adaptations when new residents move in to an adapted home can be largely avoided when the new home has been built to an accessible standard, leading to a cost saving for Local Authority / Social care/landlords

**Value.** We have not been able to find any data referring to the costs for the following (costs should include making good to decorations and finishes afterwards):

- removal of stair lifts
- removal of grab rails
- removal of through-floor lifts
- removal of external ramp and/or handrail
- reduced cost as a result of the reduced need for aids and adaptations for accessible homes.

However, the Northern Ireland Interdepartmental review of housing adaptations<sup>68</sup> looked at the savings brought about through recycling adaptations such as stair lifts and through-floor lifts, which in the case of recycling also includes the cost of removal and making good afterwards.

Table 3.9 Financial savings in 2009/10 between the installation of a new lift as opposed to a recycled lift.

---

<sup>68</sup> Northern Ireland Executive, Interdepartmental review of housing adaptations services, Evidence review 2013

Type of lift	Estimated cost
New stair-lift	£2,030 (procurement and installation)
Recycled stair-lift	£692 (removal, refurbishment and re-installation)
New Vertical Lift	£9,562
Recycled Vertical Lift	£5,609

**Frequency.** Not known

The Department of Health, Social Services and Public Safety (DHSSPS) Price Waterhouse Cooper Audit of Occupational Therapy Services in Northern Ireland identified an average recycling rate of 40% for all lifts and ceiling track hosts in 2006/07.<sup>69</sup> This needs to be balanced against insurance, maintenance, storage and reinstallation costs, and the consideration of needing to replace such items every 10 years.

**Finding 3.10 - While there is anecdotal record of the desire for adaptations to be removed from a home when newly occupied, there is no available data on the cost and frequency of occurrence, nor how these figures are affected by the provision of accessible homes.**

**Gap:** Research is required on both the cost and frequency of occurrence of the need for the removal of adaptations, and how this data is affected by the provision of accessible homes. Investigation by local authorities or RSLs could determine the extent to which this occurs currently and how much the removals typically cost, excluding any general upgrades to the entire property.

It is important to note that a Housing Occupational Therapist can make effective use of a local register of accessible housing, with the occupational therapist's specific knowledge of the area and the people living in it. This could largely eliminate the need for removing adaptations since people could be matched up with their specific requirements, with potentially only some minor adjustments required.

Marrying up an occupational therapist's knowledge of and list of people and their specific needs (who requires accessible properties and may be able to use certain adaptations) with an adapted rented property when it becomes empty can enable immediate matching and avoidance of lengthy voids and the concomitant costs.

A useful reference is Scotland's Accessible Housing Register Home2Fit,<sup>70</sup> which is currently being set up and is based on Glasgow's pioneering work in 2007. These are online systems with a wide range of applications:

- to enable disabled people seeking an accessible home to register and record the

<sup>69</sup> Northern Ireland Executive, Interdepartmental review of housing adaptations services, Evidence review 2013

<sup>70</sup> Home2Fit, Scotland's Accessible Housing Register

features they need. By registering, Home2Fit records information on housing circumstances; required property size, location and level of accessibility

- to enable landlords and housing providers to record information on their accessible properties by size, location and adaptations
- to enable social housing providers and private landlords to find a match to allocate accessible housing to disabled people in housing need
- to provide an advertising facility for owner-occupiers to market accessible and adapted housing to potential buyers looking for adapted accommodation
- to provide a comprehensive source of information for disabled people seeking more suitable accommodation.

The needs of disabled or older people who are owner-occupiers or privately renting are rarely considered, but their needs may be just as acute as those of people in socially-rented accommodation. Local Authorities do not always have a person who can assist in providing advice and support for them when they are moving.

Apart from the input on a local accessible housing register and matching needs with property, occupational therapists can save money by addressing the cost/issue of adapting privately rented and/or owner occupied properties, enabling a person to move to a more accessible/new build property without the need for costly adaptations that may not be wholly suitable. Some local authorities use the discretionary element of Disabled Facilities Grants to assist people to move (such as legal fees and removal costs). Wide adoption of this policy will assist people in finding appropriate accommodation for their needs. .

A commitment could be encouraged from local authorities, in the first place to employ occupational therapists and secondly to assist them in setting up and maintaining a detailed local accessible housing register. Finally, local authorities could be encouraged to work flexibly in relation to the use and expenditure of Disabled Facilities Grants.

### 3.11 Reduced admin costs of rehousing

The need for an accessible home often grows and develops with the age of the resident. However, moving from a family home to an accessible one, for whatever reason, can be a lengthy and disruptive process. The problems and difficulties of moving out of one area and into another include missing friendships in a known and friendly community, having to establish new routes and get to know shopping locations, breaking links with established activity centres, unfamiliarity with local amenities, etc. For older and disabled people particularly, this can be difficult and distressing.

Homes which are built to a minimal level of accessibility, like a Lifetime home, have a baseline standard which will accommodate the majority of needs of an ageing population without the disruption and expense of rehousing. The ready supply of a

range of fully accessible homes will ensure that wheelchair users and people with more restrictive disabilities will more easily find a suitable new home, and can then move quickly.

**Nature of benefit.** The reduction of demand for rehousing will lead to the following benefits:

- fewer payments of Disabled Persons Rehousing Assistance Scheme (DPRAS)<sup>71</sup>
- fewer man-days spent by occupational therapists, Housing Officers, Legal departments, etc.

**Value.** Harrow Council has produced a draft fact sheet about Grants and Assistance regime for disabled adaptations. In it they estimate that the cost of rehousing can be up to £30,000 <sup>72</sup> though this will depend on the local authority.

**Frequency.** Not known.

**Finding 3.11 - There is no readily available data on the cost of rehousing people because of their need for accessible housing or how that need is affected by the provision of an accessible or adaptable home in the first place.**

**Gap:** Information from housing associations and local councils is required, including comparisons between the frequency and costs of and reasons for moves from accessible and non-accessible homes to more accessible homes. The impact of rehousing needs on owner occupiers due to accessibility requirements could also be explored.

The existence of a body of accessible homes and a register which records their location and level of accessibility would provide significant benefits to people needing these facilities, and would reduce the need for rehousing.

## 3.12 Secondary benefits

The previous sections provide information about the primary benefits of accessible housing on a range of factors. However, there are secondary benefits which can also be identified. In this context, a secondary benefit is one which arises indirectly from a home being built to higher standards of accessibility and which may be heavily reliant on other factors (secondary benefits are typically not included in Government assessment of social benefits).

The columns in the chart below relate to the foregoing sections (see Key), while the rows identify a wide range of secondary benefits and how they impact on each of the sections.

### KEY to chart below

<sup>71</sup> Disabled Persons Rehousing Assistance Scheme (DPRAS) – Middlesbrough July 2007

<sup>72</sup> Grants and assistance regime for disabled adaptations to housing in Harrow.

- 1 Avoid temporary residential costs (rehabilitation or re-ablement care)
- 2 Reduced bed-blocking
- 3 Reduced residential care costs
- 4 Reduced cost of care assistance at home
- 5 Reduced cost to NHS (trips/falls/injury to carer)
- 6 Reduced cost /need for aids and adaptations
- 7 Reduced cost of removing adaptations
- 8 Reduced admin costs of rehousing

	1	2	3	4	5	6	7	8
<b>A</b>	Improved/maintained quality of life	✓	✓	✓	✓	✓	✓	✓
<b>B</b>	Improved mental health/independence/ well-being of the individual	✓	✓	✓	✓	✓		
<b>C</b>	Maintenance of original levels of dignity, pride and self-esteem	✓	✓	✓	✓	✓	✓	
<b>D</b>	Reduced fear of falling (with mental health impacts of reduced anxiety, depression, stress, etc)				✓	✓	✓	
<b>E</b>	Maintained /increased empowerment, autonomy, independent decision-making, improved self-esteem and self-confidence. <sup>73</sup>		✓	✓	✓	✓	✓	
<b>F</b>	Improved/maintained social inclusion	✓	✓	✓	✓	✓	✓	✓
<b>G</b>	Lower levels of anxiety and depression <sup>74</sup>	✓	✓	✓	✓	✓		✓
<b>H</b>	Reduced social isolation due to visitability of own home and those of others.	✓	✓		✓	✓	✓	
<b>I</b>	Reduced levels of mortality from cardiovascular disease, accidents and suicide due to social isolation.	✓	✓		✓	✓	✓	

<sup>73</sup> Wheelchair Accessible Housing: waiting for appropriate housing in England – Aspire 2014

<sup>74</sup> Public Health England – Written Evidence (BEN0186)

	1	2	3	4	5	6	7	8
<b>J</b>						✓		
	Reduced fear of crime, as the home is not visibly different from others in the street (external ramps and handrails are unwelcome indicators of a home with a vulnerability or disability.) <sup>75</sup>							
<b>K</b>		✓		✓	✓	✓		
	Positive effect on health and peace of mind. <sup>76</sup>							
<b>L</b>		✓			✓			
	Reduction in risk of further illness picked up in hospital, particularly pneumonia in vulnerable people such as the immuno-suppressed and older people, further delaying the release of a bed.							
<b>M</b>		✓	✓		✓			
	Reduction in potential for spread of infection, such as MRSA, <i>C difficile</i> , <i>E coli</i> , etc.							
<b>N</b>	✓	✓			✓			
	Reduction in the institutionalisation of the individual and therefore sustained independence and social inclusion.							
<b>O</b>	✓	✓		✓				
	Earlier return to work, activities, community.							
<b>P</b>	✓	✓	✓	✓	✓	✓		✓
	Maintenance of employment/studies/day-to-day activities.							
<b>Q</b>		✓		✓		✓		
	Improved quality of life of carers.							
<b>R</b>	✓	✓	✓	✓	✓	✓		✓
	Reduced mental strain on family.							
<b>S</b>	✓	✓						
	Reduced travel by family and friends to a different location							
<b>T</b>							✓	
	Less damage/repair required to the home							

<sup>75</sup> Incorporating Lifetime Homes standards into modernisation programmes. Joseph Rowntree Foundation, Housing Research 174 (April 1996)

<sup>76</sup> Money Well Spent - the effectiveness and value of housing adaptations - JRF 2001 page 13.

	1	2	3	4	5	6	7	8
U		✓			✓			✓
V	✓	✓			✓			

## Summary

The review of the impact of accessible dwellings is difficult to quantify from many vantage points, but the use of NHS data and similar reports at least provides basic information and insights, if not full corresponding data in all cases.

For instance, the reduction of delayed discharge from hospital can be effected by a number of means, such as readily available care homes or rehabilitation care. A small proportion of patients are prevented from leaving hospital by the need for home adaptations or equipment, currently identified as 14%. There is a gap in the data available to inform this study on how many of these patients would have been able to go home if their homes had been accessible or in need of minor adaptations.

The identification of gaps in the data therefore includes the following:

- NHS data on the numbers of people who go into temporary residential care after hospital, and the number who take that route only because their home is unsuitable
- further information is required to identify whether accessible housing would help reduce the delays caused by the need to put care packages in place
- where people enter temporary residential care because of an unsuitable home, data identifying how accessible that home was (e.g. to evidence whether more accessible homes reduce likelihood of temporary residential care and if so to what degree)
- evidence or data of reduced impacts on carers or disabled people resulting from homes being more accessible
- NHS data on the numbers of people leaving/avoiding residential care, the reasons for doing so, the initial cost of doing so, the amount of savings realised, and whether (and to what extent) these costs are materially reduced where a person lives in a home which is designed to be accessible at the outset
- evidence is needed on the frequency and cost of care in the home which adequately identifies the difference in outcomes where homes are built to accessible standards (ADM, Lifetime home and wheelchair accessible standards) when compared with homes which are less accessible
- there is a need for studies assessing the frequency and severity of slips, trips and falls in homes and which compare outcomes in Part M, Lifetime and wheelchair accessible homes with less accessible house types. This needs to be a statistically robust sample in order to properly ascertain the value of benefits

and savings that might be made

- research is needed to identify in practice how the cost of subsequent adaptations is reduced by investment in more accessible and adaptable properties
- research is required on both the cost and frequency of occurrence of the need for the removal of adaptations, and how this data is affected by the provision of accessible homes. Investigation by local authorities or RSLs could determine the extent to which this occurs currently and how much the removals typically cost, excluding any general upgrades to the entire property
- information from housing associations and local councils is required, including comparisons between the frequency and costs of and reasons for moves from accessible and non-accessible homes to more accessible homes. The impact of rehousing needs on owner occupiers due to accessibility requirements could also be explored.

Throughout this section, a number of suggestions have been made for addressing the need for accessible homes, and these include:

- building all new homes to Lifetime Homes criteria would have a major impact on NHS costs (refer to Section 3.5)
- establishing a space standard for wheelchair-accessible homes could ensure that the homes which are newly built would be suitable for the majority of wheelchair-users, rather than compromising on some features, as may be the case. The consideration of space for assisted wheelchairs should also be included. The Northern Ireland Department for Social Expenditure (DSD) study (in draft only currently) makes proposals for the size of wheelchair-accessible homes.<sup>77</sup>.
- as well as encouraging local authorities to require the construction of a range of accessible homes in every new planning application, there is a benefit in setting up and maintaining a local register of accessible homes, and the ability to identify them easily through a vehicle such as a National Register of Accessible homes.
- this would rely on local authorities employing Housing-related Occupational Therapists who could act quickly to assess people's needs and match them up with the relevant accommodation, wherever possible, or identify any adaptations required
- encouraging hospitals to build move-on accommodation in their grounds for newly-disabled people to develop and maintain their skills for an independent life, accommodating family too, could enable them to avoid institutionalisation or inadequate alternatives. This could use available hospital land and provide a home until appropriate permanent accommodation was available

---

<sup>77</sup> Wheelchair Standard Housing Strategy: Design Standards, Northern Ireland Housing Executive, 2016.

- as well as identifying suitable accommodation for people leaving hospital, many people will also need ongoing support and guidance, ideally provided by an Occupational Therapist or similar
- additionally, there may be a need for advice to people who own their own home, whose needs may not so easily be met. Occupational Therapists are well-suited to providing this sort of service, in addition to their practical support
- setting up a streamlined process, such as that developed by the Northern Ireland Adaptations Design Communications Toolkit,<sup>78</sup> would enable joined-up thinking and a speeded up process for identifying and installing adaptations in the home. This could be a great financial benefit to the Local Authorities and Social Care, and physical benefit to disabled and older residents.

Essentially the points identified above suggest a level of joined-up thinking and co-ordination between agencies that is not currently seen, except in the work carried out by the Northern Ireland Housing Executive.

**Finding 3.12 – the benefits derived from building accessible homes are likely to be enhanced by a range of supporting services or policies, particularly those delivered at a local level.**

- The range of secondary benefits, although not noted in this summary, is also worth considering, and some of them may well be quantifiable. The improvement or maintenance of a good quality of life is the main benefit of accessible housing, leading to good mental health, independence, well-being, dignity, pride, self-esteem, autonomy, self-confidence, inclusion, etc. It also contributes to less anxiety, fear, stress, depression. Quantifying these benefits, though not part of this study, could provide further evidence of the value of accessible housing.

### 3.13 Findings

Throughout this section, a number of findings have emerged in relation to the value and benefits of accessible housing. These are summarised below:

**Finding 3.1** – There is a significant body of qualitative evidence of benefits to individuals from living in accessible housing, but robust quantitative evidence establishing how frequently these benefits are derived from building to higher standards of accessibility are lacking to enable accurate assessment of overall social benefits at a national level.

**Finding 3.2** – where data is being captured on costs and benefits associated with the accessibility or inaccessibility of housing, contextual aspects need to be more effectively captured to help assess how much benefit is derived from the accessibility of the property. This would include a wider range of data on personal circumstances,

---

<sup>78</sup> Adaptations Design Communications Toolkit, Northern Ireland Housing Adaptations Services, 2014

assisted or unassisted use of wheelchairs or other mobility aids (e.g. mobility scooters) and the age design and features of the housing in which these people live.

**Finding 3.3** – the need to adapt homes was identified as the cause for only 3% of delayed discharges. Evidence is needed to determine whether accessible housing could help reduce the 32.7% of delays resulting from the need to put care packages in place. However, 35% of delayed discharge resulted from lack of assessment or consultant services (24%) or need to supply assistive equipment (11%) suggesting that procedural and organisational changes are likely to be more effective in reducing these costs.

**Finding 3.4** – accessible housing is likely to play a part in reducing the need for people with either temporary or permanent disability requiring re-ablement or rehabilitation care outside the home. However, there is little in the way of quantitative data as to what these savings are. Accessible housing is unlikely to reduce the need to provide residential stays to provide respite, training or assessment.

**Finding 3.5** - While it can be seen that 24% of SCI patients on release from hospital do not go into suitable accommodation, there is no data for the level of mismatch between their needs and what is available in terms of accessible housing.

**Finding 3.6** – There is good evidence of significant savings arising from adaptations packages enabling – in particular – permanently disabled people to live at home, avoiding residential care. There is less evidence as to the frequency or extent that accessible housing reduces the need for residential care for the wider population, or people with a temporary disability or condition.

**Finding 3.7** – Available evidence linking reduced care cost with home accessibility primarily relates to benefits of adaptations (rather than the homes actual accessibility) and suggests that benefits are primarily concentrated amongst younger (and younger old) people with disability rather than the ageing population as a whole.

**Finding 3.8** –Trips and falls in the home create significant costs for the NHS of more than £291m per year. Whilst there are assessments of likely reduced costs where homes are more accessible, there is no data available to allow a direct comparison between accessible homes and less accessible homes.

**Finding 3.9** - Whilst there is good evidence on the cost and frequency of adaptations, and the benefits that accrue from adaptations, it is difficult to disaggregate available data and research to identify the actual reduction in cost of adaptations in a property which is more accessible when compared to a less accessible property.

**Finding 3.10** - While there is anecdotal record of the desire for adaptations to be removed from a home when newly occupied, there is no available data on the cost and frequency of occurrence, nor how these figures are affected by the provision of accessible homes.

**Finding 3.11** - There is no readily available data on the cost of rehousing people because of their need for accessible housing or how that need is affected by the provision of an accessible home in the first place.

**Finding 3.12** – the benefits derived from building accessible homes are likely to be enhanced by a range of supporting services or policies, particularly those delivered at a local level

# Chapter 4 - Summary and Conclusions

PRP Innovate have been commissioned by the MHCLG to carry out this work, which seeks to scope out existing evidence to support the evaluation of Part M and Approved Document M of the Building Regulations. The key objective was: To establish and analyse available evidence on the **benefits of accessible housing** and carrying out a gap analysis to identify what further research is required to evidence the benefits of these standards.

This research looks primarily at finding evidence in relation to accessible housing need and the benefits of accessible housing, and to identify what further evidence is needed in the future and to identify possible approaches and sources of relevant data to support this work.

## 4.1 What are the benefits of accessible housing?

There is a significant body of commentary and qualitative evidence of benefits to individuals from living in accessible housing, but robust quantitative evidence is limited and often gathered for a different purpose, therefore an assessment of accessible housing in particular is often challenging. A summary of the quantitative evidence found during the course of this research is as follows:

**Delayed hospital discharges** cost the NHS about £285m per year, and the evidence suggests that up to 14% of these delayed discharges can be reduced by accessible housing through the reduction of the need to adapt homes (3%) and the need to supply assistive equipment (11%). However, the evidence also indicates that 24% of delayed discharges result from lack of assessment or consultant services, which suggests that procedural changes would be more effective in reducing these costs.

**Trips and falls** in the home on stairs and between levels create significant costs for the NHS of more than £291m per year. Evidence suggests that low cost home modifications lead to positive results in terms of a reduction in injuries attributable to trips and falls at home, and that visual impairment leading to falls at home cost the NHS £130m per year. However, because the research does not specifically look at accessible housing but rather, the incidence of trips and falls in general, it is unclear what proportion of these costs are due to the nature of the housing in terms of accessibility versus other causes.

There is also evidence of significant savings (in the region of £25,480 - £80,000 per patient per year) arising from adaptations packages enabling – in particular – permanently disabled people to live at home, thereby **avoiding the need for residential care**. A study by the Papworth Trust found that home adaptations can help prevent or defer entry into residential care, with just one year's delay saving up to £26,000 per person, less the cost of the adaptation.<sup>79</sup> There is less evidence as to the frequency or extent that accessible housing reduces the need for residential care for the wider population, or people with a temporary disability or condition, although

---

<sup>79</sup> Home solutions to our care crisis, Papworth trust, November 2012.

the evidence for the benefits of adaptations packages indicate that the potential for benefit exists.

Adaptations that remove or **reduce the cost of care assistance at home** pay for themselves in a time-span ranging from a few months to three years and then produce annual savings<sup>80</sup>, varying from £1,200 to £29,000 a year.<sup>81</sup> This evidence of benefits is derived from adaptations, not the inherent features of the property itself, and it is also unclear from the data whether the homes were already accessible and needed only small adaptations (such as the installation of grab rails) or required more major adaptations. In terms of the **reduced cost of home adaptation**, a recent study by the Northern Ireland Housing Executive of 70 adaptations<sup>82</sup> showed that the savings of adaptations would have been £275,000 if 69 residents had been able to move directly into appropriate accommodation instead of having their homes adapted.

In a more generalised study by the PSSRU/LSE,<sup>83</sup> it was found that a client base of 45,000 individuals receiving interventions (at a total cost of approximately £270 million, broadly equivalent to the total annual expenditure on Disabled Facilities Grants used to fund major adaptations), is likely to generate a **reduced demand for health and social care services** worth £156 million over the estimated lifetime of the equipment, and to **achieve quality of life gains** of £411 million over the same period.

There is very little quantitative data available to characterise the nature and frequency of the benefits related to the **avoidance of temporary residential costs** and the **reduced cost of rehousing** although it would be logical to assume that accessible housing leads to benefits in these areas. Harrow Council estimates that the cost of rehousing can be up to £30,000<sup>84</sup> per home, but there is no available data on the quantity or frequency of this occurrence. Finally, while there is anecdotal evidence of the desire for the **removal of adaptations** from a newly-occupied home, there is no available data on the cost and frequency of this occurrence nor how these would be affected by the provision of accessible housing.

## 4.2 What is needed to better understand the nature of the benefits of accessible housing?

There are overall gaps in terms of robust quantitative evidence establishing the cost and frequency of these benefits that arise from building to higher standards of accessibility. One reason is the lack of statistically-robust studies that specifically target gathering information on the characteristics of the home in terms of whether it is Part M, Lifetime Homes, or wheelchair accessible compliant.

---

<sup>80</sup> PSSRU Unit costs of Health and Social Care 2015 section 11.6

<sup>81</sup> It is not known whether the cost of loans/gifts of equipment is included in the figures provided above.

<sup>82</sup> Evaluation of the Adaptations Design Communications Toolkit, Northern Ireland Housing Executive, 2015.

<sup>83</sup> Building a business case for investing in adaptive technologies in England, LSE and PSSRU, Nov 2012

<sup>84</sup> Grants and assistance regime for disabled adaptations to housing in Harrow.

Most of the data currently available is also gathered and analysed for a different purpose, and is typically aggregated in terms of outcomes but not necessarily the context leading to these outcomes. Often the data available tends to relate to the costs and frequency of home adaptation, and it is often unclear whether aggregated data refers to younger people with disability vs elderly people, and whether the data relates to properties that are more, or less accessible. It would be very useful to know, for example, how much the cost of adaptation would be reduced for an already accessible home as opposed to one that required more major interventions.

Where data is being captured on costs and benefits associated with the accessibility or inaccessibility of housing, contextual aspects need to be more effectively captured to help assess how much benefit is derived from the accessibility of the property. This would include a wider range of data on personal circumstances, assisted or unassisted use of wheelchairs or other mobility aids (e.g. mobility scooters) and the age, design and features of the housing in which these people live.

The identification of gaps in the data therefore includes the following:

- **Temporary residential care:** NHS data on the numbers of people who go into temporary residential care after hospital; the number who take that route only because their home is unsuitable; and for these people, data identifying the level of accessibility of that home.
- **Delayed discharges:** Further information is required to identify whether accessible housing would help reduce the delays caused by the need to put care packages in place.
- **Avoidance of residential care:** NHS data on the numbers of people leaving/avoiding residential care, the reasons for doing so, the initial cost of doing so, the amount of savings realised, and whether (and to what extent) these costs are materially reduced where a person lives in a home which is designed to be accessible at the outset.
- **Care assistance at home:** Evidence is needed on the frequency and cost of care in the home which adequately identifies the difference in outcomes where homes are built to accessible standards (ADM, Lifetime home and wheelchair accessible standards) when compared with homes which are less accessible.
- **Trips and falls:** There is a need for studies assessing the frequency and severity of slips, trips and falls in homes and which compare outcomes in Part M, Lifetime and wheelchair accessible homes with less accessible house types. This needs to be a statistically robust sample in order to properly ascertain the value of benefits and savings that might be made.
- **Cost of home adaptations:** Research is needed to identify in practice how the cost of subsequent adaptations is reduced by investment in more accessible and adaptable properties.
- **Cost of removing adaptations:** Research is required on both the cost and frequency of occurrence of the need for the removal of adaptations, and how this data is affected by the provision of accessible homes. Investigation by local authorities or RSLs could determine the extent to which this occurs currently and

how much the removals typically cost, excluding any general upgrades to the entire property.

- **Admin costs of rehousing:** Information from housing associations and local councils is required, including comparisons between the frequency and costs of and reasons for moves from accessible and non-accessible homes to more accessible homes. The impact of rehousing needs on owner occupiers due to accessibility requirements could also be explored.
- The range of **secondary benefits** is also worth considering, and some of them may well be quantifiable. The improvement or maintenance of a good quality of life is the main benefit of accessible housing, leading to good mental health, independence, well-being, dignity, pride, self-esteem, autonomy, self-confidence, inclusion, etc. It also contributes to less anxiety, fear, stress, depression. Quantifying these benefits, could provide further evidence of the value of accessible housing.

## 4.3 Research Findings

A number of findings have emerged in relation to the value and benefits of accessible housing. These are summarised below:

**Finding 3.1** – There is a significant body of qualitative evidence of benefits to individuals from living in accessible housing, but robust quantitative evidence establishing how frequently these benefits are derived from building to higher standards of accessibility are lacking to enable accurate assessment of overall social benefits at a national level.

**Finding 3.2** – where data is being captured on costs and benefits associated with the accessibility or inaccessibility of housing, contextual aspects need to be more effectively captured to help assess how much benefit is derived from the accessibility of the property. This would include a wider range of data on personal circumstances, assisted or unassisted use of wheelchairs or other mobility aids (e.g. mobility scooters) and the age design and features of the housing in which these people live.

**Finding 3.3** – the need to adapt homes was identified as the cause for only 3% of delayed discharges. Evidence is needed to determine whether accessible housing could help reduce the 32.7% of delays resulting from the need to put care packages in place. However, 35% of delayed discharge resulted from lack of assessment or consultant services (24%) or need to supply assistive equipment (11%) suggesting that procedural and organisational changes are likely to be more effective in reducing these costs.

**Finding 3.4** – accessible housing is likely to play a part in reducing the need for people with either temporary or permanent disability requiring re-ablement or rehabilitation care outside the home. However, there is little in the way of quantitative data as to what these savings are. Accessible housing is unlikely to reduce the need to provide residential stays to provide respite, training or assessment.

**Finding 3.5** - While it can be seen that 24% of SCI patients on release from hospital do not go into suitable accommodation, there is no data for the level of mismatch between their needs and what is available in terms of accessible housing.

**Finding 3.6** – There is good evidence of significant savings arising from adaptations packages enabling – in particular – permanently disabled people to live at home, avoiding residential care. There is less evidence as to the frequency or extent that accessible housing reduces the need for residential care for the wider population, or people with a temporary disability or condition.

**Finding 3.7** – Available evidence linking reduced care cost with home accessibility primarily relates to benefits of adaptations (rather than the homes actual accessibility) and suggests that benefits are primarily concentrated amongst younger (and younger old) people with disability rather than the ageing population as a whole.

**Finding 3.8** –Trips and falls in the home create significant costs for the NHS of more than £291m per year. Whilst there are assessments of likely reduced costs where homes are more accessible, there is no data available to allow a direct comparison between accessible homes and less accessible homes.

**Finding 3.9** - Whilst there is good evidence on the cost and frequency of adaptations, and the benefits that accrue from adaptations, it is difficult to disaggregate available data and research to identify the actual reduction in cost of adaptations in a property which is more accessible when compared to a less accessible property.

**Finding 3.10** - While there is anecdotal record of the desire for adaptations to be removed from a home when newly occupied, there is no available data on the cost and frequency of occurrence, nor how these figures are affected by the provision of accessible homes.

**Finding 3.11** - There is no readily available data on the cost of rehousing people because of their need for accessible housing or how that need is affected by the provision of an accessible home in the first place.

**Finding 3.12** – the benefits derived from building accessible homes are likely to be enhanced by a range of supporting services or policies, particularly those delivered at a local level.



Ministry of Housing,  
Communities &  
Local Government

## Research into Access to and Use of Buildings

Part 2a: The effectiveness of current guidance for  
buildings other than dwellings

# Executive Summary

PRP Innovate have been commissioned by the MHCLG to carry out this work, that aims to provide an overview and analysis of existing evidence that underpins the statutory guidance set out in Part M: non-dwellings, and identifies possible gaps in the evidence.

The research objectives were to:

- provide an overview and analysis of existing evidence for the statutory guidance for Part M: non-dwellings
- identify possible gaps in the evidence
- provide a comparison of Part M standards with relevant guidance from other countries.

## Analysis of the spatial, structural and functional anthropometric data for wheelchair users

Our literature survey indicates that most studies carried out to establish spatial, structural and functional anthropometric data for wheelchair users date back to the last millennium, and the latest study carried out for the DETR in 2005<sup>85</sup> looked only at dimensions of stationary occupied wheelchairs but not at the abilities and characteristics of users. It has now been over ten years since the last study, and this survey may need to be updated, particularly in relation to the use of electric scooters, powered wheelchairs and adapted manual cycles.

More recent studies carried out in the Republic of Korea and France in 2014 on ramp gradients and permissible cross-fall gradients would appear to support current guidance on ramp guidance in relation to permissible gradients and cross falls, though more research into provision of landings and ramp widths may be appropriate.

## Analysis of the evidence for sanitary facilities

In a survey of unisex accessible toilets in the UK, it showed that there may be a need for a more inclusive approach to toilet design that meets the needs of not only independent wheelchair users but also those with carers, those with profound and multiple learning disabilities, and other forms of spinal and brain injury, muscular dystrophy and multiple sclerosis.

---

<sup>85</sup> Hitchcock et al (2005). A Survey of Occupied Wheelchairs and Scooters, DETR, UK.

There is a lack of comprehensive studies carried out on a wider range of disabled people including those with multiple and complex impairments, bariatric people, those of smaller or taller stature or people with cognitive impairments. Ergonomic, anthropometric and space requirement data for all of these types of users will be needed if the guidance is to be developed further to meet these needs.

## Visually and hearing impaired users

In terms of visually- and hearing-impaired building users, UK studies date back to extensive research carried out at the University of Reading, Project Rainbow and Project Crystal in the late 1990's. These provide useful guidance on the factors that influence the ability to communicate and perceive environments through colour and lighting, and are still current and fit for purpose.

## Comparison with guidance developed in other countries

A comparison of Part M guidance with similar guidance across the world suggests that UK standards are in agreement in terms of ramp dimensions, door widths and opening forces, stair dimensions, lift dimensions and corner layouts for independent wheelchair accessible toilets.

## Recommendations

The scope for the statutory guidance in Part M is sufficient to meet the needs of a wide range of users. However it is acknowledged that the current guidance has not been developed to address the needs of users with more specific needs, particularly for groups of people with needs that sit outside the more common types of disability, and for demographic groups whose number increased significantly since Part M was last updated in 2004.

Comprehensive ergonomic studies have not been carried out of the needs of this wider range of disabled people. Whilst Part M will always need to address the most common needs in a shared built environment, further research is necessary to understand how these more diverse needs could be integrated into regulation to improve further benefits. A wider study looking at anthropometric and ergonomic data (in order to update the evidence base supporting guidance in Approved Document M as a whole), as well as the needs and capabilities of disabled users across the UK may be helpful in establishing an up-to date basis on which the guidance can be developed further.

The design of sanitary provision is particularly essential to disabled people being able to access and use public buildings. There is a good case for review of existing requirements to ensure that guidance provides the best fit possible for the needs of

not only independent wheelchair users but also those with carers, those with profound and multiple learning disabilities, those with other forms of spinal and brain injury, muscular dystrophy and multiple sclerosis. The guidance also needs to consider more recent developments in assistive technology and mobility aids and this may require further research and analysis to improve the evidence base.

A further comprehensive review and comparison of guidance in countries with similar economic and social characteristics against the requirements of Part M may be able to confirm the validity of existing guidance, and provide direction on where further research may be needed. However, because standards for accessibility in Approved Document M are broadly in line with, or slightly ahead of regulatory standards in other countries, it is likely that primary evidence of the needs of disabled people in the UK will prove a more useful way of ensuring provision in regulatory guidance in the future.

# Chapter 1 - Introduction

- 2.1 PRP Innovate have been commissioned by the MHCLG to carry out this work, that aims to provide an overview and analysis of existing evidence that underpins the statutory guidance set out in Part M: non-dwellings, and identifies possible gaps in the evidence. The key objectives of the work were:
- To obtain evidence of the **effectiveness of the guidance set out in *Approved Document M : access to and use of buildings, volume 2: buildings other than dwellings***, and carrying out a gap analysis to identify what further research is needed to support an end-to-end review of the non-domestic guidance in Part M and Approved Document M of the building regulations.
- 2.2 This report will look at how effective the Part M2 guidance has been since 2004 and evaluate how well it has been meeting disabled people's needs, in terms of identifying the strengths and weaknesses of the existing guidance, and identifying what further research would be needed to support a review of the guidance. For both domestic and non-domestic components, any areas where improved anthropometric data would be of benefit should be identified.
- 2.3 In order to facilitate the search for evidence on the benefits of accessible housing and the effectiveness of the guidance for buildings other than dwellings, we carried out an initial literature review, looking at publications, academic papers, PhD dissertations and industry reports, and established standards.

# Chapter 2 - Methodology

## 2.1 Overview

In order to facilitate the search for evidence on the benefits of accessible housing and the effectiveness of the guidance for buildings other than dwellings, an initial literature review was carried out, including a review of relevant publications, academic papers, PhD dissertations and industry reports, and established standards for ergonomics, anthropometrics and mobility.

## 2.2 Research Questions

To guide our search for documentary evidence and stakeholder feedback to support the evaluation of Part M and Approved Document M, the following research questions were confirmed with MHCLG at the project kick-off meeting. These research questions provide the structure and framework for the desktop research and social engagement activities that underpin this research work.

### Research Phase Questions:

#### RQ1 - NEEDS

- **What accessibility needs need to be addressed in non-domestic buildings?**

#### RQ2 - EFFECTIVENESS

- **What evidence exists to evaluate the adequacy of existing standards in terms of meeting the needs of disabled people in non-domestic settings?**
- **Are the provisions in Part M comprehensive enough to meet people's needs?**

## 2.3 Literature Review

Based on the research questions set out in 3.1, a desktop research exercise was carried out to search for references that provide evidence for each of the research questions, for both the domestic and non-domestic components of Part M.

### 2.3.1 Key References and Data Sources

Evidence for the two key research questions identified above are collected from a variety of sources, including government, disability groups, access consultants, housing providers, building owners (including FM teams), local authorities, designers and other stakeholders from across the industry. The references and data sources we have looked at include the following:

- As a starting point, a comparison of the current Part M and APPROVED DOCUMENT M with the draft Part M and draft APPROVED DOCUMENT M to give an indication of what evidence is required based on the proposed changes;
- Documentation from the Housing Standards Review of 2013;
- University-based research projects in areas related to disability but not necessarily limited to housing and non-domestic buildings, such as the Pedestrian Accessibility Movement Environment Laboratory (PAMELA) project at the UCL Transport Institute;
- Other research on access, anthropometrics and ergonomics from other industries and sectors, such as the transport and automotive industries, and the evidence-based research carried out in Northern Ireland, including work by Alison Grant on inclusive design.
- Anthropometric and Ergonomic guidelines and design data, including architectural graphic standards and British Standards related to any human measurements that can be used for developing access standards as well as emerging peer-reviewed academic studies in this field;
- London Accessible Housing Register and other similar databases
- Reports and papers from the access sector, including work by access consultants and occupational therapists, human resources, National Register of Access Consultants (NRAC), The Access Association; Housing Adaptations Advisory Service (HAAS)
- Focused social media networks and groups, such as the Accessibuilt and Business Disability Forums.

### 2.3.2 Evaluating the Robustness of the Evidence

The following robustness measures were used in our evaluation of evidence:

- **Sample size** – for statistical data, is the sample size reliable?
- **Author or commissioning authority** – has the report been published by a highly reputable source?

A complete listing of the references used, including the robustness evaluation, can be found in Appendices I.

### 2.3.3 Initial Screening of the Part M1 and M2 volumes

The following criteria were used in our assessment of the relevance of evidence against the current requirements of APPROVED DOCUMENT M:

- **Established Guidance** – Is the guidance unlikely to be questioned? Does it refer to high level guiding principles that are widely accepted in the industry? Does it set out guidance or information that is well-established and also unlikely to be questioned?
- **Highly Prescriptive** – Does the guidance refer to very specific dimensions and specifications?
- **Challenging to Implement** – In practice, has the guidance proven to be difficult, impractical or costly to implement?
- **Risk of Obsolescence** – Is there a risk that this guidance is no longer relevant to today's needs?

The results of the screening, including the scoring against these criteria, can be found in Appendix II and Appendix III.

# Chapter 3 - Analysis of existing anthropometric, ergonomic and mobility data that relates to or forms basis of statutory guidance for Part M: Buildings other than dwellings

## 3.

### 3.1 Aim of chapter

This chapter aims to provide an overview and analysis of existing evidence for the statutory guidance for Part M: non-dwellings. It summarises and evaluates the robustness and currency of the data and evidence, and identifies possible gaps in the evidence.

The last section compares Part M standards with accessibility standards in selected countries for key sections of the guidance and identifies any significant differences with the UK guidance, which could be used to further inform a more comprehensive review.

### 3.2 Summary

Our literature survey indicates that most studies carried out to establish spatial, structural and functional anthropometric data for wheelchair users date back to the last millennium, and the latest study carried out for the DETR in 2005<sup>86</sup> looked only at dimensions of stationary occupied wheelchairs but not at abilities and characteristics of users.

The needs of a diverse range of disabled people including those with complex and multiple impairments, bariatric people, those with smaller/taller stature or people with cognitive impairments, are not currently reflected in the guidance, particularly in relation to provision and design of public toilets.

Technological advances and current building management practices affect how visually and hearing-impaired people use and navigate building environments and this is not currently reflected in guidance.

---

<sup>86</sup> Hitchcock et al (2005). A Survey of Occupied Wheelchairs and Scooters, DETR, UK.

A comparison with relevant guidance in other countries does not indicate significant discrepancies in guidance or dimensions.

## 3.3 Analysis

Spatial, structural and functional anthropometric data for wheelchair users

### 3.3.1 Studies carried out on wheelchair user characteristics, space requirements and abilities include the following:

The first inclusive toilet designs and recommended ramp gradients<sup>87</sup> were based on Tim Nugent's research study at University of Illinois, among wheelchair users under 45 years. This set the mould for access standards worldwide, culminating in the guidance accompanying the Americans with Disabilities Act of 1990. It also established that a ramp of 1:12 was manageable by a manual wheelchair user. This became accepted prescription for all national standards issued around the world.

### 3.3.2 Goldsmith's works.

Selwyn Goldsmith (1932- 2011) developed the earliest UK guidance on access for disabled people to and within buildings. His first guidance manual, *Designing for the Disabled, 1963*<sup>88</sup> was based on a compilation of international norms at the time. The text, the first of its kind, focused on presenting anthropometric details of people with wheelchairs, crutches and other movement aids and the arrangement and layout of spaces. However, no primary anthropometric studies were carried out as part of the work, and data was derived entirely from secondary sources.

The second edition of *Designing for the Disabled* in 1967<sup>89</sup> was supported by his research into the needs and abilities of 284 wheelchair users in Norwich during 1964-68.

The updated third edition<sup>90</sup> in 1976 added further research from international sources. It was reviewed by The Architects' Journal as 'a remarkable document and a singular achievement' and was an international source of technical information. It was established as a definitive reference book on access to buildings. Data from Goldsmith's study informed Part M of the 1992 UK Building Regulations.

Goldsmith's *Designing for the Disabled: The New Paradigm, 1997*<sup>91</sup> was a critique of

---

<sup>87</sup> American National Standards Specifications for making buildings and facilities accessible to, and usable by, the physically handicapped (USA Standard A117.1- 1967)

<sup>88</sup> *Designing for the Disabled - a Manual of Technical Information*, S Goldsmith RIBA, London, 1963, revised 1967

<sup>89</sup> *Planning for the disabled: A survey of wheelchair users in Norwich* S Goldsmith (unpublished), 1968

<sup>90</sup> *Designing for the Disabled*, S Goldsmith RIBA, London, 3<sup>rd</sup> edition, 1976

<sup>91</sup> *Designing for the Disabled: The New Paradigm, 1997*, S Goldsmith, Oxford: Architectural Press

existing standards and legislation. This was a highly influential book that informed thinking about accessibility in the UK and beyond in terms of the concept of inclusive or universal design rather than making special provision for disabled people.

Goldsmith's final publication *Universal Design*, 2000<sup>92</sup>, was based on the concept of universal design, 'making buildings safe and convenient for all users, including people with disabilities'. This evolution of thinking and approach was reflected in the development of guidance in the 2004 Building Regulations Part M and future versions which refer to '*Access to and use of buildings*' in comparison with the 1992 and earlier versions of Part M which referred to '*Access and facilities for disabled people*'.

The guidance in *Universal Design* presented anthropometric data, along with examples of circulation spaces, sanitary facilities, car parking spaces and seating spaces for wheelchair users in cinemas and theatres. The data was drawn from various sources including architects' drawings, product catalogue specifications and advice from a range of public and private consultants.

**References.** Much of general ergonomic anthropometric data for Goldsmith's *Designing for the Disabled* originated from the Dreyfuss study.<sup>93</sup> This was based on a US Dept. of Defence funded survey of a large sample originally of adult males in military service or suited for it. The 1960 landmark book (updated in 2002) is acknowledged as authoritative textbook of anthropometric data for architects. Other data is sourced from Stephen Pheasant's *Bodyspace*<sup>94</sup>, 1998, with anthropometric data derived from a range of surveys undertaken in Britain and elsewhere. This suggested a taller adult male in the 50<sup>th</sup> percentile. In relation to ambulant disabled people, Goldsmith asserted<sup>95</sup> that 'no reliable anthropometric data could be obtained and presented in a systematic form. A relevant factor is that there can be no generally operational definition of the point at which ambulant disabled people can be distinguished from normal able-bodied people.'

### 3.3.3 Floyd's Study 1966

Floyd's Study 1966 *Study of the space requirements for wheelchair users*<sup>96</sup> was considered to be 'the most valuable ergonomic study of wheelchair users' by Goldsmith.<sup>97</sup> This was based on a sample of 127 paraplegics and tetraplegics who were available during Floyd's study at Stoke Mandeville rehabilitation hospital. However, Goldsmith stated there were limitations to this survey as only 38 of these were representative of the wider paraplegic population, the others not having completed their rehabilitation, or who were athletic sports participants and under 45 years. There was a 5:2 ratio of men to women which was not representative. Reach

---

<sup>92</sup> *Universal Design: A Manual of Practical Guidance for Architects*, S Goldsmith, Oxford: Architectural Press, 2000

<sup>93</sup> *The Measure of Man and Woman: Human factors in design*, Henry Dreyfuss Associates, John Wiley and Son, rev'd edition 2002,

<sup>94</sup> *Bodyspace, Anthropometry, Ergonomics and the Design of Work*, S Pheasant and C Haslegrave, Taylor & Francis 1998, revised 2006

<sup>95</sup> *Universal Design*, S Goldsmith 2000, chapter 3: Anthropometrics, pg 2

<sup>96</sup> *A study of the space requirements of wheelchair users*, W F Floyd & others, *Paraplegia*, Vol 4, No 1, 1966

<sup>97</sup> *Designing for the Disabled*, 3<sup>rd</sup> Edition, Chapter 20, Ergonomics, 2023, Goldsmith, 1976

ranges for the 23 tetraplegics in the study with upper limb impairments were not recorded.

### 3.3.4 Felix's Study 1971

A study by Walter Felix for the Disabled Living Foundation in 1971<sup>98</sup> that looked at wheelchair circulation space, doorway manoeuvres, ramp gradients and disabled drivers was said to be compromised by its poor methodology by Goldsmith<sup>99</sup>. The research did not cover movements of a wheelchair user in a toilet or bathroom.

### 3.3.4 Feeney's Study 1973

A housing study<sup>100</sup> carried out at the Loughborough Institute of Consumer Ergonomics by R J Feeney in 1973 provided the data for wheelchair movement through corridors and doorways.

### 3.3.4 Goldsmith 1964-68

Selwyn Goldsmith's two-year study of 284 wheelchair users in Norwich<sup>101</sup> looked at abilities and needs of wheelchair users over 1964-68 including space requirements, posture, reach and strength. This exposed issues facing severely disabled people and unmet demand for unisex toilet facilities.

Goldsmith found in his research<sup>102</sup>, that the characteristics of wheelchair users are 'so immensely variable that no representative sample of them could be expected to present a statistically normal distribution for any anthropometric measure'. At issue is the definition of a wheelchair user, as there are many variables that go into the definition. Some users can get up and walk about unaided, others walk a short way using a handrail, others able to stand to transfer to a seat, and a smaller segment have no mobility function in their legs.

A survey of disabled drivers<sup>103</sup> in Norwich by Goldsmith in 1968 was a complement of his study of wheelchair users and looked at a sample size of 162 drivers. 118 of these did not use a wheelchair and were mainly ambulant disabled. The ratio of men was 84%, 35% were aged 60 years or over and 64% were aged 50 years or over.

The study provided information about employment, use of steps and ramps, car parking and effects of obstructions in and around buildings, and walking abilities. The

---

<sup>98</sup> Four architectural movement studies for wheelchair and ambulant disabled, F Walter, Disabled Living Foundation, London 1971

<sup>99</sup> Designing for the Disabled, 3<sup>rd</sup> Edition, Chapter 92 Selected references, 928 Ergonomics, wheelchairs, Goldsmith, 1976

<sup>100</sup> Housing for the disabled: Part 1: An ergonomic study of the space requirements of wheelchair users for doorways and corridors, R J Feeney, A Ownsworth, Inst for Consumer Ergonomics, Loughborough, 1973

<sup>101</sup> Planning for the disabled: A survey of wheelchair users in Norwich S Goldsmith (unpublished), 1968

<sup>102</sup> *Universal Design*, S Goldsmith, 2000, chapter 3 Anthropometrics, pg 24

<sup>103</sup> Disabled drivers in Norwich, Survey by S Goldsmith, (unpublished), 1968

study found 27% of people able to walk at least a quarter of a mile, 43% between 50 yards and a quarter of a mile. Only 30% were severely limited in their mobility.

### **3.3.5 Platt 1966-68**

A survey <sup>104</sup> of the abilities of wheelchair users to propel themselves independently (only half of all responders), stand with or without assistance, and get out of wheelchair to transfer was carried out by Elizabeth Platt, through a postal questionnaire and interview questionnaire in the county of Leicestershire between 1966 and 1968. 484 wheelchair users were surveyed. The survey also provided information on proportion of chairs used inside or outside of the home.

### **3.3.5 Jarosz 1966**

A study looking at the workspace of wheelchair users by Jarosz, 1996<sup>105</sup> established anthropometric data for design of workspaces and home interiors for wheelchair users from a sample size of 101 men and 69 women aged 18-39 years in Poland. She found the reach dimensions of this group were smaller than that of the able-bodied population. Jarosz concluded that the physical characteristics of individuals have also been shown to be quite different across disability populations.

### **3.3.6 Das and Kozey 1999 and 2000**

Studies in 1999<sup>106</sup> and 2000<sup>107</sup> by Das and Kozey, were applicable to universally accessible industrial workstations. A photogrammetry methodology was used to obtain the measurements. The various subject demographics including age, level or type of dysfunction as well as the specified anthropometric dimensions of the wheelchair mobile subjects were identified. The data would be useful for the design of industrial workstations for wheelchair mobile adults. They deduce that, "Present workstation design principles based on seated able-bodied anthropometric measurements would not be suitable for this population".

### **3.3.7 Paquet and Feathers 2004**

A study by Paquet and Feathers (2004)<sup>108</sup> in Buffalo, USA, had the objective of generating data on adult wheelchair users as part of a larger project that involved

---

<sup>104</sup> Characteristics and requirements of wheelchair users in county of Leicestershire, Elizabeth Platts, Univ of Loughborough, 1971

<sup>105</sup> *Determination of the workspace of wheelchair users*, Emilia Jarosz, International Journal of Industrial Ergonomics, Vol 17, 1996

<sup>106</sup> Structural anthropometric measurements for wheelchair mobile adults, Das and Kozey, Applied Ergonomics, Vol 30 issue 5, 1999

<sup>107</sup> Determination of the normal and maximum reach, structural anthropometric measurements of adult wheelchair users, Das and Kozey, International Journal of Industrial Ergonomics, Vol 33, issue 3, 2003

<sup>108</sup> Anthropometric Study of Manual and Powered Wheelchair Users, Paquet & Feathers, International Journal of Industrial Ergonomics, Vol 33, 2003

developing a database of the structural characteristics and functional abilities of wheelchair users.

Paquet and Feathers argue that anthropometric studies of the elderly and disabled have involved smaller sample sizes than studies on the non-disabled population and fewer measurements. The 121 participants (75 males and 46 females and 46% powered wheelchair users), representing a wide range of disabilities were measured, with 36 body and wheelchair landmarks and seven reference planes being used in the calculation of 31 structural anthropometric dimensions.

They recorded a range of information about the occupied wheelchairs such as device type (manual or powered), make, model, age and presence of armrests and footrests, drive wheels, controller and seat support surfaces. Only small differences were noted between manual and powered and male and female wheelchair users. New measurements methods have value for 3D modelling and CAD applications.

### **3.3.8 Centre for Employment and Disadvantage Studies 2005**

A 2005 survey in the UK, carried out by the Centre for Employment and Disadvantage Studies (CEDS) on behalf the Mobility and Inclusion Unit at the Department of Transport,<sup>109</sup> collected data at the Mobility Roadshow and 12 site visits of retail centres and schools around the UK. This was an update of previous studies in 1991 and 1999 and allowed an analysis of trends across the years. The main aim of the study was to determine provision for wheelchair users in buses and trains so looked at ability to use handrails and dynamic stability.

The last study looked at a wide range of 1356 participants including 18% children, electric, self and attendant-propelled wheelchairs, and mobility scooters. It looked solely at dimensions of wheelchairs and height of occupants. The study also carried out a user needs survey with 43 stakeholders (21 wheelchair users and 22 data users needing to identify suitable wheelchairs for users)

Comparing measurements of the four principal dimensions of all adult devices measured in the previous (1999) survey, it would appear that overall there have been significant increases in height, weight and length but a significant decrease in width.

Now eleven years old, this survey may need to be updated, particularly in relation to use of electric scooters, powered wheelchairs and adapted manual cycles by disabled and older people.

### **3.3.9 PD 6253 1989**

A significant publication in 1989 was PD 6523 '*Information on access and movement within and around buildings and on certain facilities for disabled people*', which was an analysis and five yearly review of BS Codes of practice, based on review of other

---

<sup>109</sup> A Survey of Occupied Wheelchairs and Scooters, CEDS for DETR, 2005

country and international (ISO) standards and publications and research concerned with access to and use of buildings.

This document recommended the development of a more comprehensive British Standard to replace BS5810 and BS 5619 and to serve as a basis for replacement of the Building Regulation Part M 1985.

An important recommendation was that the Standard should be based on a systematic analysis of disabled people's needs in buildings and on validated research concerning disabled people's use of building features. Since much of the information then available was incomplete, often contradictory and not based on the results of properly conducted research, a recommendation was made that a comprehensive research programme should be carried out.

### **3.3.10 DETR 1996**

This led to the commissioning of research in 1996 by the DETR (Department of the Environment, Transport and the Regions) to form the basis of the BS 8300:2001.

This DETR commissioned research was undertaken by Robert Feeney Associates (RFA) over four years from 1996. The research was conducted in RFA's laboratory or centres.

Sampling frames were used to ensure the sample employed reflected the people described in the larger national survey of disabled people carried out by the Office of Population Censuses and Surveys (OPCS) in 1994<sup>110</sup>.

Feeney described the fundamental principle behind the experimentation in his paper<sup>111</sup> which was that the cost, practicality or utility of a design solution could be balanced against the proportion of people who may be accommodated. Such an approach was used to investigate a whole range of features associated with building access and use. However, Feeney qualifies the use of the 'percentage' approach, as used in traditional ergonomics that cannot be used with disabled people because of the skewed distribution of characteristics and capabilities within that population.

The project focused on measuring basic characteristics of disabled people in respect of reach, space requirements to carry out activities, levels of incline successfully climbed, body size and capabilities such as visual acuity. The majority of the research was carried out on ramps, doorways and corridors, toilets, steps and stairs. Car parking spaces, auditoria layout and lobbies were dealt with using CAD analysis.

Reach capabilities of disabled people were determined using a specially constructed rig. 300 participants including 150 ambulant disabled people and 150 wheelchair users were surveyed.

Feeney stated that one of the limitations of his research was the lack of any adequate sampling frame for visually impaired people, as the criteria used in the survey carried out by the Office of Population Censuses and Surveys (OPCS) (1994)

---

<sup>110</sup> The prevalence of disability among adults, Office of Population Censuses and Surveys (OPCS) Surveys of Disability in Great Britain, 1994, Report 1

<sup>111</sup> BS 8300 - the research behind the Standard: Space Requirements for Wheeled Mobility, Robert Feeney, 2003

did not accurately reflect levels of tasks visually impaired people face when using buildings.

This research formed the basis of BS 8300:2001 and the Building Regulations Approved Document M 2004 and remains the basis of much of the guidance in the current versions.

### **3.3.11 Annex C of the BS 8300:2009+A1 2010**

*Annex C of the BS 8300:2009+A1 2010* provides measurements for space requirements for stationary wheelchairs and space required to move through 90° or 180°. The data there is based on ergonomic research (user trials and validated desk studies) which formed part of a research project commissioned in 1997 and 2001 by the DETR. *(It is assumed this is the Feeney study, but no reference is provided)*. Sample sizes were 54 for manual wheelchairs, 27 electric wheelchairs, 6 attendant pushed chairs and 5 electric scooters.

CAD analysis was used to determine space to side and rear of vehicles.

### **3.3.12 Annex F of the BS 8300:2009+A1 2010**

*Annex F to BS 8300:2009+A1 2010* provides reach ranges for wheelchair users and ambulant disabled people. No sample size was indicated, but it was part of the above study. This research was used to establish ranges of dimensions that can be applied to accessibility of reception desks, tables and kitchen work surfaces.

Reach ranges outside this study, including reaching to low level socket outlets or into the back or bottom of kitchen drawer, were established in a separate research study that is not documented.

**Finding 3.1 - While there have been more recent studies carried out of abilities of wheelchair users, these appear to be from the fitter end of population using wheelchairs, or even placing non-disabled people in wheelchairs. There is a lack of comprehensive studies carried out on a wider range of disabled people including those with multiple and complex impairments, bariatric people, those of smaller or taller stature or people with cognitive impairments. A wider study of the presence, characteristics and abilities of disabled people across the population may be helpful in establishing an up-to date countrywide profile of disabled people and their needs.**

## **3.4 Research data for ramps: gradients, cross falls and need for accompanying steps**

### **3.4.1 Designing for the disabled, 3rd edition, 1976**

Selwyn Goldsmith's guidance *Designing for the disabled, 3<sup>rd</sup> edition, 1976*, contained ramp gradient and dimensional guidance based on 'an unpublished American study made in 1957<sup>112</sup> and Felix Walter's 1971 study<sup>113</sup> of ramp gradients.

Goldsmith<sup>114</sup>, made a number of points about the reliability of the Walter's evidence including that

- tests were made inside a building and not subject to weather conditions
- the 62 ambulant disabled and 46 wheelchair users who took part in the study were selected on rough functional and medical criteria and not necessarily representative of wider population
- participants were supervised by an occupational therapist tending to encourage maximal achievement and may not have corresponded with normal course of events

Goldsmith further commented that 'studies have been made to determine the right gradient for a ramp for wheelchair users. Although a maximum gradient of 1:12 for ramps is preferred, it should be recognised that there cannot be a *right* gradient for wheelchair users and the only right gradient is no gradient at all'.

He suggested further reasons for a maximum gradient of 1:12 as 'this is as steep as an independent wheelchair user can descend without fear of tipping forwards', and to avoid 'the hazard of the chair running away owing to difficulty of braking.'

Goldsmith recommended<sup>115</sup> landings at a longer spacing of every 800mm rise or 10m length, preferably only at turns as level variations in a straight flight can be trip hazard for visually impaired people.

### 3.4.2 RFA research

The RFA research<sup>116</sup> formed the basis for ramp dimensions and gradients in the BS 8300:2001, that has remained the basis of the later BS 8300:2009 and the latest guidance in the Building Regulations Part M. There is no detailed report of this research that could be located.

### 3.4.3 Study from the Republic of Korea, 2014

A more recent 2014 study from the Republic of Korea<sup>117</sup> set and examined two hypotheses about effects of ramp slopes (1:6, 1:8, 1:10, 1:12 and 1:14) by varying ramp height and pushing force of wheelchair users. The study used a sample size of

---

<sup>112</sup> A study to determine the specifications of wheelchair ramps, C D Elmer (unpublished) Univ. of Iowa, 1957

<sup>113</sup> Four architectural movement studies for wheelchair and ambulant disabled, F Walter, Disabled Living Foundation, London 1971

<sup>114</sup> *Designing for the Disabled*, 1984 Chapter 32 Ramps, 321 Gradients

<sup>115</sup> *Designing for the Disabled*, 1984 Chapter 32 Ramps, 322 Dimensional data

<sup>116</sup> BS 8300 - the research behind the Standard: Space Requirements for Wheeled Mobility, 2003

<sup>117</sup> Effects of ramp slope, ramp height and users' pushing force on performance, muscular activity and subjective ratings during wheelchair driving on a ramp, Kim, Lee & Min Chung, International Journal of Industrial Ergonomics 44 (2014)

30 including non-disabled participants classified as weak, strong and medium. Based on results they suggest a max allowable slope by ramp height of 1:8, 1:10 and 1:12 for ramp heights of 0.15m, 0.30m and 0.45m respectively.

However, disabled people were excluded from study as it was assumed (from other studies) that there would be no difference in terms of upper extremities. Goldsmith and others challenge the hypothesis that abilities of regular wheelchair users can be extrapolated from placing non-disabled people in wheelchairs.

#### **3.4.4 Need for steps to accompany ramps**

The evidence for the **need for steps to accompany ramps** was identified and established by Goldsmith in his Norwich study<sup>118</sup> on 162 disabled drivers of whom 118 people did not use wheelchairs but were ambulant disabled. Of the 32 that expressed a preference, 20 preferred steps as against 8 in favour of slopes. Four people said they found it easier when going down to use steps, but when going up to use slopes. Goldsmith says of his research<sup>119</sup> 'for ambulant disabled people, there is a greater hazard of overbalancing when descending ramps, and the case of long leg amputees, there is the additional danger that the action of descending a ramp can cause the knee lock to disengage. Short steep ramps are the biggest threat'.

#### **3.4.5 Pierret and others, 2014**

**Permissible cross fall gradients** : Research by Pierret and others in France in 2014<sup>120</sup> studied a small group of 25 volunteers recruited from patients who were male, paraplegics, of working age (18-65 years) travelling independently in wheelchairs for over 6 months.

25 paraplegics achieved 8 x 300m propulsion tests combining four gradients (0%, 2%, 8% and 12%) and two speeds. Heart rate and oxygen uptake and subjective ratings made on completion of each test.

Results suggest 2% cross fall (1:50) is generally acceptable and 8% is a critical threshold. Excessive cross-fall can degrade manual wheelchair user's social life and state of health by increasing muscular-skeletal disorders.

For longer journeys a 4% (1:25) slope is acceptable to all users and 10% should never be exceeded.

For comparison, the maximum permissible cross-fall across different country regulations studied has been consistent at 1:50.

**Finding 3.2 - Research data would appear to support current guidance on ramp guidance in relation to permissible gradients and cross falls, though more research into provision of landings and ramp widths may be appropriate.**

---

<sup>118</sup> Disabled drivers in Norwich, Survey by S Goldsmith, (unpublished), 1968

<sup>119</sup> Designing for the Disabled 1984, Chapter 2 Evidence 1224 Kerbs and ramps, pg 39

<sup>120</sup> Cardio-respiratory and subjective strains sustained by paraplegic subjects, when travelling on a cross-slope in a manual wheelchair, B Pierret, K Desbrosses, J Paysant, JP Meyer, International Journal of Industrial Ergonomics 44 (2014) Elsevier

## 3.5 Surveys and research on sanitary facilities

### 3.5.1 Nugent, 1960

The first inclusive toilet designs<sup>121</sup> were based on Tim Nugent's research study at University of Illinois in the US in the early 1960s, among wheelchair users under 45 years. The toilet size prescribed was 915mm wide, 1420mm long with 815mm wide outward opening door, grab rails both sides, and 510mm high seat, and was designed for trained and athletic wheelchair users.

The CP 96: Part 1: 1967 *Access for the disabled to buildings* unisex toilet was the original British standard for an accessible toilet. It was based on research<sup>122</sup> carried out by 5<sup>th</sup> year architecture students with a full size test rig at the Mary Marlborough Lodge rehabilitation centre in Oxford (in conjunction with Dr P Nichols and his team) using adjustable walls and grab rail positions. Important functional criteria were that there should be space for both frontal transfer and lateral transfer, and that the washbasin should be reachable while seated on the WC.

This established the basis of 'disabled' sanitary facility as a segregated, exclusive, unisex, standardised facility that was usually kept locked with RADAR key. The size of toilet was 1370 x 1750 with 510mm high seat. It was soon established this was too small, with no space for an assistant, and the seat was too high.

### 3.5.2 Circular 3/68, 1986

The 1986 Circular 3/68 *Design of Public Conveniences with Facilities for the Disabled* recommended the CP 96 toilet and did not refer to ambulant disabled facilities.

### 3.5.3 Platt, 1971

Elizabeth Platt's 1971 Leicestershire survey<sup>123</sup> asked specific questions about use of the WC finding that 26% of people (sample size of 322) always used a wheelchair to the toilet in their home, 8% sometimes used a wheelchair, and 63% never used a wheelchair.

---

<sup>121</sup> American National Standards Specifications for making buildings and facilities accessible to, and usable by, the physically handicapped (USA Standard A117.1- 1967)

<sup>122</sup> Public convenience design for the disabled, J and L Angell (unpublished), Birmingham School of Architecture, 1966

<sup>123</sup> Characteristics and requirements of wheelchair users in county of Leicestershire, Elizabeth Platts, Univ of Loughborough, 1971

### 3.5.4 Feeney, 1973

A 1973 study by Robert Feeney<sup>124</sup> at the Loughborough Institute for Consumer Ergonomics found among a sample of 34 wheelchair users transferring to a WC pan, 15 used a frontal approach, 7 an oblique approach and 12 a lateral approach. Eight of these were able to use alternative ways of transferring.

### 3.5.5 BS 5810:1979

The BS 5810:1979 *Code of Practice For Access for the Disabled to Buildings*. This short standard included the revised larger unisex toilet compartment of size 2000 x 1500mm.

The toilet size and layout was based on further tests with full size model rig, led by Dr Glyn Stanton, consultant ergonomist to the Department of Health. His findings helped inform the recommendations in the third edition of *Designing for the Disabled*, 1976 which were replicated in the BS 5810 and subsequently in the approved documents for Part M in 1987 and 1992 and stayed in use until 2004.

This was overall considered an inadequate set of design standards by Goldsmith as it only dealt with design standards and did not cover application conditions.

Goldsmith made a number of comments<sup>125</sup> on the unisex corner layout in including:

- the 500mm spacing of centre of pan to wall so that the assistant can place themselves in this corner to assist transfer is not understood by designers or users. For independent use, the closer the WC is to the wall, the easier to grab the horizontal rail, 300mm is preferred. (Goldsmith's comment should be noted in the context of the provision in current AD M 5.10 j, which requires a drop down rail on the wall side of a WC at a distance of 320mm from the centre line of the pan if the horizontal rail is set at 60mm from the wall. A drop down rail in this position is rarely provided. An option in 5.10 k allows the omission of the drop-down rail if the horizontal rail is centred at 100mm from the wall. This projection would obstruct anyone assisting in this area).
- only 25% wheelchair users transfer laterally, another 25% can only transfer laterally to either left or right. A larger peninsular layout could therefore an alternative to the transfer-one-side only provision in most buildings.

### 3.5.6 British Market Research Bureau Ltd, 1990

The first major survey of *Sanitary provision for people with special needs*<sup>126</sup> was carried out by the British Market Research Bureau Ltd for Department of the Environment in 1990.

---

<sup>124</sup> Housing for the disabled: Part 2: An ergonomic study of the space requirements of wheelchair users in bathrooms, R J Feeney, Inst for Consumer Ergonomics, Loughborough, 1973

<sup>125</sup> Universal Design, 2000, Chapter 7: Sanitary facilities (pgs 70-71)

<sup>126</sup> Sanitary provision for people with special needs, British Market Research Bureau Ltd for Dept of the Environment, 1990

Survey data came from national population counts and in the four towns, and from interviews with adults visiting shopping centres, chosen at random. The four towns were chosen with good accessibility characteristics - Carlisle, Eastbourne, Hereford and Peterborough. There were 132 responses for toilets in public buildings and 84 for ones in public buildings.

Six categories of users were surveyed:

- 174 wheelchair users
- ambulant disabled people
- visually impaired people
- pushchair users (double and single)
- non-disabled or 'regular' people.

The report produced national estimates of proportion of building users with special needs when using public toilets. It also covered workplaces.

The study found that with regard to BS 5810 toilet,

- only 50% of respondees could manage on their own
- 25% could manage if WC was convenient
- 25% always needed assistance

The survey also looked at transfer methods to and from the WC and asked how different grab rails were used and how useful they were. The survey found (for public buildings) the side horizontal grab rail on the wall by the wc pan was the most useful, (used by 64%) followed by the drop-down rail on the open side( 36%), the vertical rail on the side wall by the pan (21%) and the low horizontal rail behind the pan (14%)

### **3.5.6 BS 8300:2001**

The BS 8300:2001 *Design of buildings and their approaches to meet the needs of disabled people. Code of practice* introduces itself as 'a comprehensive replacement of previous standards in place for nearly 30 years, and a validated research based standard'.

BS 8300:2001 provided the benchmark for what is understood to be the 'disabled toilet' and was informed by user research<sup>127</sup> commissioned by the Department of Environment Transport and the Regions (DETR) that took place from 1996-2001.

---

<sup>127</sup> BS 8300 - the research behind the Standard: Space Requirements for Wheeled Mobility, Robert Feeney, 2003

### **3.5.7 Unisex accessible WC, 2004**

The current design of the unisex accessible WC dates from the 2004 Approved Document M of the Building Regulations and is based on the BS 8300:2001 toilet layout. This was the first change of the design of the toilet since 1979, 25 years previously. We could not find any supporting data or research that established this layout. It is identical to the earlier 1979 layout with the only exception of the length being increased from 2000mm to 2200mm.

### **3.5.8 VivaCity 2020 research project, 2003 - 2006**

A three year research project<sup>128</sup> was conducted from September 2003 to August 2006 as a component of the VivaCity 2020 research consortium funded by the Engineering and Physical Sciences Research Council (EPSRC)<sup>129</sup>.

The aim was to consult directly with users concerning the current designs of toilets used when away from home. Consulted users included older people, families with young children, teenagers, faith communities and people with physical, sensory and cognitive impairments.

Case studies were researched and street surveys conducted in nine city centres including Clerkenwell Westminster & Richmond in London, Manchester, Sheffield, Milton Keynes, Cambridge, Nottingham & Liverpool.

250 people contributed to the development of 42 'personas' through detailed interviews conducted by telephone, in person and through focus groups. Emails and letters also received. 211 (87 men and 124 women) were interviewed and a total of 550 participants surveyed.

The conclusion arrived at was that current toilet design follows a 'one size fits all' philosophy, while the research indicates that with the range of abilities, ages and cultural considerations (family and faith aspects) represented in modern society, several different designs are required to meet the needs of the wider population.

### **3.5.9 ITAAL Survey, 2005 (30)**

The charity ITAAL (Is There An Accessible Loo), set up in 1997 with support from the Centre for Accessible Environments (CAE) to represent the toileting needs of people with disabilities and their carers, conducted a detailed survey of its membership in 2005 (comprising predominately of wheelchair users and their caregivers), to assess whether current public toilet provision was meeting their members' needs.

The survey and data does not indicate the total number of ITAAL members surveyed but provides some information on proportion of members with different requirements. For instance 36% of all ITAAL members require adult changing facilities, and 96% of members aged under 35 years require these facilities.

---

<sup>128</sup> The Inclusive Design of Away from Home Toilets in City Centres, 2003-06

<sup>129</sup> Inclusive Design of Public Toilets, 2007 Vol 1 Issue 4

72% of the returned surveys were passed on for use by the VivaCity Consortium research. The survey found that shortcomings in accessible toilet provision preventing them from using public toilets included:

- 'lack of space' reported by 24% respondents This rose to 89% of under 35 year olds who depended on carers
- 'lack of hoist or changing table' reported by 27% respondents. This proportion rose to 96% of under 35 year olds who depended on carers
- 96% of respondents under 35 years with care assistants could not use facilities due to lack of hoist or bench
- 92% responded that lack of adequate toilet facilities prevented them from going out 'very much'.

### **3.5.10 Our Toilets: Access Dilemmas in UK Public Toilets**

A paper presented by Bichard, Greed and Hanson at the Association of American Geographer Annual General Meeting, Chicago 2006,<sup>130</sup> reviewed current policy standards and guidelines and summarised current design recommendations. It identified distinct user groups who are currently not adequately provided for. This found through a survey of 101 unisex accessible toilets that not one met all the recommendations of Part M and the majority were too small for users to access. (As many of these could have been built to earlier standards and this factor was not noted in the paper, the issue remains that implementation of guidance remains a problem).

The paper concludes there is a need for a fully inclusive approach to design of toilet facilities that cater to needs of everyone.

*"It can be argued that current design guidelines do not incorporate suitable provision for all possible users with disabilities, namely those who use large powered wheelchairs and need the assistance of one or more caregivers when toileting, and so they fail to meet the needs of a small but important section of society, young people with multiple and profound disabilities".*

*"Currently, it is estimated that nearly 100,000 people may be affected by the lack of adequate toilet facilities that do not provide sufficient space or incorporate adult changing fixtures. This number includes those with profound and multiple learning disabilities, some forms of spinal injuries, muscular dystrophy, multiple sclerosis and acquired brain injury. In addition, it is recognised that the number of people with complex or multiple disabilities is growing as improved medical knowledge extends life spans, resulting in a likely need for more fully accessible facilities in the future (Changing Places, 2006)."*

---

<sup>130</sup> Who Put the P in Policy? The reality of guidelines and legislation in the design of the accessible toilets, Bichard, Greed and Hanson, Association of American Geographer Annual General Meeting, Chicago 2006

### **3.5.11 House of Commons, Communities and Local Government (CLG), The Provision of Public Toilets, Twelfth Report of Session 2007-08**

This made a recommendation for public toilets in relation to access.

#### *Recommendation 9:*

*“We recommend that local authorities make appropriate provision for disabled public toilets, taking the British Standard relating to the provision of disabled public toilets as their primary guideline. We recommend that local authorities, in planning their public toilet provision, should not neglect provision for severely disabled people, and we encourage them to establish specialist disabled toilets in major centres of population.”*

The following evidence presented to the above by Changing Places Consortium:

*“Standard accessible (disabled) toilets do not meet the needs of thousands of disabled people who need assistance to use the toilet, changing benches or hoists and space to accommodate assistants.*

*A lack of suitable accessible facilities puts people’s health at risk and leaves them socially excluded. Without suitable accessible public toilets, many disabled people and their families are only able to make short trips or are simply forced to stay at home.*

*The UK is home to approximately 40,000 people with profound and multiple learning disabilities, the majority of whom need Changing Places toilets. In the UK the number of people who would benefit from a Changing Places toilet include approximately:*

- *24,000 people with a spinal injury.*
- *20,000 people with muscular dystrophy.*
- *8,500 people with multiple sclerosis.*
- *2,000 people with an acquired brain injury.*

*The number of people with complex disabilities is growing—we are all living longer, meaning many more people are likely to need access to a Changing Places toilet in the future.”*

## 3.6 Design for visually and hearing-impaired people: Colour, Contrast and Perception Design Guidance for Internal Built Environments

### 3.6.1 Project Rainbow, 1995 - 1997

*Project Rainbow*,<sup>131</sup> carried out between 1995 to 1997, was the most detailed investigation into how the use of colour and visual contrast within buildings impacts on the ability of blind or partially sighted people to navigate a space and identify features within it and is the basis for most design guidance on how and when colour and contrast should be used. The research was supported by the Engineering and Physical Sciences Research Council (EPSRC) and Department of Environment for the Research Group for Inclusive Environments at the University of Reading.

The aims of the project were to establish from visually impaired people two aspects of providing adequate colour/tone contrast within buildings:

- how different do adjacent colours or tones have to be for a difference to be discerned by a majority of visually impaired people
- in which areas within the internal environment would it be best to concentrate colour/tone contrast in order to improve the well-being and safety of visually impaired people when identifying features and finding their way around a building.

There were 38 test participants who included 31 visually impaired people and 7 fully sighted people, with a Project Management Group including representatives from ICI Paints (ICI), the Joint Mobility Unit (JMU) on behalf of the Royal National Institute for the Blind (RNIB), and the Guide Dogs for the Blind Association (GBDA).

Visual impairments of test participants and those responding to questionnaires were classified into three categories of visual field loss – central, peripheral and general/sporadic.

User needs analysis was achieved through use of a large-sample questionnaire, semi-structured interviews and real-world tests.

The results, including analysis of 676 returned questionnaires were used in the publication of design guidance. The project established from visually impaired sample group:

- how information about surroundings is gained while navigating
- how public buildings are accessed and used
- what is ability to perceive visual contrast in everyday lighting conditions
- what constitutes adequate contrast and what areas in a building would contrast

---

<sup>131</sup> Project Rainbow: A Research Project to Provide Colour and Contrast Design Guidance for Internal Built Environments, K Bright and G Cook, Occasional Paper No 57, The Chartered Institute of Building, 1999 (39)

offer best benefit

- how environments can be improved to assist navigation and identification
  - The research demonstrated that between 50% to 60% of visually impaired people could benefit from the recommendations of the Design Guide. The research determined that:
- the walls and floor are critical surfaces which require sufficient visual differentiation between them<sup>132</sup>
- ceiling/ wall differentiation is a supplementary method of determining the shape of space when first entering an area
- luminance contrast is an important way of distinguishing different surfaces, and providing visual clues about features, with shape and size providing useful supportive information
- critical surfaces to provide an impression of shape, space and proximity are walls, doors, floors and stairs
- in small spaces, additional design feature beyond use of colour differentiation at ceiling and floor level should be used
- special features that need to be highlighted to allow building to be used more easily include sanitary ware, handrails, door furniture, service controls, stair nosings etc.

### 3.6.2 The Colour, Light and Contrast Manual, 2010

*The 2010 The Colour, Light and Contrast Manual: Designing and Managing inclusive built environments by Bright and Cook* is a comprehensive evidence-based guide, based on research projects carried out at the Research Group for Inclusive Environments at the University of Reading, including Project Rainbow. The manual confirms much of the guidance provided in the Approved Document M regarding visual contrast, with some differences, including:

- **Obstacles and potential hazards:** 'Where obstacles are unavoidable, their presence should be clearly identified by contrast, ground-level tactile surfaces, the use of barriers and/or tapping rails' and further, 'Over 83% of respondents identified importance of contrast in helping to avoid hazards.'<sup>133</sup>
- Barriers are mainly recommended for overhead obstacles such as underside of stairs. This is different from the guidance in Approved Document M 3.14 a, requiring '*a visually contrasting guard rail around elements such as columns and radiators*'.

---

<sup>132</sup> P 15 'In terms of assisting a visually impaired person to navigate around a building, the maximum benefit from using colour and tone contrast will be gained from concentrating its use up to 1.2 metres above floor level, i.e. up to around handrail or dado rail height, and especially at the junction of the floor with the wall.'

<sup>133</sup> *The Colour, Light and Contrast Manual, 2010*, Chapter 4: practical issues for features, Obstacles and potential hazards, p 148-9

- **Doors:** Part M guidance on doors: 3.10 f requires door frames to contrast visually with the surrounding wall. However, the Manual says<sup>134</sup> *'contrasting the architrave alone will cause visually impaired people longer to establish what the feature is. The vast majority of visually impaired people expressed preference for the adequate contrast of the entire door with the surrounding wall.'*
- **Step nosings and handrails:** The manual confirms guidance in Part M regarding visually contrasting step nosings (1.33 i) and handrails (1.36 e), the need for 30 light reflectance value (LRV) points difference at each, and that the contrasting strip should wrap around the nosing. It adds that the minimum illuminance at the handrails and tread levels should be 100 lux.
- Step nosings and other visual contrast guidance in BS 8300:2009 is based on research carried out by the British Research Establishment (BRE) and other information contained in BS 5395:2009 and represents the most current guidance available on the provision of nosings to stairs.
- **Toilets:** The manual confirms guidance in Part M of need for sanitary fittings and grab bars to visually contrast with wall and floor finishes (5.4 k), the need for 30 LRV points difference at each, and minimum illuminance at floor level should be 100 lux.

### 3.6.3 Project Crystal, 1999

*Project Crystal*,<sup>135</sup> carried out in 1999 by Bright, Cook, Sinha, Iantaffi, and Luck, was based around research for Engineering and Physical Sciences Research Council (EPSRC) previously undertaken for Project Rainbow and allowed evidence-based comparisons to be made between the strategies adapted by blind and partially sighted people and deaf and hard-of-hearing people when using the built environment and the problems they experienced. It also sought to establish the importance of colour and lighting when communicating using BSL or lip-reading.

As part of the project, a postal questionnaire survey was sent out to 800 deaf and hard of hearing participants, of which 216 responses were received and analysed. Seven focus group discussions and tests with 54 deaf and hard of hearing people (10 BSL users and 22 speech-readers) were also carried out. In terms of composition of respondents, all respondents were over 18 years, 21% were 75 years or over; 64% of respondents were female; 98% white with very few responses from Black and Asian population.

An innovative method of testing communication was developed to allow a comprehensive examination of the ability of both British Sign Language (BSL) users and non-BSL users to understand communicated information in controlled, but realistic, environments

Until this project there was very little research that looked at everyday decoration and lighting and the impact on communication. The project identified the importance

---

<sup>134</sup> *The Colour, Light and Contrast Manual, 2010*, Chapter 4: practical issues for larger surfaces, Doors, p 138-9

<sup>135</sup> *Project Crystal: Inclusive environments for deaf and hard-of-hearing people*, K Bright, G Cook Univ of Reading and I Sinka Open University, 2000 (38)

of a range of factors that affect ability to communicate including colour and lighting, and the quality of the visual environment.

In terms of use of public buildings, the features that affected the ability of participants to ability included colour, contrast, decoration, lighting, space, sound absorbency of surfaces, separation of quiet and noisy areas, background sound, sounds from building appliances, air-conditioning etc.

Respondents found an induction loop to be of benefit in places of worship, lecture theatres and cinemas but to be of limited use in shops and at glass counters. This has implications for Approved Document M - 4.26 b Aids to communication, requirements- for 'provision of hearing enhancement at service or reception counters where they are situated in noisy area or they are behind glazed screens'.

### 3.7 Approved Document M 2015: Comparison of selected elements with guidance developed in other countries

In order to gain a better understanding of the state of the art with regards to accessibility standards, we also looked at a selection of relevant international standards and guidance that have been developed in other countries, and compared the content to the UK Part M, focusing on the guidance for buildings other than dwellings.

The list of standards includes the following:

- **UK:** Access to and use of buildings Approved Document M Volume 2- Buildings other than dwellings, 2015 edition, Building Regulations 2010
- **Ireland:** TDGM Technical Guidance Document M, Access and Use, Building Regulations 2010
- **ISO:** Draft BS ISO 21542 Building construction – Accessibility and usability of built environment, B/559\_09\_0032 British Standards Institution BSI
- **South Africa:** SANS 10400-S:2011 South African National Standard, The application of the National Building Regulations, Part S: Facilities for persons with disabilities
- **New Zealand:** NZS 4121:2001 New Zealand Standard, Design for Access and Mobility- Buildings and Associated Facilities
- **Sweden:** BFS 2011:26 BBR 19 Section 3: Accessibility, dwelling design, room height and utility rooms (Note: this is not the latest version, which is only available in Swedish)
- **Germany** DIN 18040 Part 1, 2010 This was not available, so have used 'Berlin-Design for all, Accessible Public Buildings, 2nd Edition, 2007' as proxy
- **Hong Kong:** Design Manual: Barrier Free Access 2008, Buildings Department

The results from this analysis is summarised in the following table:

**Table comparing 7 international sets of guidance and regulation to Part M**

Building feature	UK	ISO	IRELAND	GERMANY	SWEDEN	New Zealand	SOUTH AFRICA	Hong Kong
<b>Country Regulation</b>	<b>AD M 2015</b>	<b>ISO 21542</b>	<b>TGDM 2010</b>	<b>DIN 18040 Part 1, 2010</b>	<b>BFS 2011:26 BBR 19</b>	<b>NZS 4121:2001</b>	<b>Sans 10400-S:2011</b>	
<b>Title of Regulation/ Guidance</b>	<b>Access to and use of buildings, Approved Document M, Vol 2- Buildings other than dwellings, 2015. Building Regulations 2010,</b>	<b>Building construction – Accessibility and usability of built environment, B/559_09_0032 British Standards Institution BSI</b>	<b>Building Regulations Technical Guidance Doc M 2010 Access and Use</b>	<b>Berlin- Design for all, Accessible Public Buildings 2007</b>	<b>Section 3: Accessibility, dwelling design, room height and utility rooms</b>	<b>New Zealand Standard: Design for Access and Mobility- Buildings and Associated Facilities</b>	<b>South African National Standards, The application of the National Building Regulations, Part S: Facilities for persons with disabilities</b>	<b>Design Manual: Barrier Free Access 2008, Buildings Department</b>
<b>Path max cross falls</b>	1:40	1:50	1:40	1:50	1:50	1:50	1:50	Not specified
<b>Ramp slopes</b>	1:20 for 500mm rise 1:12 - 166mm rise, 2m length	1:20 for 500mm rise, 1:12 for 210mm rise 1:10 for 150mm rise, 1:8 for 75mm rise	1:20 for 500mm rise 1:12 - 166mm rise, 2m L  Steeper allowed for existing buildings	4% (1:25) not a ramp; 4-6% (1:15) easily used; Over 6% exceptional cases; 8-10% 1:12 to 1:10 (only short spans e.g. one step)	1:12 max 500mm rise	1:12 max for 9m, 1:14 preferable	1:12 max for 6m 1:15 for 10m 1:20 for 15m	1:12 max except for 1:10 for 1500mm 1:8 for 600mm, though higher standards recommended
<b>Max permissible gradients</b>								
<b>Min ramp widths</b>	1500mm	1200mm	1500mm	1200mm	1300mm	1200mm	1100mm	1050mm

Building feature	UK	ISO	IRELAND	GERMANY	SWEDEN	New Zealand	SOUTH AFRICA	Hong Kong
Reqm't for steps to accompany a ramp	If rise over 300mm	If rise over 500mm	If rise over 300mm	Not specified	Supplement with stairs where possible	Not specified	recommended	Not specified
Min door widths (internal)	800mm, 750mm for existing	800mm, 850mm recommended	800mm, 750mm for existing	900mm, 800mm for existing bldgs	800mm	760mm	750mm	800mm
Space to side of leading edge	300mm	600mm min, 250mm max depth to handle	300mm	500mm	Not specified	300mm	450mm	330mm
Opening force	30N at 0°, 22.5N at 30-60°	30N at 0°, 20N at 30°	30N at 0°, 22.5N at 30-60°	25N max	Not specified	Exterior 38N Interior 22N Fire doors 70N		Exterior 30N Interior 22N Fire doors 30N
External stairs riser and tread	R 150-170mm T 280-425mm	R 180mm max T 260mm min	R 150-180mm T 300-450mm	Building Regulation to be followed		Only internal stairs specified	Only internal stairs specified	R 160mm max T 280mm min
Stair width	1200mm min, 1000mm between handrails	1200mm min 1000mm between handrails	1200mm min, 1000mm between handrails	Building Regulation to be followed	1200mm	900mm between handrails	900mm between handrails	Not specified
Nosing delineation	55mm on tread & riser	40-50mm on front edge of each step, min LRV diff of 60 points, or visual warning line 50-100mm on first and last going of each flight.	50-65mm on tread only	40-50mm – tread 10-20mm – riser	Only marking of top and bottom steps required.	Should be clear contrast between tread & riser. Can be achieved by - distinguishing nosing with clear contrast, -using different colours on risers & treads	Nosings should contrast, min dimensions 40mm x 40mm to tread and riser	Non-slip nosing in contrasting colour, 30% luminous contrast recommended

Building feature	UK	ISO	IRELAND	GERMANY	SWEDEN	New Zealand	SOUTH AFRICA	Hong Kong
<b>Internal stairs</b>	Refer to Building Regulation Part K	R 180mm max T 260mm min	At least one staircase for ambulant disabled R 150-180mm T 300mm min  Building Regs Parts K and B for other stairs	Building Regulation to be followed	Building Regulation to be followed T 250mm min No dim for Riser	R 180mm max T 310mm min,	R 170mm max No tread dim specified	R 175mm max T 225mm min
<b>Lift provision</b>	Required for all levels of a building	Required for all levels of a building, but refer to national building regulations.	Red'd for all multi-storey buildings except non-residential or mixed use bldgs, with net fl area/floor less than 200m <sup>2</sup> , and no floor with an entrance level more than 4.5m vertically from main entrance level.	Only for buildings with +4 storeys above ground floor. At least one lift must be accessible to wheelchair users  Lifts must be accessible from all floors that contain rooms for common use.	Does not appear to be mandatory. At least one lift shall be suitable for wheelchair user & helper.	Req'd in buildings over 4 storeys or where public access to banks or govt offices, medical facilities, public assembly (250+) and public libraries	Not clear if needed to serve all floors.	Not mandatory. Where provided should be at least one accessible lift.
<b>Min lift size</b>	1100 x 1400mm	1100 x 1400mm	1100 x 1400mm	1100 x 1400mm	1100 x 1400mm	1400 x 1400mm	1100 x 1400mm	1100 x 1200mm. Where 3 lifts, one should be 1500 x 1400mm

Building feature	UK	ISO	IRELAND	GERMANY	SWEDEN	New Zealand	SOUTH AFRICA	Hong Kong
<b>Toilet provision requirements</b>	At least one unisex accessible toilet	Min one wheelchair toilet with basin	Min one unisex accessible toilet at each WC facility	At least one barrier free toilet on each floor.	At least one accessible toilet on each public storey where toilets are provided	At least one all-gender accessible toilet to be provided	At least one unisex accessible toilet should be provided.	One accessible unisex toilet where up to 20 WC cubicles are provided and two where over 20 cubicles provided
<b>Wheelchair user toilet size</b>	Corner layout 1500 x 2200mm	Lateral transfer both sides – min 2200 x 2200mm + large washbasin  Corner toilet: 1900 x 2200mm or 1700 x 2200mm	Larger 1800 x 2500mm where net area/floor is over 200 m <sup>2</sup>  Smaller 1500 x 2200mm where net area/floor is under 200 m <sup>2</sup>	Standard is 2-sided lateral transfer, 2200mm x 2200mm.  Smaller bldgs, extg can use 1600 x 2200mm.  Sports facilities can use 1610 x 1610mm	2200 x 2200mm	1600 x 1900mm	1800 x 1800mm min	1500 x 1750mm
<b>Distance of WC from wall</b>	500mm	450mm	500mm	500mm		450mm	450-500mm	450mm
<b>Height and Depth of WC pan</b>	480mm 750mm	400-480mm 650-800mm	480mm 750mm	460-480mm 700mm		460mm 700-750mm	480-500mm 690mm	380-450mm
<b>Standard cubicle</b>	450mm circulation space	Not specified	450mm circulation space	Not specified	Not specified	Not specified	Not specified	Not specified
<b>Ambulant disabled provision</b>	Min 750 x 800mm space in front of pan	Min 900 x 900mm space in front of pan	Min 750 x 800mm space in front of pan	Not specified	Not specified	Not specified	Not specified	Not specified

Building feature	UK	ISO	IRELAND	GERMANY	SWEDEN	New Zealand	SOUTH AFRICA	Hong Kong
<b>Enlarged cubicles</b>	Req'd where 4 cubicles provided	Not specified	Not mandatory	Not specified	Not specified	Not specified	Not specified	Not specified
<b>Changing Places cubicle for adults</b>	Recommends BS 8300 design, not mandatory	Not mentioned	Not mentioned	Recommended in public baths and medical centres. No size, only fittings described.	Not mentioned	Not mentioned	Not mentioned	Not mentioned
<b>Aids to communication</b>	Limited information on hearing enhancement , visual contrast. Visual contrast defined by 30 LRV points difference, 15 LRV diff for smaller elements.  Ref to Reading Univ guidance.	Separate sections on Acoustic environment, Lighting, emergency warning systems, Visual contrast, Orientation and information, Signage  Levels min 100lux Task lighting specified  Visual contrast min 30 pts LRV, 60 pts for hazards	Much more detail on Hearing enhancement systems Signage Visual contrast Audible aids Lighting	Detailed sections on Orientation and Information, Signage, including visual, acoustic and tactile information; Lighting and Acoustic enhancement.	Section on Contrasts and markings, orientation and wayfinding. Lightness contrast of 0.40 NCS (National Color System) recommended.	Detailed guidance on Signage, Contrast, Illumination levels,	Sections on Signage, Lighting and Warning Signals	Sections on Signage, Visual and Hearing Impairments, Illumination, Assistive listening and Guidance for Elderly people

### 3.8 Our comparison of guidance across the selection of countries suggests commonalities across the following areas:

- Ramp dimensions (except for widths that differ), gradients and cross falls
- Door widths and opening forces
- Stair dimensions (many of which are regulated separately in country-specific Building Regulations as the Part K in the UK)
- Lift dimensions – all guidance in sample had the same minimum size of 1100mm x 1400mm
- Corner layout of independent wheelchair accessible toilet.

For some building features such as internal stairs, many countries referred to. There are differences in terms of the following:

- space at leading edge of door varying from 300mm in the UK to 600mm in the ISO standard
- the need for a lift in all buildings. Some countries differentiate by type of building (used by public or not), number of storeys, occupancy and floor area
- size and type of accessible toilet often depends on size and use of building
- range of accessible toilets. UK tends to have smaller accessible toilet size, but has provision for ambulant and enlarged cubicle
- UK standards also refer to an Adult Changing Places toilet, which is not generally covered by any of the other standards that were looked at.

Some of the areas that are covered in much of the guidance looked at that is not as extensively covered in our own Building regulations includes:

- many other countries include detailed sections on signage and guidance for sensory and cognitively impaired people
- anthropometric data is provided in much of the guidance in other countries – this might be advantageous in supporting designers justify a wider range of effective solutions to meet the regulations overarching functional requirements.

## 3.9 Conclusions

- Most of the current references for ergonomics and anthropometrics date back to the last millennium, with some survey measures dating back to 1940. This includes basic anthropometrics for general needs as well as wheelchair users, but not for users who may have unique access requirements, including users with obesity, or short/tall stature. A better understanding of these dimensions would assist in filling in the current gaps in Part M for certain disability types.
- In terms of wheelchair dimensions, the latest study of wheelchair users in the UK dates back to 2005, and updates previous studies in 1991 and 1999. In the period from 1991 to 2005, the study showed significant increases in the height, weight and length of the wheelchairs coupled with significant decreases in width. It has now been over ten years since the last study, and this survey may need to be updated, particularly in relation to the use of electric scooters, powered wheelchairs and adapted manual cycles.
- In terms of wheelchair circulation, the studies which form the basis of BS8300:2001 and Building Regulations Approved Document 2004 date from 1966 to 2001. Again, as wheelchair dimensions have changed significantly in the past ten years, the measurement of reach, manoeuvring space requirements, may be worth revisiting, with the newer wheelchairs in use.
- In terms of ramps, there have been more recent studies carried out in the Republic of Korea and France in 2014 on ramp gradients and permissible cross-fall gradients. The Korean study indicates the acceptability of ramp heights of 1:8, 1:10 and 1:20 for heights of 0.15, 0.30 and 0.45 meters, respectively. However, this study was conducted using non-disabled people sitting in wheelchairs and its results need to be qualified accordingly. The French study confirms that a 1:50 cross fall is generally acceptable.
- The main reference for sanitary accommodation standards is BS8300, based on studies carried out from 1996-2001 by Robert Feeney Associates for the Department of the Environment, Transport and the Regions (DETR). A 2005 survey of people with disabilities and their carers cited shortcomings in accessible toilet provision which include a lack of space (24%), lack of hoist/changing table (27%) and a general lack of adequate toilet facilities (92%).
- In another survey of 101 unisex accessible toilets in the UK, it was found that not a single one met all of the recommendations of Part M indicating a lack of adequate implementation. The survey also showed that there may be generally a need for a more inclusive approach to toilet design that meets the needs of not only independent wheelchair users but also those with carers, those with profound and multiple learning disabilities, and other forms of spinal and brain injury, muscular dystrophy and multiple sclerosis. Ergonomic, anthropometric and space requirement data for all of these types of users may be needed as we move into the future.
- Guidance for people with sensory impairments

- In terms of visual and hearing impairments, UK studies date back to extensive research carried out at the University of Reading, Project Rainbow and Project Crystal in the late 1990's. These provide useful guidance on the factors that influence the ability to communicate and perceive environments through colour and lighting.

### 3.9.1 International comparison

- A comparison of Part M guidance with similar guidance across the world suggests that UK standards are in agreement in terms of ramp dimensions, door widths and opening forces, stair dimensions, life dimensions and corner layouts for independent wheelchair accessible toilets. There are variations of approach that exist in terms of spaces at the leading edge of doors, lift requirements, and the range of sizes and types of accessible toilets. UK Part M covers Adult Changing Places toilets, when most other standards do not and has a wider variety of types of accessible toilet accommodation (such as ambulant cubicles), however it offers less extensive guidance on signage and guidance for sensory and cognitively impaired people.

### 3.10.1 Findings:

Throughout this section, a number of findings have emerged in relation ergonomic and anthropometric data for Part M. These are summarised below:

**Finding 3.1** - While there have been more recent studies carried out of abilities of wheelchair users, these appear to be from the fitter end of population using wheelchairs, or even placing non-disabled people in wheelchairs. There is a lack of comprehensive studies carried out on a wider range of disabled people including those with multiple and complex impairments, bariatric people, those of smaller or taller stature or people with cognitive impairments. A wider study of the presence, characteristics and abilities of disabled people across the population may be helpful in establishing an up-to date countrywide profile of disabled people and their needs.

**Finding 3.2** - Research data would appear to support current guidance on ramp guidance in relation to permissible gradients and cross falls, though more research into provision of landings and ramp widths may be appropriate.

**Finding 3.3** - A comprehensive review and comparison of guidance in countries with similar economic and social characteristics against the Part M may be able to confirm existing guidance and provide direction on where further research may be needed. However, because standards for accessibility in Approved Document M are broadly in line with, or slightly ahead of regulatory standards in other countries, it is likely that primary evidence of the needs of disabled people in the UK will prove a more useful way of ensuring provision in regulatory guidance in the future.

**Finding 3.4** - review of Part M to ascertain how the guidance performs with regard to the needs of visually and hearing impaired people and how relevant it continues to be may be useful, given technological advances in this area and building management practices which have significantly developed since Project Rainbow and Project Crystal

**Finding 3.5** - The design of sanitary provision is particularly essential to disabled people being able to access and use public buildings. There is a good case for review of existing requirements to ensure that guidance provides the best fit possible for the needs of not only independent wheelchair users but also those with carers, those with profound and multiple learning disabilities, those with other forms of spinal and brain injury, muscular dystrophy and multiple sclerosis. The evidence indicates that users want larger toilet compartment sizes and adult changing facilities.

**Finding 3.6** - Ergonomic, anthropometric and space requirement data for all of these types of building users may be needed to support changes in guidance to ensure that the resultant buildings are the best possible fit taking into account the likely wide range of diverse needs that need to be met.

# Chapter 4 - Summary and Conclusions

5.1 PRP Innovate have been commissioned by the MHCLG to carry out this work, which seeks to scope out existing evidence to support the evaluation of Part M and Approved Document M of the Building Regulations. The key objective was:

- To obtain evidence of **the effectiveness of the guidance set out in *Approved Document M : access to and use of buildings, volume 2: buildings other than dwellings***, and carrying out a gap analysis to identify what further research is needed to support an end-to-end review of the non-domestic guidance in Part M and Approved Document M of the Building regulations.

5.2 This report looks at how effective the Part M2 guidance has been since 2004 and evaluate how well it has been meeting disabled people's needs, in terms of identifying the strengths and weaknesses of the existing guidance, and identifying what further research would be needed to support a review of the guidance. For both domestic and non-domestic components, any areas where improved anthropometric data would be of benefit has been identified.

## 5.3 **What is the nature of the Anthropometric and Ergonomic Evidence that supports Part M?**

Our literature survey indicates that most studies carried out to establish spatial, structural and functional anthropometric data for wheelchair users date back to the last millennium, and the latest study carried out for the Department of the Environment, Transport and the Regions (DETR) in 2005<sup>136</sup> looked only at dimensions of stationary occupied wheelchairs but not at abilities and characteristics of users. It has now been over ten years since the last study, and this survey may need to be updated, particularly in relation to the use of electric scooters, powered wheelchairs and adapted manual cycles. While there have been more recent studies carried out on the abilities of wheelchair users, these appear to be from the fitter end of population using wheelchairs, or even placing non-disabled people in wheelchairs.

In terms of ramps, there have been more recent studies carried out in the Republic of Korea and France in 2014 on ramp gradients and permissible cross-fall gradients. The Korean study indicates the acceptability of ramp heights of 1:8, 1:10 and 1:20 for heights of 0.15, 0.30 and 0.45 meters, respectively. However, this study was conducted using non-disabled people sitting in wheelchairs and its results need to be qualified accordingly. The French study confirms that a 1:50 cross fall is generally acceptable. This research data would appear to support current guidance on ramp guidance in relation to permissible gradients and cross falls, though more research into provision of landings and ramp widths may be appropriate.

There is a lack of comprehensive studies carried out on a wider range of disabled people including those with multiple and complex impairments, bariatric people, those of smaller or taller stature or people with cognitive impairments. A wider study of the presence, characteristics and abilities of disabled people across the population may be helpful in establishing an up-to date countrywide profile of disabled people and their needs. As it stands, the needs of these people are not currently reflected in the

---

<sup>136</sup> Hitchcock et al (2005). A Survey of Occupied Wheelchairs and Scooters, DETR, UK.

guidance, particularly in relation to the provision and design of public toilets.

In a survey of 101 unisex accessible toilets in the UK, it was found that not a single one met all of the recommendations of Part M indicating a lack of adequate implementation. The survey also showed that there may be generally a need for a more inclusive approach to toilet design that meets the needs of not only independent wheelchair users but also those with carers, those with profound and multiple learning disabilities, and other forms of spinal and brain injury, muscular dystrophy and multiple sclerosis. Ergonomic, anthropometric and space requirement data for all of these types of users may be needed as we move into the future.

In terms of visually- and hearing-impaired building users, UK studies date back to extensive research carried out at the University of Reading, Project Rainbow and Project Crystal in the late 1990's. These provide useful guidance on the factors that influence the ability to communicate and perceive environments through colour and lighting.

A comparison of Part M guidance with similar guidance across the world suggests that UK standards are in agreement in terms of ramp dimensions, door widths and opening forces, stair dimensions, lift dimensions and corner layouts for independent wheelchair accessible toilets. There are variations of approach that exist in terms of spaces at the leading edge of doors, lift requirements, and the range of sizes and types of accessible toilets. UK Part M covers Adult Changing Places toilets, when most other standards do not and has a wider variety of types of accessible toilet accommodation (such as ambulant cubicles), however it offers less extensive guidance on signage and guidance for sensory and cognitively impaired people.

#### 5.4 Research Findings

A number of findings have emerged in relation to the review of the literature supporting the anthropometric and ergonomic standards that support Part M. These are summarised below:

**Finding 3.1** - While there have been more recent studies carried out of abilities of wheelchair users, these appear to be from the fitter end of population using wheelchairs, or even placing non-disabled people in wheelchairs. There is a lack of comprehensive studies carried out on a wider range of disabled people including those with multiple and complex impairments, bariatric people, those of smaller or taller stature or people with cognitive impairments. A wider study of the presence, characteristics and abilities of disabled people across the population may be helpful in establishing an up-to date countrywide profile of disabled people and their needs.

**Finding 3.2** - Research data would appear to support current guidance on ramp guidance in relation to permissible gradients and cross falls, though more research into provision of landings and ramp widths may be appropriate.

**Finding 3.3** - A comprehensive review and comparison of guidance in countries with similar economic and social characteristics against the Part M may be able to confirm existing guidance, and provide direction on where further research may be needed. However, because standards for accessibility in Approved Document M are broadly in line with, or slightly ahead of regulatory standards in other countries, it is likely that primary evidence of the needs of disabled people in the UK will prove a more useful way of ensuring provision in regulatory guidance in the future.

**Finding 3.4** - A review of Part M to ascertain how the guidance performs with regard to the needs of visually and hearing impaired people and how relevant it continues to be may be useful, given technological advances in this area and building management practices which have significantly developed since Project Rainbow and Project Crystal

**Finding 3.5** - The design of sanitary provision is particularly essential to disabled people being able to access and use public buildings. There is a good case for review of existing requirements to ensure that guidance provides the best fit possible for the needs of not only independent wheelchair users but also those with carers, those with profound and multiple learning disabilities, those with other forms of spinal and brain injury, muscular dystrophy and multiple sclerosis. The evidence indicates that users want larger toilet compartment sizes and adult changing facilities.

**Finding 3.6** - Updated Ergonomic, anthropometric and space requirement data for all types of building users may be needed to support changes in guidance to ensure that the resultant buildings are the best possible fit taking into account the likely wide range of diverse needs that need to be met.



Ministry of Housing,  
Communities &  
Local Government

## Research into Access to and Use of Buildings:

Part 2b and c: Views on Part M: Buildings other than dwellings

# Executive Summary

## Introduction

5.5 PRP Innovate have been commissioned by the MHCLG to carry out this work, which seeks to scope out existing evidence to support the evaluation of Part M and Approved Document M of the Building Regulations.

5.6 The aims of this research were:

- To obtain evidence of the **effectiveness of the guidance set out in Approved Document M for buildings other than dwellings**, and carrying out a gap analysis to identify what further research would be needed to support an end-to-end review of the non-domestic guidance in Part M and Approved Document M of the Building regulations if Government decided to do so.
- To obtain **views regarding the effectiveness** of the guidance set out in Approved Document M for buildings other than dwellings through consultation and/or engagement with a wide variety of stakeholders, including disabled people, key industry users of the guidance, and the formation of an inclusive and balanced expert steering group.

There were two stages to the research:

- A series of stakeholder discussions and workshops
- Online reviews collected that were based on first hand experiences of disabled people and their families.
- 

## Has AD-M Volume 2 been effective in meeting disabled people's needs in buildings other than dwellings?

The consensus view of stakeholders, from discussions and workshops, was that most of the guidance provided in Approved Document M (Access to and use of buildings) was reasonable. The participants were in agreement that the document flows logically, provides a legible sequential journey through a building and is relevant and useful. While guidance was considered to be reasonable in meeting most needs of disabled people, lack of enforcement of guidance was seen as a critical issue.

However, it was also generally agreed that existing guidance may not fully meet the needs of a more diverse range of disabled people particularly in relation to sanitary provision, which reflects the findings from the previous section on anthropometric and ergonomic standards. The guidance may also need to be updated to reflect

current technological advances and building management practices, particularly in relation to use of the building environment by visually and hearing impaired people (where guidance in the Approved document is already considered to be less effective in ensuring reasonable provision).

The discussions also identified the potential for exploring a more relaxed set of standards for office/working environments as compared to the requirements for public realm and public buildings. The key recurring themes that arose from the discussions include the following:

- **Areas where a review of guidance would be helpful** include the guidance for student accommodation, lift provision and guidance, and sanitary accommodation, and instances where technology has changed since the guidance was written such as technological advances in relation to lift and automatic door design and digital communication aids and navigation systems. New provisions may need to be made or the capabilities of new technology and equipment need to be carefully considered.
- **Areas where guidance may be too prescriptive** include toilet layouts, stair nosing guidance, visual contrast guidance for doors, tactile warning paving and requirements for reception desks
- **Areas where guidance is difficult or impractical to implement** include aspects of handrail provision, some aspects of requirements for visual contrast, guarding to projecting elements, width of ramped access, requirements in audience and spectator facilities, requirement for a larger single toilet in small buildings.
- **Areas where guidance may need updating** includes reflecting technological advances in relation to lift and automatic door design and digital communication aids and navigation systems.

As part of the research, a desktop review of first hand experiences of disabled people and their carers were also collected and analysed across different building types through various social media and internet resources. The most frequently occurring issues that are of importance to building users include the following areas:

- **Site access issues**, such as the safety, visibility and articulation of accessible entrances; the provision, location and quantity of on-site parking facilities; and the provision of full step-free access and correctly specified handrails.
- **Entrances and circulation issues**, such as the requirements for visibility and sizing of main entrance doors; the location of non-secure accessible entrances via non-straightforward side or rear entrances; non-powered entrance doors; and lack of weather protection along the accessible routes into the building.
- **Facilities issues**, such as the provision/location of spy holes and non-functioning automatic doors in hotels, motels and student accommodation; and non-compliance with regards to socket heights and provision.
- **Sanitary accommodation issues**, such as the location of disabled toilets; the access route to these toilets; space provision in front of toilet doors; inadequately sized toilet accommodation; tied-up emergency cords; sinks, mirrors and door handles at the wrong height; and heavy doors.

## Recommendations

The key issues emerging from consideration of current guidance in Part M of the Building Regulations which could be relevant to future review include:

- The need to identify how to ensure good levels of compliance with the requirements of the regulations
- Consideration of work to ensure that guidance makes reasonable provision reflecting the following changes in demographics: an ageing population and the increase in obesity and bariatric population.
- The specific needs of the following users of buildings currently which may not be adequately covered by the guidance: hearing and visually impaired people; children's and parents' needs; people of shorter stature; people with complex and multiple impairments requiring care-assistants; powered wheelchair users (who may need larger toilets); disabled people who use a cycle as a mobility aid; users who require assistance to both sides of the WC pan
- Consideration of the following health issues: mental health conditions and cognitive health issues including dementia
- Assessing whether Part M has a role in addressing wider equality issues for protected characteristics relating particularly to public sanitary provision

# Chapter 1 - Introduction

6.

- 6.1 PRP Innovate have been commissioned by the MHCLG to carry out this work, which seeks to set out findings on stakeholder views on the effectiveness of the requirements for Approved Document M, Volume 2: Buildings Other than Dwellings.

The key objective of the work was: To obtain views regarding the effectiveness and benefits of the accessible housing standards and the guidance set out in Approved Document M for buildings through consultation and/or engagement with a wide variety of stakeholders, including disabled people, key industry users of the guidance, and the formation of an inclusive and balanced expert steering group.

6.2

- 6.3 This research looks at how effective the Part M2 guidance has been since 2004 and evaluates how well it has been meeting disabled people's needs, in terms of identifying the strengths and weaknesses of the existing guidance, and identifying what further research would be needed to support a review of the guidance. For both domestic and non-domestic components, any areas where improved anthropometric data would be of benefit should be identified.

- 6.4 This work included consultation workshops with relevant stakeholders, including access consultants, designers, product manufacturers, and building control officers to obtain feedback on how the standards are used in practice. Finally, we carried out a wide-ranging internet-based desktop study to obtain feedback from disabled users and their experience of using Part M compliant buildings.

# Chapter 2 - Methodology

## 2.1 Overview

7. In order to facilitate the search for evidence on the benefits of accessible housing and the effectiveness of the guidance for buildings other than dwellings, the research was carried out in two phases:
- Consultation workshops with relevant stakeholders, including access consultants, designers, product manufacturer, and building control officers to obtain feedback on how the standards are used in practice.
  - We carried out a wide-ranging internet-based desktop study to obtain feedback from disabled users and their experience of using Part M compliant buildings.

## 2.2 Research Questions

To guide our search for documentary evidence and stakeholder feedback to support the evaluation of Part M and Approved Document M, the following research questions were confirmed with MHCLG at the project kick-off meeting. These research questions provide the structure and framework for the desktop research and social engagement activities that underpin this research work.

### Research Phase Questions:

#### RQ1 - STATE OF THE ART

- **What are the recent developments related to access issues in terms of new developments in construction and technology, societal and demographic trends and updated standards for anthropometrics, ergonomics and mobility?**

### 2.2.1 Stakeholders

Through initial desktop research, we established a comprehensive picture of the different stakeholders that are affected by changes and revisions to Part M and AD-M. These will include both industry users who are required to comply with the requirements as well as disabled persons who are directly affected by and stand to benefit from improvements in the guidance. These include

Disabled persons	Industry users
<ul style="list-style-type: none"> <li>• <b>Blindness/visual impairment</b></li> <li>• <b>Deafness/hearing impairment</b></li> <li>• <b>Learning disabilities (dyslexia, dyspraxia, ADHD)</b></li> <li>• <b>Physical impairment/mobility issues (wheelchair users, people with difficulty walking, limited upper body strength, dexterity impaired)</b></li> <li>• <b>Size (small stature (dwarfism/children); large stature(obesity))</b></li> <li>• <b>Age (elderly, young children)</b></li> <li>• <b>Carers (healthcare professionals, parents)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Architects and designers</li> <li>• Building Control officers</li> <li>• Developers</li> <li>• Housebuilders</li> <li>• Access consultants</li> <li>• Landlords</li> <li>• Facilities Managers</li> </ul>

The stakeholder engagement phase of the research was aimed at gaining a better understanding of how well the domestic and non-domestic components of the guidance set out in Part M meet different stakeholder accessibility requirements, and how they are being implemented in practice.

### 2.2.2 Stakeholder engagement and social media-based research

Following the literature review, have used stakeholder engagement techniques and social media-based internet research to add a qualitative dimension to the evidence, in terms of anecdotal yet valuable feedback from both stakeholders and users of the guidance. While not statistically robust, we believe there is value in this approach, both in terms of enriching our understanding of the usability and effectiveness of the guidance as well as gathering together the latest trends and developments in the field.

### 2.2.3 Considerations

In selecting our stakeholder engagement research methods, the following key questions were considered:

- How do we reach all of the key stakeholder groups and get their opinions?
- What types of social media would they have access to, and are able to use?
- For those who don't have access to the internet or are unable to use social media, how can we reach them?
- What social engagement methods are available? Which ones are the most suitable for what groups?

## 2.2.4 Stakeholder engagement

Our review of the published literature from across industry identified some valuable resources where user feedback on accessible housing has already been gathered<sup>137</sup>.

Likewise, a wealth of feedback from disabled users of non-domestic buildings already exists online in various forms (Annex 5). In terms of primary stakeholder engagement, we then decided to focus on industry users of the guidance and engage with them through a series of collaborative workshops and meetings that were held in March 2016.

The workshops were structured around the following key questions, and focused mainly on the effectiveness of the guidance for buildings other than dwellings.

- Are all the sections of the guidance are still appropriate and relevant in delivering useful and meaningful benefits?
- Are there are significant elements of disabled users' needs that are not being met by the guidance (is the guidance still fit for purpose?)
- Are there instances where the guidance may be too prescriptive and limiting the potential of new technology and innovative design to achieve the desired results?
- Is the approach of using a uniform set of guidance for both offices and public buildings an appropriate and efficient one?

The feedback gained from the workshops has been fed into the discussion in Chapter 4, and has served as a useful tool for validating the findings from the evidence and literature review.

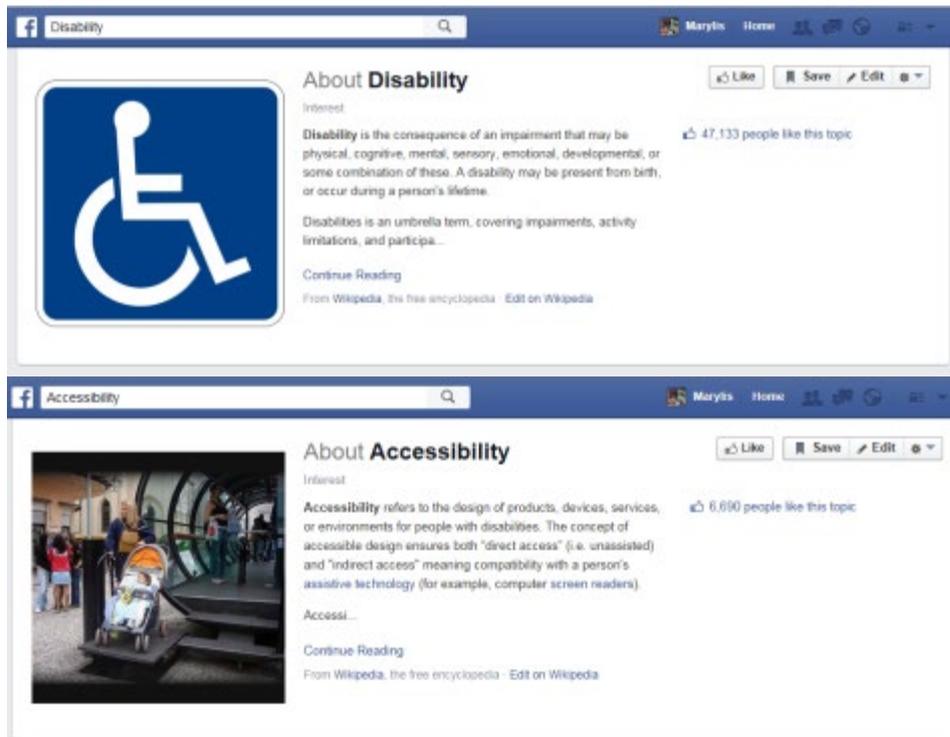
## 2.2.5 Social media-based research

We have also gathered information from the following types of social media resources:

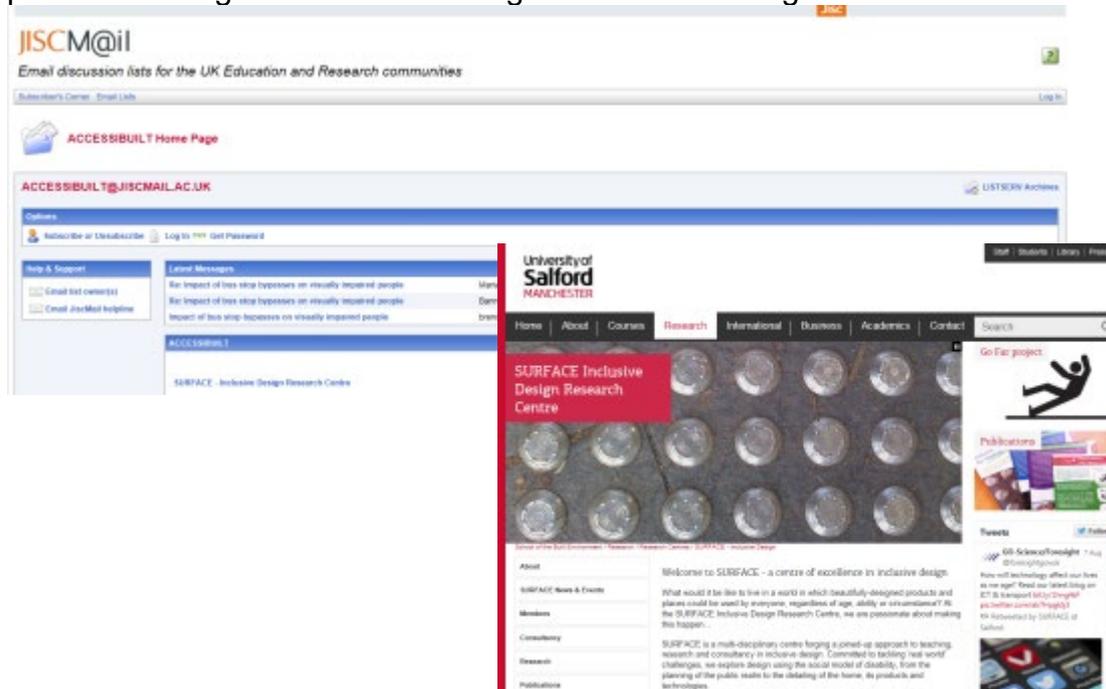
**Social Networking Sites** - Sites such as Facebook or Linked in can be used to identify active user groups of access consultants, builders who carry out building adaptation, architects who specialise in accessible housing, facilities managers, front of house staff, transport designers, human resources sector specialists in accessibility issues; and the various disability groups. These personality-based sites also provide a platform for discussions and commentary that we could tap into for mining information about key concerns and usability issues.

---

<sup>137</sup> JRF Reference from LG - to be updated



**Message Boards and Forums** - Messageboards such as the ACCESSBUILT JISCMail forum, moderated by the SURFACE Inclusive Design Research Centre at the University of Salford, hosts a rich archive of access-related discussions that provide an insight into users of the guidance and a range of technical issues.



**Websites** - There are a number of disability group websites that not only let people know about the particular disability they are focusing on, but some also host research work and publications that may be of interest in the light of any discussions around accessibility and Part M. Some of these websites include:

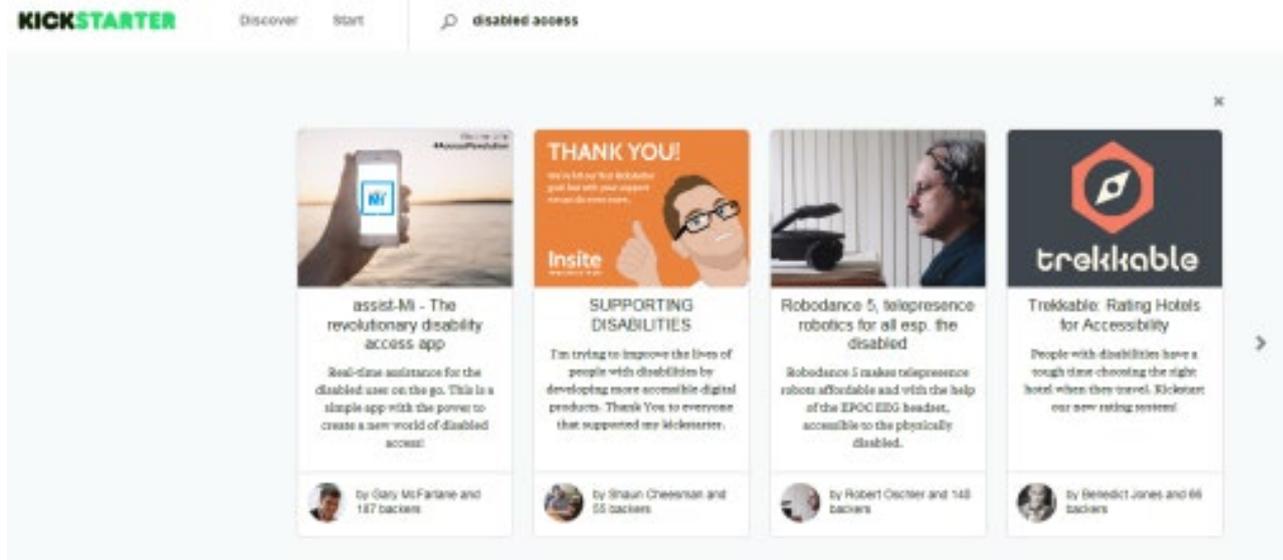
- Blindness/visual impairment – [RNIB](#)

- Deafness/hearing impairment – [Action on Hearing Loss](#)
- Learning disabilities (dyslexia, dyspraxia, ADHD) – [British Dyslexia Association](#)
- [Dyslexia Action](#)
- [Dyspraxia Foundation](#)
- The National **Attention Deficit Disorder Information and Support Service** - [ADDISS](#)
- Physical impairment/mobility issues – [SCOPE](#)

**Blogs and articles** - Blogs are a good source of specialised information, researched and curated by individuals who have a passionate interest in specific topics. One good reference blog is Joe Reddington's List of Top 100 Disability Blogs - a root blog that leads to a number of other blogs providing insight into a wide range of disability issues.

The screenshot shows the website **joereddington.com** with the tagline "Disability, Technology, and Social Projects." The navigation menu includes: ALL ARTICLES, INTERVIEWS, FEATURE WRITERS, PROJECTS, AAC, and ABOUT JOE. The main content area features an article titled "THE ALWAYS UP-TO-DATE LIST OF THE TOP 100 DISABILITY BLOGS". The article text reads: "This is a list of the top 100 disability blogs by traffic ranking. Unlike previous lists this one updates automatically every 24 hours so you see realtime changes. For those unfamiliar, the rules are these: To get on this list, there are two conditions: first of all you must be regularly (but not exclusively; many of these bloggers explore a range of topics) posting about some aspect of disability. The second is pragmatic. For fairness, the blog should be the reason that most people come to your site, not the only reason, but it should be the main one. I have no doubt at all in my mind, that *Ouch*, is probably the world's most read disability blog, but I also have no doubt that the main reason that people go to *bbc.co.uk* is probably not for that blog. So I can't really use the Alexa *bbc.co.uk* ranking as a good measurement. Plus I'd like to highlight, independent, unpaid, grassroots blogs. (*Disabilitynow* is \*just\* on the right side of this I think, comments welcome...)" To the right of the article is a "SUBSCRIBE!" section with a text input field and a "Follow by email" button. Below that is an "UPCOMING POSTS" section with a link to "Puzzle".

**Crowdfunding** - Crowdfunding websites, such as kickstarter, gofundme and Indiegogo are a great way for entrepreneurs to tap into the interests of the general public in order to fund innovative ideas or special causes. Some of the project descriptions can be quite detailed and a lot of ideas or products have a lot of research and product development behind them already. This would be an interesting place to look for the latest developments in accessibility, and also to see which ideas are rapidly gaining support.



**Crowd-driven advocacy** - Related to crowdfunding initiatives, is the idea of crowd-driven advocacy on websites such as change.org to find out if there are any petitions or lobbies for accessibility features in buildings, and possibility what issues disabled users face, related to the use of buildings.

**Microblogs** - Microblogs, such as Twitter, are a good platform for discussion and the powerful searchable potential provided by hashtags can be valuable for trawling archives to see what discussions people have been having on various accessibility topics in the recent years. Twitter also provides a platform for disability-based organisations or personas to be heard - @disabilitynow, @disabilitygov, @disabilitycoop, @bbcouch, @disabledworld are just a few Twitter accounts that tweet regularly on issues related to disability. Another form of microblog, is Pinterest, which is the visual equivalent of tweeting, where images are used effectively to communicate, disseminate and collect ideas.



**Online rating sites** - Sites such as tripadvisor and yelp have dedicated “disabled access” filters and forums that provide a venue for building users to provide feedback on a range of non-domestic facilities such as hotels, restaurants, museums, shopping centres, activity centres and the like. We have found this particular medium to be extremely useful for the research.



**Social bookmarking** - Sites such as Reddit have access-focused areas, where a single page can lead to a large number of thematically related links from all over the world. It is similar to how bookmarks are created when a person browses in Internet Explorer, for example, except this is shared across multiple users.

**Multimedia** - the rise of online media formats, such as podcasts, YouTube, Vimeo, TEDTalks and RSA Animate have led to high-quality content from expert (and not so expert users) being available online and on-demand. We will carry out searches for relevant media content and discussions that are relevant to the work.

While social media based research provides valuable resources on the state of the art (RQ4), and provides insights to the needs, benefits and effectiveness of the current Part M provision, the evidence found through the social research could be highly anecdotal and serves to enrich the research found in the literature review, but not replace it.

# Chapter 3 - Stakeholder views on the effectiveness of the requirements for Approved Document M, Volume 2: Buildings Other than Dwellings

## 3.1 Aim of chapter

This chapter sets out findings based on stakeholder submissions and workshops carried out during March 2016 to determine how effective the Approved Document Volume 2 has been at meeting disabled people's needs in buildings other than dwellings, in a way that is appropriate and efficient.

The set of stakeholders consisted of mainly professionals working in the building industry including architects, occupational therapists, a sanitary products supplier, NRAC access consultants, local authority building control officers and approved inspectors. All the stakeholders have been using the Approved Document M, Volume 2 Buildings other than dwellings extensively during the course of their work.

## 3.2 Summary

The chapter presents the outcomes of the stakeholder discussions in the form of a detailed commentary on the provisions of the Approved Document M, Volume 2. It identifies strengths and weaknesses in the existing guidance, where further research may be needed, and emerging issues that may need to be considered in any further review.

The discussion identified potential for simplification of guidance in Approved Document M while ensuring a reasonable and appropriate level of accessibility continues to be provided.

The consensus view was that most of the guidance provided was reasonable. The participants were in agreement that the document flows logically, provides the sequential journey and is relevant and useful.

However, the guidance may not fully meet the needs of a diverse range of disabled people particularly in relation to sanitary provision.

Emerging issues that may need to be addressed by guidance include needs of an older population, and the needs of people with complex and multiple disabilities, bariatric people, people with cognitive impairments and those of a smaller/taller stature.

The guidance may also need to be updated to reflect current technological advances and building management practices particularly in relation to use of the building environment by visually and hearing impaired people.

The issue of enforcement of current guidance was identified as a critical issue. This was particularly important in relation to provision of sanitary accommodation where a wide discrepancy from prescribed guidance was identified.

## 3.3 Analysis

### 3.3.1 What requirements apply (Section 0.4)

This opening section looks at application of Part M to different parts of buildings and refers to specific types of impairments. However, by referring specifically to wheelchair users, people with impairment of hearing or sight, and in general to people with other disabilities, the guidance appears to focus on the identified groups of disabled people to the exclusion of others

### 3.3.2 Offices vs Public buildings.

Currently Part M is identical for both offices and public buildings. There was a discussion as to whether this is an appropriate and efficient approach, and whether they could they be treated separately. This is based on the following key differences:

- people are more familiar with an office environment;
- reasonable adjustments can be made specifically for staff in office environments.

Features that may differ in offices and public buildings include toilets, kitchens and lift provision

While it was generally felt that a direct division of requirements between the two uses may be a step backwards in terms of streamlining the guidance, it was suggested that the Access Statement route could be used to justify different levels of provision in an office building.

The differences include:

- whether there is a need to provide a range of sanitary facilities including a wider 1200mm cubicle in office environments that are described as being useful for people carrying shopping or needing to take children into the cubicle with them
- whether there is need to provide lower level shared refreshment counters in all parts of a particular office environment when there could be targeted provision where required
- whether there is a need to provide a lift to all parts of an office environment

There may be potential to explore more relaxed standards in office/working environments when compared to requirements for public realm and buildings.

### **3.3.3 Areas where more specific guidance and also more technical requirements may be required**

There are areas where user groups suggested that more guidance may be required to ensure that the intent set out in the Approved Documents is achieved in practice. When the guidance is not specific enough, this could lead to poor compliance, or non-compliance. This may include the following areas:

- the applicability of Approved Document M Volume 2 guidance to communal/shared residential facilities such as shared lounges, bars, kitchens, swimming pools and spas that are not referred to within residential guidance of Approved Document M Volume 1.
- on site car parking and setting down (1.18 a, b and e) - more guidance may be needed on the definition of distances, more clarity that access zones to parking bays should be clear of structure and obstructions, and more guidance on the details for setting down points. There is also currently no guidance for the provision of taxi ramps and their gradients
- cross falls to ramps (1.26k) – there is guidance on cross falls to ramp landings but none on cross falls to ramp flights
- entrances to existing buildings (2.7) – More guidance on how these could be made more accessible may be helpful where it is not possible to meet the standards for new buildings.
- **weather protection (2.7g)** - Improved guidance as to what level of weather protection is required for a manual door may be beneficial
- **revolving doors (2.20)** - **guidance on the most appropriate form of revolving doors for accessibility may be beneficial**
- **requirement for a lift to all floors (3.17)** - There was a debate on whether a lift should be required to all floors regardless of floor area, use, or type of project and whether some clear exemptions should be introduced. Guidance may be required on how this exemption could be determined. This is likely to be on a case by case basis, for example, for a small two-storey building with essential services and accessible toilet on the ground floor it may not be critical to have a lift going up to the first floor
- **lift alarm (3.28g)** - a section regarding the lift emergency call being accessible and perceptible to people with sensory impairments, including visual and audible indication that an emergency assistance call has been acknowledged, may be beneficial
- **lifting platforms (3.43)** - Generally, it was felt that the current designs of platform lifts used in internal environments could be reflected in the guidance. Many of these are fully enclosed platform lifts with push button controls that do not need continuous pressure to operate. More research may be needed in this area to catch up with European directives.

- **hotel standards and student accommodation (4.17)** - Hotel standards may not always be suitable for student accommodation in that the student will be living there for 13 weeks at a time and communal facilities such as kitchens are provided in addition to individual rooms. There is currently no requirement to make these accessible, which makes it difficult for wheelchair users accommodated in the accessible bedrooms. Lack of provision of accessible WCs is also an issue in communal areas in student accommodation. The provisions for student accommodation also do not consider those with profound and multiple needs
- it may be helpful to show a diagram layout of a typical wheelchair accessible student study bedroom with ensuite level access shower.
- **provision 5.6- Adult changing places facility** - It was felt that more detailed guidance needs to be provided for the layout of an adult changing places facility. Guidance does not need to be prescriptive. A 3m x 4m facility may not be required in all situations as a smaller facility may be easier to provide and may still be very useful. It was felt that clever use could be made of the larger combined shower and WC facility to provide space for larger powered wheelchairs and also for adult changing benches. There was a recommendation that it may be helpful to provide a Changing Places layout diagram
- toilets in separate-sex washrooms - Lobbies to single sex toilets are not covered by guidance. Often these are too small and difficult to use by people with mobility impairments or larger size.
- no guidance is currently provided for a unisex self-contained compartment which is increasingly provided in offices and public buildings.. Wording may need to be changed to 'individual toilet cubicles'.

**Finding 5.2: Research may be required to update guidance to more closely address the needs of an older and diverse disabled population particularly in relation to sanitary provision.**

### **3.3.4 Areas where the guidance may be too prescriptive or complicated**

The respondents felt that the guidance should be robust as a minimum standard but that there should be some flexibility to allow for designers to recognise the intent of the guidance and provide opportunities for deviations that also achieve the same end. This may include:

- guidance for surfaces of approaches from site boundary and car parking (1.13 d-f)
- **requirement for tactile warning paving (1.33c)** - It was considered that the need to keep a circulation route clear may be more important than providing corduroy warning to the top and bottom of stairs. Tactile warning extending over a pedestrian approach route may cause an obstruction. Flexibility would allow for better solutions depending on the context and type of project
- **requirement for accessible entrances to be sign-posted using the International Symbol of Access from the edge of the site (2.7a)** - This requirement goes against

the principle that all entrances, and at least the main entrance should be accessible), and is, in practice, one of the issues that most affect wheelchair users based on our social media-based research

- **larger manoeuvring space for reception desks without a knee recess (3.6d)** - it was felt that this needed to be reviewed. The guidance does not currently distinguish between counters used for provision of information or overview/ security compared to counters where visitors need to physically use the counter to write or sign in. This makes a difference as to whether a knee space under the counter is required
- **handrail profile (1.37h)** – it was felt that too few options are provided, and as a result guidance is often ignored. Research to provide more generic guidance or evaluate a wider range of designs may be beneficial
- **requirement for stair nosings (1.33i)** - the requirement for a 55mm wide permanently contrasting material on both tread and riser precludes the use of alternative techniques for distinguishing step nosings and has widespread non-compliance. It was felt that this needed to be more performance based and that more research is needed to determine what the most useful and acceptable solution for visually impaired people may be. In addition, this requirement differs from the guidance set out in Part K.
- **reception areas (3.6 e)** - The requirement to have a lowered section of counter at least 1500mm wide could be too prescriptive as smaller reception areas may not be able to accommodate a counter of this size
- **300mm space to leading edge (3.10c)** - It was suggested that this requirement could be relaxed within stairwells and doors to standard toilets that wheelchair users are unlikely to use. The space could be reduced to half (150mm) in these situations
- **visual contrast to door frames (3.10f)** - This requirement could be regarded as too prescriptive and may not allow the door leaf itself to contrast rather than the frame. In any case many doors now do not have formal frames or architraves and there is no frame to highlight. There may need to be more flexibility to comply with the requirement for door openings to be made more visible
- **requirement for prescribed visual contrast** between the wall and ceiling and wall and floor (3.12) - This precludes alternative architectural solutions such as use of lighting, shadowing, contrasting skirting or coving, or to distinguish the shape of the room or to allow navigation through it
- **provisions for wheelchair-accessible unisex layout (5.10 j,k)** - The precise location recommended for the drop down bar location on the outside of the pan could be more flexible as this was often considered to be too far from the pan.

### **3.3.5 Areas where the guidance could be difficult to achieve or may be impractical to implement, leading to possible non-compliance**

Sometimes current requirements may be difficult to achieve, particularly with regards to existing buildings. These include the following situations:

- **ramped access (1.26c)** - achieving a 1500mm wide ramp is not always easy in existing buildings. It was felt that 1200mm may be easier to achieve, and generally

acceptable for short stretches of ramps where passing is not required or essential.

- **handrails not 'cold to the touch (1.37f)** - This requirement is often difficult to achieve and is rarely complied with. People are likely to be wearing gloves cold weather and this may not be a major issue.
- **leading edge of door should visually contrast (3.10g)** - This is rarely achieved and is unachievable in many factory made doors.
- **requirement for all projecting elements to have a visually contrasting guardrail (3.14a, 3.16f)** - this reduces circulation space even further and may not be necessary for full height structural projections, only for ones below eye level. There is significant non-compliance with regard to this provision.
- **passing places 1800mm x 1800mm at reasonable intervals (3.14c)** - This is hard to achieve in office buildings and it is difficult to determine what is reasonable. This could be possibly redundant guidance.
- **door from unisex toilet should only open into 1800mm wide corridor (3.14h)** - this is difficult to achieve, and requires an unnecessary depth of corridor, using up a lot of space for a door that is only occasionally used. It may be more important to ensure that the door closes in the direction of escape or main movement direction.
- **provisions, audience and spectator facilities (4.12b)** - The requirement for handrails to all stepped aisles is difficult to achieve. Row end rails are commonly used. Bleacher seating does not come with handrails, so this requirement is difficult to achieve. Handrails to stepped aisles in lecture halls in schools and colleges are the most problematic where aisle widths are limited. Further options and clarification may be useful.
- **minimum number of wheelchair spaces (4.12c, Table3)** - The requirement for a minimum of six wheelchair spaces is difficult to achieve for smaller theatres and lecture rooms. A lower requirement may be suitable for the removable numbers.
- **requirement for visual contrast (4.30m)** - This is difficult to achieve as standard electrical plates are white and walls are always painted white or cream. This is an area of high non-compliance. Research may be needed into whether this is actually needed in public buildings and offices where users rarely operate services themselves.
- **requirement of toilet of greater width if only one toilet in a building (5.7a, 5.10e)** - This was felt to be difficult to achieve and possibly wasteful of space, as usually a single toilet would only be provided in smaller premises and the greater width may take up a significantly larger proportion of the floor space. The requirement to provide a standing height wash basin was felt to be unnecessary, particularly as this was only a hand rinse basin, and if it did pose a problem for ambulant disabled people they may be able to use the basin while seated on the pan.
- **requirement for wider cubicle where four or more WC cubicles provided (5.7d, 5.14d)** – It was noted there is significant non-compliance on the provision of enlarged cubicles particularly in office buildings. The ambulant disabled cubicle could be considered to be an adequate larger provision. This wider cubicle provision is useful for public buildings and shopping centres where people may be carrying shopping or

accompanying children.

- **requirements for urinals for wheelchair users (5.13, 5.14g)** - It was felt this may be an unnecessary requirement and of questionable value. Requirement for a lower urinal with its rim at 380mm above floor level and vertical grab bars was unlikely to be used by wheelchair users and may really only benefit children and people of shorter stature. In offices, this could be accommodated on a needs basis. BB102 is appropriate guidance for schools.

### 3.3.6 Areas that lead to issues of enforcement

It was felt that often implementation and compliance with the standards was more of an issue than the detail contained within standards themselves. The judgement as to whether the guidance is being met generally falls to individual building control officers or approved inspectors and their own interpretation of the guidance, particularly in relation to existing buildings.

In some cases the guidance refers to requirements that are changed over the lifetime of a building, making enforcement and monitoring difficult. This includes the following:

- **opening forces (3.10a)** - door closers are changed over the life of a building and this requirement is difficult to enforce and monitor. Rising butts could be recommended in place of door closers where doors are not fire doors. These could be particularly recommended for toilet doors. All corridor doors could be on hold back, all entrance doors (used frequently) could be powered and where doors are used frequently such as accessing libraries, these could be powered where the 30N opening force is difficult to achieve.

### 3.3.7 Areas where more clarity may be required

Cross- references to further guidance beyond the Approved Document. In cases where further guidance such as the BS 8300 was referred to for more detail, it is often not clear whether following this referenced guidance is a mandatory requirement or merely a recommendation. In practice, further guidance is generally not adhered to as it does not appear to be a statutory requirement. Perhaps a status needs to be conferred on these further standards if they are essential requirements, or essential items from that guidance should be included and detailed in the Approved Document. This includes cross- references provided for sports buildings and schools that are often ignored.

Other areas which may benefit from greater clarification include:

- **opening force (2.13a)** - The requirement for a low opening force for entrance doors clashes with weather control requirements
- **space at leading edge (2.15)** - Where door openings are set in very thick walls, the face of the door needs to be not more than 200mm back from the face of the wall on both the leading and following faces. The 300mm side nib could be made narrower

than the thickness of the main wall to facilitate this. V2 Diagram 9 could be amended to show this aspect similarly to V1 Diagram 3.2.2.29 to provide more clarity on this issue

- **lobbies (2.29)** – Vol 2 (Non-dwellings) Diagram 10 shows lobbies with 1570mm clear of door swings. Vol 1 (Dwellings) states 1500mm clear of door swings. It may be preferable if these were internally consistent
- **need for a lift to all floors (3.17)** - It was felt that the wording of this was ambiguous as to whether provision of a lift was mandatory to all floors. It says 'a passenger lift is the most suitable means of vertical access and should be provided wherever possible'. Wording was clearer in 3.24 a-d, which clearly indicates that the provision of lifting devices is a requirement

Whether a platform rather than a passenger lift should be provided should be made clearer in the guidance, as a slow moving platform lift with continuous pressure controls often becomes the default. The case for providing a platform lift should be made within the access statement

- **location of controls (4.30g)** - This requires sockets to be located 350mm from corners, but does not refer to switches which also need to be located away from corners for easy reach by wheelchair users
- **provisions for sanitary accommodation (5.5)** - It was felt that the requirement not to place baby changing facilities in wheelchair-accessible toilets may need to be made stronger, or that this may only be allowed where there is more than one wheelchair accessible toilet available for users. The large size nappy disposal bin was in fact a bigger problem in terms of an obstruction than the baby changing shelf. It was also felt that separate nappy bins are not really required and these could be combined with standard waste bins. There may need to be guidance on not placing large size bins that take up an excessive amount of space in the compartment, but this is possibly more of an enforcement issue and outside the scope of the study
- **provisions for wheelchair-accessible unisex layout (5.10 j,k)** - The requirement for an additional drop down bar to the inside of the pan was not understood or believed to be required
- **washbasin (5.10l) - on fittings** to comply with Diagrams, 18, 19 and 20. It was noted that no size or depth for the washbasin is prescribed in Diagram 18. A maximum projection of 350mm was suggested to allow frontal transfer. It was also felt that requirement for a shelf, sanitary bin and alarm cord are often overlooked or misinterpreted and a checklist may be a useful tool. It may also be useful to indicate on drawings that pipework should be outside of the required clear space.
- **requirement for flushing mechanism (5.10r)** - May be useful to provide a height for this as manufacturer's standard Part M pack has high level flush handle at 1200mm height
- **visual signal to fire alarm (5.4g)** - Unless these are actually within self-contained cubicles, visual fire alarm signals cannot be seen. Clearer specification may be needed of where they should be installed

- **space within compartment (5.14a)** - A diagram here may be useful. It could suggest a location for the toilet roll holder that is often very large in size and is frequently fixed in an inappropriate location restricting circulation space
- **wheelchair accessible changing and shower facilities (5.17)** - Reference to 'adult changing table' and Note 2 referring to BS 8300 does not clarify whether this provides details of Changing Places toilets. More suitable may be a link to the Changing Places guidance. It may be useful to have clearer guidance on where Changing Places toilets are appropriate and should be provided. It was suggested that making Changing Places toilets (or a similar standard) mandatory for certain categories of buildings (large venues, large transport interchanges, airports, hospitals, shopping centres etc.) may be more appropriate than a recommendation.
- **wheelchair accessible changing and shower facilities (5.17) - Note 1** refers to 'Accessible Sports Facilities' However, this does not say that following the guidance is recommended or necessary. More clarity is needed. One accessible toilet and shower facility within a group of toilets does not meet service user needs where there may be teams of wheelchair users using the facilities. Proportions may need to be provided.
- **requirement for prescribed visual contrast** between the wall and ceiling and wall and floor (3.12). This requirement only applies to passageways rather than other spaces currently, which may disadvantage **visually impaired people in other internal spaces.**

### 3.3.8 Areas where the guidance may need updating

Technology has changed on since the guidance was written and updates to guidance could address how to deal with the following:

- **revolving doors (2.20)** - In practice, pass doors to the side of revolving doors (as set out in the current reapproved document) are often locked shut to prevent over use and for weather control and this disadvantages many people who find revolving doors difficult. Technology for revolving doors has moved on. Existing guidance assumes revolving doors cannot be made accessible but this is not always the case – greater flexibility may be derived by providing more guidance on making revolving doors accessible. For instance these could be made wider (3.8 to 4m diameter) and also have only one leaf so that there is a wide semi-circle of space available. This is currently the specification in hospitals and airports where people are carrying luggage and trolleys.
- **audible indicators to automatic swing doors (2.21c)** - These are no longer required by the European standard BS EN 16005 for automatic doors and door suppliers no longer manufacture these with audible indicators. This requirement could possibly be deleted
- **design considerations for switches, outlets and controls (4.25-29)** – It was noted that technology has moved on and many light and service controls are now automatic or only operated by building administrators and facilities managers. The guidance

could be revised to reflect this

- **lift controls (3.28b-d)** - It was noted that lift technology has evolved, and with some multi-tenanted floors you need to choose your destination before you even enter the lift lobby. Digital touch screens are being provided outside (or inside the lobby) requiring users to choose their floors in advance of entering the lift. However, these touch screens are not suitable for visually impaired people. You cannot use the screen if you cannot see the numbers and there is no tactile marking. Digital pads are not particularly accessible either. More guidance could be given on lift destination systems, given the popularity of these now, and in particular, how such screens/systems could work for blind and partially sighted people.
- **aids to communication (4.36)** - References to public telephones and text telephones within buildings (4.14 and 4.36 d and e) are outdated. Generic references to equipment and fittings could be made. The increasing use of touch screens and electronic signage and the need for audible information to supplement this signage could also be considered.

**Finding 5.2: Research may be required to update guidance where there are current technological advances such as in relation to lift standards, automatic and revolving doors, and building and public realm navigation.**

### **3.3.9 Whether guidance is adequate in meeting needs of a range of users**

The following areas of improvement were identified, which include instances where the guidance may not exactly be fit for purpose in terms of meeting the needs of wheelchair users and those with sensory impairments:

- **size of lift (3.29)** - **The 1100mm x 1400mm lift tends to be on the small side for many situations and many motorised wheelchairs will not fit into this space. The minimum size lift may not be suitable for public buildings.**

The recommended larger 2000mm x 1400mm alternative lift mentioned is not always easy to achieve. However, an intermediate size of 1600mm x 1400mm sized lift (with a 900mm or 1000mm wide door opening), which is recommended in Arts Council design guidance, works well in most situations and is easier to achieve. It may be helpful to have this in the approved document, as designers invariably default to the minimum 1100mm x 1400mm size. More research may be needed into the appropriate size of a lift and whether minimum sizes should differ in different types of buildings.

- **lifting platforms (3.43)** - The continuous pressure requirement for controls puts many disabled people at a disadvantage.
- **application of criteria for wheelchair platform stairlift (3.23, 3.44)** - It was considered that there should be stronger presumption against use of a platform stair lift and these should not in be permitted in new buildings. The suggestion was that these should only be used in existing buildings where there is no other option.
- **platform lift sizes (3.43g)** - i and ii - 800 x 1250mm and 900 x 1400mm sizes were generally not considered appropriate for a public building; while iii - 1100 x 1400mm

platform size: was suggested as the minimum requirement in a public building to accommodate all users. The other two specifications of lifting platform may only be appropriate as a bespoke installation, such as to meet the needs of an employee as a reactive measure.

- **shared refreshment facility at height of 850mm (4.13, 4.16c)** - It was suggested that an office building may have multiple small refreshment counters and it could be reasonable to provide a minimum of one lower counter on each floor or within each building rather than at every refreshment area. It was noted that a 900mm counter height is required to accommodate white goods, which conflicts with the 850mm shared surface worktop requirement. In a large refreshment area there should not be a problem with providing both heights, however, in a smaller kitchen this may be unfeasible.
- **requirement for wider cubicle where four or more WC cubicles provided (5.7d, 5.14d)** - It was questioned why the larger cubicle is only required if four cubicles were provided as the need was as important as an ambulant cubicle in a public environment.
- **washbasin (5.10i)** - Many felt the handrinse washbasin was often unusable. There are conflicting anecdotes about usefulness of its reachability from the pan. The location is not easy to get to when in a wheelchair, to approach either head-on or sideways (if not being used from the pan). Generally hand rinse basins are provided that are too small for many users, with risk of splashing and spillages on the floor. Lower velocity water flow is a possible solution. It was also felt that the tap should be closer to the WC to be more easily reachable, but then the location obstructs use of the basin. Generally it was felt that more research may be needed on how washbasins are used and what may be the most useful arrangement.
- **requirements for provision of cubicle for ambulant disabled people (5.11)** - It was felt this should not be linked to provision in separate-sex washrooms, but universal to all WC provision. Many providers do not provide ambulant disabled facilities in self-contained unisex standard facilities as there is no specific guidance applying to these. This is a gap in the guidance that may need to be reviewed.

There was a question as to whether a single ambulant cubicle is sufficient whatever the size or layout of the toilet. It was suggested that this could be standard practice for any row of cubicles where it was practical to provide an outward opening door.

The following issues were also identified in relation to meeting user needs within the Approved Document. In particular, it was felt that a separate section in the Approved Document covering sensory aspects of the built environment (including signage) may be useful.

### **3.3.10 Whether guidance provides for adequate sanitary accommodation for range of users**

In general this was felt to be a key area where there needs to be a review as to whether all user needs are addressed by current guidance in Approved Document M.

- **objectives for sanitary accommodation (5.1)** sets out the principle that suitable sanitary accommodation should be available for everyone including wheelchair users, ambulant disabled people, people with babies and small children and people encumbered by luggage. There is a feeling that current guidance on sanitary provision could be reviewed to assess how well it meets the needs of people with multiple and complex disabilities, people requiring assistance to use the toilet and people with larger wheelchairs. There is also the question as to whether the scope of the building regulations could include sanitary provision for all protected characteristics.
- it was felt that while in general manual and electric wheelchairs are smaller than they used to be, there are some larger powered wheelchair and electric scooter users that may not be catered for by current sanitary specifications. This is more likely to be the case in public buildings rather than offices
- the corner layout may not suit all people who need assistance and may prefer a peninsular type layout
- adult changing places toilets are referred to in the guidance but detailed guidance is not provided..(Further discussion of this is in section 5 earlier)
- requirements are not covered by the guidance.. Unisex toilets are not always appropriate for certain faith groups
- in comparison with men's cubicles, women's standard cubicles need to accommodate sanitary bins, the need to sit down to urinate, and may need to be larger. More research is needed in this area
- no guidance is provided on children needs and may need to be considered
- it may be helpful if the guidance could provide ratios of facilities, eg of proportion of accessible toilets to standard ones

### **3.3.11 Increased use of mobility scooters and cycles by disabled population**

Further research could be done on increasing use of mobility scooters and cycles among disabled population for travelling, and storage and transfer requirements for these.

There has been an increase in use of mobility scooters among older and disabled population, amounting to a 10% annual increase in sales<sup>138</sup>. Shopmobility schemes have contributed to this trend.

Increasing use and encouragement of adapted cycles for disabled people is evidenced by inclusive cycling standards that are now provided in TfL's 2014 *London Cycling Design Standards* and the *Accessible London SPG*, 2014, London Plan 2011.

---

<sup>138</sup> Streets Ahead, The future of London's road, New London Architecture, 2016

### 3.3.12 Addressing needs of visually impaired people

- **visual contrast and lighting** - There needs to be a review of the information and guidance provided in the Approved Document. It is divided across different sections and may not be fully integrated into the guidance
- requirement for visual contrast to walls, floors and ceilings only applies to passages and corridors whereas the BS 8300 requires it in all rooms
- new technologies for navigation should be encouraged e.g. potential of audible systems as an alternative to signage should be indicated in guidance
- interior design and architecture is not subject to building control approval and therefore visual contrast can fall between the gaps
- **signage and way finding** - This may not be adequately covered in the guidance and should be reviewed
- **tactile paving** - More research could be done on how this is used and how useful different applications are for visually impaired people.

### 3.3.13 Addressing needs of hearing impaired people

- requirement for a good acoustic environment may need to be included in more detail
- more detail may be required in general such as need for good lighting at counters for lip-reading
- more research into what features and elements assist people with hearing impairments to function well within and navigate the built environment
- a suggestion was made that there could be a separate section in the Approved Document covering sensory aspects of the built environment.

### 3.3.14 Addressing needs of people with cognitive Impairments

More research and guidance may be required as this area is not covered in the provisions. An overview and commentary in relation to the needs of cognitively impaired people may be helpful. Provisions may need to apply to specific buildings such as those providing public services and specialist services.

Suggestions for provisions included:

- consistency of layout
- logical routes

- use of textures and patterns for guidance

### **3.3.15 Addressing needs of people of short stature and children**

There is no reference in the guidance to provision of facilities for disabled people of a younger age group – especially important in public buildings. The needs of these groups are often ignored. Children often go to workplace environments.

One example may be 'heights of washbasins and urinals' (5.13), which does not refer to the needs of children and people of shorter stature.

The requirements for these groups of people are not made explicit though indirectly covered in guidance for lower reception and servery/ bar counters and toilets that meet needs of wheelchair users. However, where stepped access is provided, it is considered that wheelchair users will not be able to reach the area and therefore lowered facilities will not be needed and the broader application of lower level facilities is ignored.

Lower level WC and urinals are necessary for these groups, but it is recognised that requirements can be more flexible in office environments than in public buildings. (*In Part G, there are only references to calculating provision for men and women, not children or disabled people*).

There is no requirement for a lower handrail to staircases and balustrades to protect children except in dwellings and schools though children could be present in most building environments.

### **3.3.16 Addressing needs of bariatric people**

Research may be required into the extent of need for bariatric provision, and the extent to which existing provision in the building regulations meet bariatric needs. This may need to consider;

- requirements would be most useful for toilet provision
- weight requirements are not covered at all in current guidance
- requirement for a wider cubicle may help this group of people
- facilities may need to be adaptable for specific users as a reasonable adjustment rather than being designed in from the outset.

### **3.3.17 Emerging issues that may need to be considered to support a full review of the Approved Document**

The key issues emerging from consideration of current guidance in Part M of the Building Regulations which could be relevant to future review include:  
Consideration of the following changes in demographics:

- an ageing population
- increase in obesity and bariatric population

*‘There is a lack of information in particular, around sensory impairments; we are an aging population. The other area is cognitive, the rise of understanding of the autistic and Asperger’s spectrum brings new demands as does dementia; this is also an age related aspect’.*

*‘Obesity and an understanding of the anthropometrics of the general population have not been considered for some time. Apart from the rise in obesity we are as a nation getting larger, bigger feet, etc. This has implications for strengths of joists, depth of goings and stairs, etc.’*

The specific needs of the following users of buildings could be considered in more detail:

- sensory impaired people
- children’s and parents’ needs
- people of shorter stature
- people with complex and multiple impairments requiring care-assistants
- powered wheelchair users (who need larger toilets)
- disabled people who use cycles as a mobility aid
- users who require assistance to both sides of the pan

Consideration of the following health issues:

- mental health conditions including autism
- cognitive health issues including dementia

Assessing whether Part M has a role in addressing wider equality issues for protected characteristics relating particularly to public sanitary provision

### **3.3.14 Conclusions**

- while guidance was considered to be reasonable in meeting most needs of disabled people, lack of enforcement of guidance was seen as a critical issue
- more relaxed or flexible guidance could be explored for office buildings compared to public realm and buildings
- areas where a review of guidance would be helpful include student accommodation, lift

provision and guidance, and sanitary accommodation

- areas where guidance is too prescriptive include toilet layouts, stair nosing guidance, visual contrast guidance for doors
- tactile warning paving and requirements for reception desks
- areas where guidance is difficult or impractical to implement include aspects of handrail provision, some aspects of requirements for visual contrast, guarding to projecting elements, width of ramped access, requirements in audience and spectator facilities, requirement for a larger single toilet in small buildings
- areas where guidance may need updating includes reflecting technological advances in relation to lift and automatic door design and digital communication aids and navigation systems.

The guidance may not meet the needs of a range of disabled users including an ageing population with increasing numbers of bariatric people, and the needs of people with complex and multiple impairments requiring use of carers, people of a shorter or taller stature and those with cognitive impairments. More research may be required in this area.

# Chapter 4 - Findings from Social Media research: the building user perspective

8.

## 4.1 Methodology

A number of reviews based on first-hand experiences of disabled people and their families were collected across different building types through the various social media sources listed in Chapter 2. Further detail can be found in Appendix IV.

Most buildings selected, reviewed and discussed in this report to the best of our knowledge have been built, post Part M. However, a majority of buildings in the non-domestic sector currently under occupation in the UK are housed in historic buildings were built prior to Part M, most of which have been recently refurbished with internal adaptations.

It was therefore important to consider the existing building stock prior to Part M as well, to inform the potential need to expand the building regulations to include adaptations to historic buildings. The most common recurring issues identified in this building group, are discussed below.

## 4.2 Section 1: Site access issues

### 4.2.1 Level approach from the boundary of the site and car parking

Pathways leading to main building entrances/ accessible entrances from the boundary of the site and car parking are not always clearly labelled or visible and based on the location of the property (if located in a dense, urban city centre) are sometimes not provided at all.

The regulation requires this route to have level access or be gently sloping, but evidence collected suggests that access paths to alternate building entrances are usually along more complex routes that are hidden away along dimly lit pathways or side alleyways and sometimes located along steep slopes with gradients that are not suitable for people with any form of mobility impairment.

The location of alternate accessible entrances along roundabout and complicated long routes (sometimes to comply with the regulation to provide level access), makes these access paths extremely compromised in terms of ease of use and security letting people down and feeling even more vulnerable and unwelcome to the place of visit.

The level of difficulty faced by people suggests that regulations for access paths needs to be made clearer in terms of their location, maximum distances travelled, provision of clear, visible signage at the right heights and locations and that pathways are well lit (potentially with minimum lighting levels specified) to make them less risky and secure.

## **4.2.2 On-site car parking and setting down/ Hazards on access routes**

Evidence collected suggests that a number of public buildings do not provide on-site blue badge parking facilities. Where these are provided, their numbers are not always adequate and the drop off points and blue badge parking zones are not always located closest to the accessible building entrances, as required.

## **4.2.3 Ramped access/ Stepped access / Handrails to external stepped and ramped access**

Most buildings reviewed (both pre and post Part M) do not provide full step-free access or correctly specified handrails, making access into buildings very difficult for users with mobility and other visual impairments. Steps are typically the biggest barrier for disabled people when accessing venues and the options of either providing platform lifts or ramps at correct gradients are usually never available to users.

In the case of existing/listed buildings, where step-free provision is not possible, regulation suggests the provision of correctly sloped temporary ramps. When temporary ramps are required, provision should also be made for their storage close to the entrance, and correctly specified signage to suggest the existence so people are made aware.

# **4.3 Section 2: Entrances and entrance routes, and Section 3: Horizontal and vertical circulation issues**

## **4.3.1 Accessible entrances**

Main entrance doors to buildings have been highlighted as one of the main areas of non-compliance in most buildings reviewed. Apart from providing the correctly sized, step-free access to buildings to assist people with mobility issues, the location and visibility of accessible entrances to buildings should also be made more prominent by providing the right level of contrast through the use of light and/or colour to make the entrances more prominent for people with visual impairments. However, evidence collected shows that in most buildings this regulation is not implemented.

A number of buildings reviewed seemed to suggest that alternative, accessible entrances are usually provided along complicated side/ rear entrances and are usually not continuously manned by security staff to the same level as other entrances to buildings which raise concerns regarding the security provision at these entrances, making them vulnerable parts of the building as opposed to inviting.

## **4.3.2 Manually operated non-powered entrance doors/ Powered entrance doors**

Most buildings reviewed were not provided with automatic doors or staff assistance call buttons which in a number of cases resulting in the separate accessible entrances causing more of a hindrance than ease of access into the building premises. Evidence

collected also suggests that the alternative accessible entrances are either located very far away from the main entrance, along a rear or side entrance without a straightforward or appropriately designed accessible route.

### **4.3.3 Entrance lobbies**

A description of suitable weather protection should also be included within the Part M regulation to ensure that users are adequately protected during their journey into the building, which can sometimes take longer and can be more challenging for some users depending upon their disability.

## **4.4 Section 4: Facilities issues**

### **4.4.1 Sleeping accommodation (hotels, motels, student accommodation)**

Other areas of non-compliance has been highlighted with regards to doors in hotel rooms where a lack of provision of spy holes at correct heights has been recorded, resulting in the user feeling rather vulnerable in such situations.

A number of buildings especially hotels, in recent times seem to provide automatic doors but the evidence collected seems to suggest that most automatic doors never shut properly behind them, compromising the security of the user. In other cases, doormats and other obstacles on the way make access to doors difficult.

### **4.4.2 Switches, outlets and controls**

An area of non-compliance with regards to sockets is mainly limited to the heights and number of sockets provided to include for provision to charge wheelchairs etc.

## **4.5 Section 5: Sanitary accommodation issues**

### **4.5.1 Sanitary accommodation generally**

The location of disabled toilets has been raised as an area of concern with most public buildings but especially in the case of restaurants, cafes and shops where floor space is at a premium.

A clear pathway leading unto the accessible toilet is often not maintained and the evidence collected suggests that these tend to be located far away from the entrance/ disabled seating provisions, often tucked away at the rear portions of the room. Access to these facilities is challenging as it usually requires the user to manoeuvre through narrow aisles and furniture blocking the way, increasing the possibility of accidents along the way. In some other cases, they are found to be located on other floors (basement/ upper floors) and have to be accessed via steps, making their use redundant as they cannot be reached by most users with accessibility issues.

Space provisions in front of toilet doors is another area of concern as they are usually not adequate, as they tend to be located either on stair landings, or blocked by tables in restaurants.

Clear signage at the correct heights and with proper lighting is also important and is often found to be missing in most types of building.

#### **4.5.3 Provision of toilet accommodation**

Most evidence collected suggested accessible toilets as the next big barrier in non-domestic buildings. In most public buildings, accessible toilets are either not enough or not specified correctly.

Inadequately sized toilet accommodation is a major concern, with space provisions and dimensions (when lucky), limited to the minimum dimensions and standards required by regulations. There are in particular problems for assisted wheelchair users where accessible WC's are not large enough for carers to move around or to accommodate larger wheelchairs of different makes and sizes. Ensuring that WC's are managed to be useable is also a common issue as space intended for circulation can be blocked out easily when simple objects such as larger waste bins are provided, or placed in an inappropriate location.

Evidence collected in a large number of public buildings especially restaurants and cafes' suggests that where problems are encountered, this is often because disabled toilets are locked or marked 'not-in-use' and can be found being used as storage spaces or cloak rooms. In other cases, they have been found to be filled with obstructions like highchairs, storage cupboards, cleaning products, extra furniture or potted plants on the floor.

#### **4.5.3 Sanitary fittings in accessible toilets**

A large number of evidence suggests that the red emergency cords in most disabled toilets are usually tied up and not-reachable, posing health and safety risks to the users. Other non-compliance issues identified includes incorrect heights of sinks, mirrors and door handles.

#### **4.5.4 Doors to public/ visitor accessible toilets**

In other cases the position of the toilet doors are not well thought of and they result in opening up in public spaces or in front of other tables in a restaurant making the experience rather awkward or embarrassing for the user, especially when the experience inside the toilet due to the level of non-compliance has been quite harrowing in itself. In other cases, toilet doors were found to be too heavy, and not easy to push.

## **4.6 Conclusion**

Much of the feedback collected from social media research suggests that the usability issues in supposedly Part M compliant buildings come from a lack of compliance or an awkward implementation of the regulations as opposed to shortcomings coming from content of the guidance itself. Some feedback relates to aspects of the guidance that were

compliant at the point of building control approval but that have become unusable or unfit for purpose in operation. This suggests that in general the guidance is robust where it is applied properly, but that compliance is an issue and needs to be strengthened.

# Chapter 5 - Summary and Conclusions

PRP Innovate have been commissioned by the MHCLG to carry out this work, which seeks to scope out existing evidence to support the evaluation of Part M and Approved Document M of the Building Regulations. The key objective of the work was:

- to obtain **views regarding the effectiveness** of the accessible housing standards and the guidance set out in Approved Document M for buildings through consultation and/or engagement with a wide variety of stakeholders, including disabled people, key industry users of the guidance, and the formation of an inclusive and balanced expert steering group.

This research looks at how effective the Part M2 guidance has been since 2004 and evaluate how well it has been meeting disabled people's needs, in terms of identifying the strengths and weaknesses of the existing guidance, and identifying what further research would be needed to support a review of the guidance. For both domestic and non-domestic components, any areas where improved anthropometric data would be of benefit has been identified.

## 5.1 Has Approved Document Volume 2 been effective at meeting disabled people's needs in buildings other than dwellings?

Following the evidence review of the literature related to anthropometric and ergonomic standards and research, a series of stakeholder discussions and workshops were carried out to discuss the strengths and weaknesses of the existing guidance and identify areas where further research may be needed as well as emerging issues that would be worth considering for future reviews of the guidance.

The consensus view was that most of the guidance provided was reasonable. The participants were in agreement that the document flows logically, provides the sequential journey and is relevant and useful.

However, the guidance may not fully meet the needs of a diverse range of disabled people particularly in relation to sanitary provision, which reflects the findings from the previous section on anthropometric and ergonomic standards. Emerging issues that may need to be addressed by the guidance include needs of an older population, and the needs of people with complex and multiple disabilities, bariatric people, people with cognitive impairments and those of a smaller/taller stature.

The guidance may also need to be updated to reflect current technological advances and building management practices particularly in relation to use of the building environment by visually and hearing impaired people.

While guidance was considered to be reasonable in meeting most needs of disabled people, lack of enforcement of guidance was seen as a critical issue. This was particularly important in relation to provision of sanitary accommodation where a wide discrepancy from prescribed guidance was identified.

The discussions also identified the potential for exploring a more relaxed set of standards for office/working environments as compared to the requirements for public realm and public buildings.

## 5.2 It was felt it that there were some weaknesses in the guidance

It was felt it that there were some weaknesses in the guidance that need to be considered in any further review. This covers a range of issues that fall under the following general categories:

- **areas where more guidance may be required** and the guidance is not specific enough, leading to loopholes that can be exploited or cause the guidance to be ignored altogether.
- **areas where the guidance is too prescriptive or complicated** include toilet layouts, stair nosing guidance, visual contrast guidance for doors, tactile warning paving and requirements for reception desks. The guidance should be robust as a minimum standard, but some areas of it currently need some flexibility to allow designers to recognise the intent of the guidance and provide opportunities for solutions that also achieve the same end. In other instances, some of the guidance was felt to be too technical to the point that they are unachievable.
- **areas where the guidance is difficult to achieve or may be impractical to implement** include handrail provision, some areas for requirements for visual contrast, guarding to projecting elements, width of ramped access, audience and spectator facilities, requirement for larger single toilet in small buildings. This may lead to widespread non-compliance for these areas. This often occurs in the case of existing buildings, or where the guidance is too demanding to achieve for smaller buildings, at which point it is just ignored.
- **areas that may lead to issues of enforcement**, such as the case where implementation or compliance checking is challenging, or when the requirements tend to change over the lifetime of a building, making on-going enforcement difficult.
- **areas where more clarity may be required**, such as the issue of cross-referenced documents and whether they are optional or required. Other areas requiring further clarity include when the guidance is ambiguous, or inconsistent with other sections of the guidance, or with requirements set out in other Approved documents, or where further explanation or diagrammatic information is needed to illustrate the requirements.
- **areas where the guidance may need updating** include the guidance for student accommodation, lift provision and guidance, and sanitary accommodation, and instances where technology has changed since the guidance was written such as

technological advances in relation to lift and automatic door design and digital communication aids and navigation systems. New provisions may need to be made or the capabilities of new technology and equipment need to be carefully considered.

- **areas where the guidance may not be fit for purpose** in terms of meeting the needs of wheelchair users and those with sensory impairments.
- **areas where guidance fails to address the needs of a wider range of users**, including carers, ambulant disabled people, people with babies and small children and people encumbered by luggage, people of short stature, children, bariatric people, people with multiple and complex disabilities, people requiring assistance to use the toilet, people with larger wheelchairs, people of faith with specific sanitary needs, needs of women and people with protected characteristics, visually impaired people, hearing impaired people and people with cognitive impairments.
- further consideration is also required with regards to changes in demographics and societal behaviour, including the increased use of mobility scooters and adapted cycles, an ageing population, an increase in obesity and bariatric population, and the extent of the increase in mental and cognitive disability.

## 5.3 Key Issues emerging, relevant to future review

8.1 The key issues emerging from consideration of current guidance in Part M of the Building Regulations which could be relevant to future review include:

- consideration of work to ensure that guidance makes reasonable provision reflecting the following **changes in demographics**: an ageing population and the increase in obesity and bariatric population.
- the **specific needs** of the following users of buildings currently which may not be adequately covered by the guidance: hearing and visually impaired people; children's and parents' needs; people of shorter stature; people with complex and multiple impairments requiring care-assistants; powered wheelchair users (who may need larger toilets); disabled people who use a cycle as a mobility aid; users who require assistance to both sides of the WC pan.
- consideration of the following **health issues**: mental health conditions and cognitive health issues including dementia.
- Assessing whether Part M has a role in addressing **wider equality issues** for protected characteristics relating particularly to public sanitary provision

## 5.4 Stakeholder Views.

8.2 In order to provide an alternative 'everyman' viewpoint to the specialist stakeholder discussions, A number of reviews based on first hand experiences of disabled people and their families were collected and analysed across different building types through various social media and internet resources.

The most frequently occurring issues that are of importance to building users include the following areas:

- **site access issues**, such as the safety, visibility and articulation of accessible entrances; the provision, location and quantity of on-site parking facilities; and the provision of full step-free access and correctly specified handrails
- **entrances and circulation issues**, such as the requirements for visibility and sizing of main entrance doors; the location of non-secure accessible entrances via non-straightforward side or rear entrances; non-powered entrance doors; and lack of weather protection along the accessible routes into the building
- **facilities issues**, such as the provision/location of spy holes and non-functioning automatic doors in hotels, motels and student accommodation; and non-compliance with regards to socket heights and provision
- **sanitary accommodation issues**, such as the location of disabled toilets; the access route to these toilets; space provision in front of toilet doors; inadequately sized toilet accommodation; tied-up emergency cords; sinks, mirrors and door handles at the wrong height; heavy doors; and toilets being used for storage or cloak room areas

Much of the feedback collected from this avenue of investigations suggests that the usability issues in supposedly Part M compliant buildings come from a lack of compliance or an awkward implementation of the regulations as opposed to shortcomings coming from content of the guidance itself. Some feedback relates to aspects of the guidance that were compliant at the point of building control approval but that have become unusable or unfit for purpose in operation. This suggests that in general the guidance is robust where it is applied properly, but that compliance is an issue and needs to be strengthened.



Ministry of Housing,  
Communities &  
Local Government

## Research into

# Access to and Use of Buildings

## Appendices

Appendix I - Evaluating the Robustness of Evidence	134
Appendix II - Initial Screening of Part M2, Volume 1	149
Appendix III - Initial Screening of Part M2, Volume 2	156
Appendix IV - Social Engagement - Research Material	165

# Appendix I - Evaluating the Robustness of Evidence

## Robustness of the Evidence

The following table presents the list of references that we looked at for this stage of the research. References highlighted in **green** are the ones that are based on reasonably robust sample size and that have been commissioned by a reputable organisation. References highlighted in **orange** represent ones that have smaller sample sizes and therefore have a weaker evidence base but have been commissioned by reputable organisations.

References highlighted in **blue** are widely accepted references in the industry, but do not quote specific primary research sources or specify any sample sizes.

References with no colour highlight do not provide enough information for us to evaluate their robustness.

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
<b>Surveys and censuses of disabled people</b>						
1	2014	Disability Facts and Figures	Office for Disability Issues Department for Work and Pensions	UK	11 million people with disabilities	1. Family Resources Survey 2011/12 2. English House Condition Survey 2008 3. Survey of English Housing 2007 to 2008
2	2012	Family resources Survey 2012 (Chapter 4)	Department for Work and Pensions	UK	34,008 homes in England, 5880 in Scotland, 3,600 in NI	Original fieldwork by ONS and NatGen Social research
3	1994	The prevalence of disability among adults, OPCS Surveys of Disability in Great Britain, Report 1	OPCS Social Survey Division, HMSO, London	UK		Survey included visually impaired people but did not accurately reflect level of tasks faced when using buildings.
4	1971	Handicapped and impaired in Great Britain, OPCS survey, 1971	Al Harris, Office of Population Censuses and Surveys, Social Surveys Division, HMSO, London	UK wide	13,451 households with at least one disabled person. 535 wheelchair users identified but no analysis of age, gender or cause of impairment	OPCS survey, stratified sample in 1971, of 249,259 households by post identified 13,451 households with at least one disabled person. All were interviewed between 1968-69

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
5	1971	Characteristics and requirements of wheelchair users	Elizabeth Platts, Dept of Ergonomics & Cybernetics, Univ of Technology, Loughborough	County of Leicestershire	Covered 448 wheelchair users A survey carried out by postal questionnaire and interview questionnaire in the county of Leicestershire between 1966 and 1968.	The survey provided information on abilities of wheelchair users and use of chairs including proportion used inside or outside of the home. It also looked at ability to move independently (only half of all respondees), stand with or without assistance and get out of wheelchair to transfer.
6	1968	Planning for the disabled: A survey of wheelchair users in Norwich	Selwyn Goldsmith (unpublished)	Norwich city	284 wheelchair users representing 1 per 410 of the total population. (35% male and 65% female) Visually impaired people also surveyed.	Looked at abilities and needs of wheelchair users in detail over 1966-67, including space requirements, posture, reach and strength.
<b>Ergonomics and anthropometric studies</b>						
7	2015	Metric Handbook: Planning and Design Data, 5th edition	Pamela Buxton, Editor Taylor and Francis			
8	2014	Cardio-respiratory and subjective strains sustained by paraplegic subjects, when travelling on a cross-slope in a manual wheelchair	B Pierret, K Desbrosses, J Paysant, JP Meyer, Inst National de Recherche et de Securite International Journal of Industrial Ergonomics 44 (2014) Elsevier	France	25 volunteers recruited from patients who were male, paraplegics, of working age (18-65) travelling independently in wheelchairs for over 6 months.	25 paraplegics achieved 8 x 300m propulsion tests combining four gradients (0%, 2%, 8% and 12%) and two speeds. Heart rate and oxygen uptake and subjective ratings made on completion of each test.
9	2014	Effects of ramp slope, ramp height and users' pushing force on performance, muscular activity and subjective ratings during wheelchair driving on a ramp	Chung Sik Kim, Donghun Lee, Sunghyuk Kwon, Min Chung, Dept of Industrial and Management Engineering, Pohang Univ of Science & Tech, International Journal of Industrial Ergonomics 44	Republic of Korea	30 participants, undergraduate and graduate students (11 males and 19 females) weak, medium and strong groups all using manual wheelchairs.	Set and examined two hypotheses about effects of ramp slopes (1:6, 1:8, 1:10, 1:12 and 1:14) by varying ramp height and pushing force of wheelchair users. Disabled people were excluded from study as it was assumed (from other studies) that there would be no difference in terms of upper extremities.

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
			(2014) 636-646, Elsevier			
10	2013	Energy cost of pushing a wheelchair on various gradients in young men.	M Horiuchi, S Muraki, Y Horiuchi, N Inada, D Abe, Dept of Physiology, Yamanashi Inst of Env Sciences	Japan	8 pairs were formed from 12 young men to minimise variations in body weight between pushing and assisted participants.	Study investigated effects of pushing a wheelchair on energy cost of walking on the level and +/- 5% gradients. All experiments were performed on a motor driven treadmill 4m in length and 2m in width. Results indicated fastest walking speed without increasing wheelchair occupants anxiety corresponds to Economical Speed (ES) when pushing a wheelchair with an occupant on all gradients.
11	2006	<i>Bodyspace, Anthropometry, Ergonomics and the Design of Work, 1998, revised 2006</i>	Stephen Pheasant and C Haslegrave, 3rd edition, Taylor & Francis	UK	Not specified. Based on 'series of surveys undertaken in UK and elsewhere'.	Data modelled on information obtained from an able-bodied population. Revised from earlier version
12	2005	A Survey of Occupied Wheelchairs and Scooters Conducted in 2005 – 3 <sup>rd</sup> in series and update of previous studies in 1991 and 1999	David Hitchcock, Michael Hussey, Stephen Burchill and Magdalen Galley for CEDS (Centre for Employment and Disadvantage Studies)  for DETR Mobility and Inclusion Unit of the Dept for Transport	UK	Centre for Employment and Disadvantage Studies (CEDS) collected data principally at 2 specialist exhibitions including the Mobility Roadshow, a specialist event for disabled children and 12 site visits to retail centres and schools around the UK. Surveyed 1356 occupants and devices, of which 48% females and 52% males; 82% adults and 18% children, 42% self-propelled and 13% Attendant-Propelled Wheelchairs, 27% Electric Wheelchairs and 18% Electric Scooter	Nine dimensions collected 1. Height of occupant 2. Length 3. Width 4. Wheelbase 5. Height of armrest 6. Distance between handles 7. Angle of front wheel to front 8. Angle of rear wheel to rear  Comparative data from 1999 was presented to highlight any trends. Children's wheelchairs were included for the first time. Also conducted a user needs survey involving 43 stakeholders.
13	2004	BS 8300 - the research behind the Standard: Space Requirements	Robert Feeney, International Workshop on Space Requirements for Wheeled	UK	300 participants - comprising 150 ambulant disabled people and 150 wheelchair users.	In 1996, DETR commissioned research to be undertaken by Robert Feeney Associates over a period of 4 years.

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
		ts for Wheeled Mobility Including: Annex C: <i>Space allowances for wheelchair manoeuvring and access to vehicles</i> Annex F: <i>Reach ranges for wheelchair users and ambulant disabled people</i>	Mobility, New York October 2003		For Annex C and Annex F: Sample sizes were 54 for manual wheelchairs, 27 electric wheelchairs, 6 attendant pushed chairs, 5 electric scooters,	Research was conducted in RFA's laboratory or centres using specially constructed rig.  It involved user trials and CAD analysis to establish space for common activities for wheelchair and scooter users.
14	2003	An Anthropometric Study of Manual and Powered Wheelchair users	Victor Paquet, David Feathers – International Journal of Industrial Ergonomics, Vol 33 Department of Industrial Engineering, University at Buffalo, State University of New York	Buffalo, NY, USA	121 adult s (75 males and 46 females) who used manual or powered wheelchairs as primary means of mobility, with various disabilities, recruited through local Independent Living Centre, Medical Centre and a Cerebral Palsy Association and local hospitals. 46% used powered wheelchairs.	Collection of wheelchair specifications, structural and functional anthropometric information for each participant. Part of a larger project to develop a database of the structural characteristics and functional abilities of wheelchair users.
15	2003	Determination of the normal and maximum reach measures of adult wheelchair users	Biman Das, John W Kozey International Journal of Industrial Ergonomics, Vol 33, issue 3 Dept of Industrial Engineering, Dalhousie Univ, Halifax	Nova Scotia, Canada	42 males and 20 females, all SCI (spinal cord related injuries) recruited through Canadian Paraplegic Association. Subjects had full range of motion in upper body.	Direct anthropometric measurement approach to the study of the normal reach area (NRA) and max reach envelope (MRE). A computerised photogrammetry system for measurements was designed, built and tested for use in this study. 16 dimensions measured. A photogrammetry methodology was used to obtain the measurements.
16	2002	The Anthropometrics of Disability - An International Workshop	Rehabilitation Engineering Research Centre on Universal Design - School of Architecture	USA and Canada	Not applicable	Conference of 40 invited experts from many fields to share information and ideas and to discuss the state of the art in this cross-disciplinary area of knowledge.

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
			and Planning University at Buffalo			
17	2002	<i>The Measure of Man and Woman: Human factors in design</i>	Henry Dreyfuss Associates, rev'd edition, John Wiley and Son	US	This was a US Dept of Defence funded survey of large sample originally of adult males in military service or suited for it.	
18	2000	A survey of occupied wheelchairs to determine overall dimensions and weight: 1999 Survey	R E Stait, J Stone and T A Savill,  Transport Research Laboratory Report 470  Report prepared for the Mobility and Inclusion Unit, DETR		745 people using wheelchair, 52% male, 10% under 16 years, 25% over 60 years.	TRL was commissioned by the DETR to carry out a survey of visitors to the 1999 Mobility Roadshow. Photographs were taken and weight recorded of participants
19	1999	Structural anthropometric measurements for wheelchair mobile adults	Das B. and Kozey J. Applied Ergonomics, Vol 30 issue 5 Department of Industrial Engineering, Dalhousie University,	Halifax, Nova Scotia, Canada	42 males and 20 females, all SCI (spinal cord related injuries) recruited through Canadian Paraplegic Association. Subjects had full range of motion in upper body.	Structural anthropometric measurements for males and females were determined for the wheelchair mobile adults. A photogrammetry methodology was used to obtain the measurements. The various subject demographics including age, level or type of dysfunction as well as the specified anthropometric dimensions of the wheelchair mobile subjects were identified.
20	1996	Determination of the workspace of wheelchair users	Emilia Jarosz, International Journal of Industrial Ergonomics, Vol 17 Inst of Industrial Design Warsaw	Poland	101 men and 69, women, aged 18-39, with impairments requiring use of wheelchairs tested.	Aim of study was to obtain anthropometric data of adult wheelchair users. 18 anthropometric characteristics were measured in the sitting position.
21	1994	The Staircase: Studies of Hazards, Falls and Safer Design	John Templer, MIT Press		Not specified	Also provides data on ramp widths, lengths and gradients.

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
22	1971	Four architectural movement studies for the wheelchair and ambulant disabled	Walter, Felix, Disabled Living Foundation, London 1971		Not specified	The study in 4 parts looked at 1 Circulation space 2 doorway manoeuvres 3 ramp gradients 4 disabled drivers and vehicles
23	1966	A study of the space requirements of wheelchair users	W F Floyd and others, Paraplegia, Vol 4, No 1, 1966	E & S Livingstone, Edinburgh, UK	127 subjects, but only 38 representative of wider paraplegic population, 36 were sports participants, 53 had not completed their rehabilitation.	Study worked with sample of paraplegics who were available during study at Stoke Mandeville hospital. There was a 5:2 ratio of men to women. Tetraplegics were not recorded.

## Sanitary provision

24	2014	Changing Places: the practical guide	Changing Places Consortium including CAE, Mencap, Pamis, Scottish Govt, Nottingham City Council, Dumfries and Galloway Council	UK		
25	2007-08	The Provision of Public Toilets, Twelfth Report of Session 2007-08	House of Commons Communities and Local Government (CLG)			Report, together with formal minutes, oral and written evidence Collated evidence regarding public toilets by a wide range of individuals and organisations representing disabled people.
26	2007	Inclusive Design of Public Toilets, 2007 Vol 1 Issue 4	The Toilet Paper, Summer 2001, Vol 1 Issue 4 VivaCity 2020, UCL, EPSRC	9 city centres across UK	550 participants surveyed to look at issue of 'away from home' toilets. Disabled people were not targeted, however. Case studies were researched in 9 city centres including Clerkenwell Westminster & Richmond in London, Manchester, Sheffield, Milton Keynes, Cambridge, Nottingham & Liverpool.	Personas were developed from detailed interviews conducted by telephone, in person and through focus groups. Emails and letters also received. 250 people contributed to 42 personas representing a range of ages, abilities, faith and gender. They also included the needs of those requiring space for adult changing, families, and those who require assistance from a carer, as well as those with hidden disabilities. .1

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
					Street surveys conducted in London, Manchester & Sheffield. 211 (87 men and 124 women) interviewed.	
27	2006	Our Toilets: Access Dilemmas in UK Public Toilets. Who Put the P in Policy? The reality of guidelines and legislation in the design of the accessible toilet	J Bichard, J Hanson and C Greed Paper presented at the Association of American Geographer Annual General Meeting, Chicago 2006	UK wide	Report on findings of the Inclusive Design of Away from Home Toilets in City Centres research from Sept 03 to Aug 06. The project was and fed into the Viva City 2020 research consortium.	
28	2005	ITAAL (Is There An Accessible Loo) survey of its membership	ITAAL	UK wide, ITAAL membership	ITAAL membership consisted predominately of wheelchair users and their caregivers),	ITAAL conducted a detailed survey of its membership The survey aim was to assess the provision of 'away from home' toilets and their suitability for use.
29	2004	The Good Loo Design Guide. Centre for Accessible Environments	Lacey A, RIBA Enterprises, CAE, London	UK		
30	1990	Sanitary provision for people with special needs	British Market Research Bureau Ltd for Dept of the Environment	Carlisle, Eastbourne, Hereford and Peterborough	Six categories of users surveyed: 174 wheelchair users, ambulant disabled, visually impaired, pushchair users (double and single), non-disabled people. 132 responses were received re toilets in public buildings and 84 for ones in public buildings	Survey data came from national population counts and in the four towns, and from interviews with adults visiting shopping centres, chosen at random. Four towns were chosen with good accessibility characteristics - Carlisle, Eastbourne, Hereford and Peterborough
External environments						

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
31	2002	Inclusive Mobility A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure	Philip Oxley, Cranfield Centre for Logistics & Transportation for the Mobility and Inclusion Unit, Dept for Transport		Wheelchair guidance based on comprehensive set of measurements of wheelchair visitors to the Mobility Roadshow (1999) the same research used for BS 8300:2001. Walking distances based on findings of studies conducted in 1980s and the London Area Travel Survey	
32	1992	Circular DU 1/91 <i>The use of dropped kerbs and tactile surfaces at pedestrian crossing points</i>	Dept of Transport		Informed by the Centre for Transport Studies at Cranfield University.	
33	1992	Tactile surfaces in the pedestrian environment : Experiments in Wolverhampton	Centre for Transport Studies at Cranfield University.		For pedestrian crossing site 36 people invited, of which 12 were familiar with site and 12 completely blind. For the guidance strip, 45 blind people took part. 25 wheelchair users and ambulant disabled also took part. To supplement tests, video recordings were made over 4 weeks of 301 pedestrians observed.	Follow up project to the 1988 research to establish if tactile surfaces were useful and the extent to which they may cause problems for other users
34	1991	Two page digest and guidance leaflet published.	Centre for Transport Studies at Cranfield University.		Interview survey of travel habits of 204 visually impaired people.	Major research project in 1988 to determine how many different surfaces could be distinguished by visually impaired people
35	1998	Guidance on use of tactile paving surfaces	Dept of Env, Transport & the Regions DETR + Scottish Exec		The advice in this document was compiled after full discussion and in full consultation with interested groups and it aims to provide consistency in the use of the tactile paving surfaces throughout the country. The research which led to the development of the tactile paving surfaces involved not only the target group, i.e. visually impaired people, but also others with a wide range of other disabilities including wheelchair users and people with walking difficulties	
36	1986	Circular Disability Unit, DU	Dept of Transport			

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
		1/86 <i>Textured footway surfaces at pedestrian crossings</i>				
<b>Sensory impairment studies</b>						
37	2010	The Colour, Light and Contrast Manual: Designing and Managing inclusive built environments	Keith Bright and Geoffrey Cook Univ of Reading, Wiley-Blackwell	UK	The design guidance is based on a number of research projects at the Research Group for Inclusive Environments at the University of Reading.	
38	1999	Project Crystal: Deafness, design and communication in the built environment	Keith Bright, Geoff Cook, John Harris; Indra Sinha, Alessandra Iantaffi, Rachael Luck Research Group for Inclusive Environments, University of Reading	UK	Pilot questionnaire sent to 54 participants and 28 returned completed surveys. Not clear if wider survey Group interviews with 36 deaf and hard of hearing people.	Project Crystal used questionnaires based on issues considered in Project Rainbow, focus groups and tests in a 'real world' environment to establish problems faced when using the built environment.
39	1997	Project Rainbow: A Project Funded under the LINK CMR Programme	Keith Bright Geoff Cook John Harris; Research Group for Inclusive Environments, University of Reading	UK	38 test participants;  676 returned questionnaires	Project Rainbow was a research project to provide colour and contrast design guidance for internal built environments  A thorough user needs analysis of visually impaired people was achieved through use of <ul style="list-style-type: none"> <li>• a questionnaire,</li> <li>• semi-structured interviews</li> <li>• laboratory tests</li> <li>• real-world tests</li> </ul>
40	2004	Colour, contrast and perception-Design guidance for internal built environments, 200	Keith Bright Geoff Cook John Harris; University of Reading	UK	The guidance here was based on the findings from Project Rainbow.	
41	2001	CIE Guide to Increasing	CIE International			

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
		Accessibility in Light and Lighting Vision Date and Design Considerations for Better Visibility and Lighting for Older People and People with Disabilities	Commission on Illumination			
<b>Guidance documents</b>						
42	1963	Designing for the Disabled , a Manual of Technical Information (1st edition)		S Goldsmith RIBA, London		Based on existing publications and research.
43	1967	Designing for the Disabled (2 <sup>nd</sup> edition)		S Goldsmith RIBA, London		Based on Norwich research (6)
44	1984	Designing for the Disabled 3rd edition, fully revised		Selwyn Goldsmith, RIBA Publications		No anthropometric study was made for the purposes of the book. Data was derived from <ul style="list-style-type: none"> <li>comprehensive study made by Dreyfuss (1960, US)</li> <li>for elderly people from more limited study by Roberts</li> <li>data on wheelchair users drawn from study by Floyd and others, 1966, Edinburgh</li> <li>Dept of Health's Health Service Design Note provided supporting evidence.</li> </ul>
45	2000	Universal Design: A Manual of Practical Guidance for Architects		Selwyn Goldsmith with PRP Architects Architectural Press		
46	2001	Inclusive Design: Designing and Developing Accessible Environments		Rob Imrie and Peter Hall, Spon Press, London and New York		This book is primarily based on information generated from an Economic and Social Research Council (ESRC)-funded project (grant number R000236997) entitled 'Commercial property development and providing for disabled people's building needs in Sweden and the United Kingdom'. The research involved postal surveys of architects and chartered surveyors in Sweden and the UK, and in-depth interviews with property developers, architects, project managers, surveyors and other property professionals in both countries. This was supplemented by case work of development practices and projects in the UK and Sweden.

Ref No.	Year	Name of Reference	Author	Geographic Coverage	Robustness Measures	
					Sample size/ Data source/s	Methodology
						The book primarily reports on UK experiences in relation to commercial property, such as office, retailing, hotel and leisure developments
47	2002	Technical standards for places of entertainment, 2002, ISBN 1 90403 105 6			District Surveyors Association (DSA) and Association of British Theatre Technicians (ABTT)	
48	2004	<i>Buildings for all to use- improving the accessibility of public buildings and environments</i>			Bright, Flanagan, Embleton, Selbekk and Cook CIRIA	
49		<i>Proprietary nosings for non-domestic stairs.</i> BRE Information paper IP 15/03			Roys, M and Wright, M, . Watford: Building Research Establishment	Provides basis of information on step nosings for BS 8300:2009 and BS 5395-1:2010
50	2010	Stairs, Ramps and Escalators: Inclusive Design Guidance			Ann Alderson, RIBA Publishing & CAE	
51	2010	<i>Accessible Sports Facilities: Design Guidance Note</i>			Brian Towers, Sport England	
52	2012	Building for Everyone: A universal design approach			Centre for Excellence in Universal Design, National Disability Authority, Ireland	
53	2012	<i>Designing for Accessibility</i>			CAE, RIBA Enterprises	
54	2013	Inclusive Design Standards			London Legacy Development Corporation	Olympic Park 2012 and surrounding area

Building Regulations and British Standards						
55	1961	American National Standards Specifications for making buildings and facilities accessible to, and usable by, the physically handicapped (USA Standard A117.1-1967)		American National Standards Institution, New York		Based on Tim Nugent's research study at Univ of Illinois, among wheelchair users under 45 years. Set mould for access standards worldwide, culminating in the Americans with Disabilities Act of 1990.
56	1967	CP 96: Part 1: 1967 <i>Access for the disabled to buildings</i> , Part 1 General Recommendations, British Standard Code of Practice		BSI, London		Based on research carried out by 5 <sup>th</sup> year architecture students with a full size test rig at a rehabilitation in Oxford using adjustable walls and grabrail positions.
57	1968	Circular 3/68 Design of Public		Ministry of Housing and Welsh Office		Only recommended the CP 96 toilet and did not touch on ambulant disabled facilities

		Conveniences with Facilities for the Disabled		
58	1978	BS 5619: Design of Housing for convenience of Disabled People	British Standards Institute	
59	1979	BS 5810:1979 Code of Practice For <i>Access For the Disabled to Buildings</i> . HMSO.	British Standards Institute (1979)	11 page standard which included the revised larger unisex toilet that was based on further tests with full size model rig, led by Dr Glyn Stanton, Ergonomist to the Dept of Health. Findings led to new WC compartment of size 2000 x1500mm in use until 2004. Overall considered an inadequate set of design standards by Goldsmith. Only dealt with design standards and did not cover application conditions.
60	1988	BS 5588 Part 8: 1988 Fire precautions in the design and construction of buildings: Code of practice for means of escape for disabled people	British Standards Institute	Superseded by BS 9999:1999
61	1985	ISO 7193 - Wheelchairs: maximum overall dimensions	ISO Technical committee TC/173	
62	1985	Building Regulations Part T: Schedule 2: <i>Provision of Facilities for Disabled People</i>		Came in as fourth amendment to 1975 Regulations. Applied to a) offices and shops, b) only single storey factories, schools and public buildings. Enforcement relied on BS 5810. For first time access provision to buildings would be regulated under legislation.
63	1987	Building Regulations 1985, Approved Document Part M: <i>Access for Disabled People</i>	Dept of Environment & Welsh Office, HMSO	Based on guidance from BS 5810. Applied to all new multi-storey buildings. Used 1979 unisex toilet standard. Requirement was that one unisex toilet in a building was sufficient.
64	1989	BSI Published Document PD 6523:1989 Information on access to and movement within and around buildings and on certain facilities for disabled people	Technical Committee responsible for BS 5810 and BS 5619	Analysis and 5 yearly review of BS Codes of practice, based on review of other country and international (ISO) standards and publications and research concerned with access to and use of buildings. Considers possible courses of action with regard to any future British Standard.
65	1992	Building Regulations 1991, Part M Approved Document 1992 edition <i>Access and facilities for disabled people</i>  Revised 1999	Dept of Environment & Welsh Office, HMSO	Recommended single unisex toilet for visitors and customers to public buildings with proviso that multi storey employment buildings, wheelchair users should not have to travel more than one floor to reach a wc. Now covered people with hearing and visual impairments

66	2001	BS 8300:2001 <i>Design of buildings and their approaches to meet the needs of disabled people. Code of practice</i>	British Standards Institution	This is a comprehensive replacement of previous standards in place for nearly 30 years, and a validated research based Standard. BS8300 has become the benchmark for what is understood to be the 'disabled toilet' and was informed by user research commissioned by the Department of Environment Transport and the Regions (DETR) that took place from 1996-2000 (Feeney, 2003).
67	2003	BS EN 81-70:2003 Safety rules for the construction and installation of lifts. Accessibility for persons with disability AMD 14675 2003, AMD 14751 2003	British Standards Institute	
68	2003	BS EN 81-72:2003: Safety rules for the construction and installation of lifts. Part 72 Particular application for passengers and goods passenger lifts- Firefighters lifts	British Standards Institute	
69	2003	BS EN 81-41, Safety rules for the construction and installation of lifts- Special lifts for transport of persons and goods- Part 41: vertical lifting platforms intended for use by persons with impaired mobility	British Standards Institute	
70	2004	Building Regulations Approved Document M – <i>Access to and use of Buildings,</i>	ODPM, TSO	First change of unisex toilet since 1979 (25 years earlier). Size increased to 2200 x 1500mm.
71	2008	ISO 7176-5: 2008 Wheelchairs: determination of dimensions, mass and manoeuvring space	ISO Technical committee TC/173	
72	2009	BS 8300:2009 + A1:2010 Design of buildings and their approaches to meet the needs of disabled people. Code of practice	British Standards Institution	Based on Ergonomic research commissioned by DETR in 1999.
73	2010	BS 5395-1:2010 Stairs- Part1: Code	British Standards Institution	Guidance for step nosings provided that differs from Part M and provides a range from 50-

		of practice for the design of stairs with straight flights and winders		65mm on the tread and 30-55mm on the riser and should have an LRV difference from the rest of the step by 30 points.
74	2010	BS 5395-1:2010 Detailed information on assessing slip resistance and dry and wet slip resistance values (SRV) for common materials	British Standards Institution	
75	2010	<i>DRAFT International Standard BS ISO 21542 Building Construction- Accessibility and usability of the built environment</i>	British Standards Institute	

## Key legislation and events

Ref	Year	Event/ Legislation	Country	Importance
	1965	First unisex accessible toilet constructed in Castle Hill, Norwich (later demolished for Castle Mall)	UK	
	1968	Architectural Barriers Act	USA	Led to development of US building regulations for accessibility, conforming to standards of 1961 A117.1
	1969	Establishment of Centre on the Environment for the Handicapped, which became Centre for Accessible Environments.	UK	CEH hosted the Access Committee of England which promoted and led to the inclusion of access in the Building Regulations.
	1970	Chronically Sick and Disabled Persons' Act , 1970,	UK	Section 4 mandated access for disabled people to public buildings. Section 5 required local authorities to make provision for disabled people in new public toilets
	1981	Disabled Person's Act, 1981, Section 6	UK	Set up 'statutory body' which was a subcommittee of BRAC with ineffective powers to oversee accessibility compliance, eventually led to enforcement instrument being building regulations.
	1984	Setting up of Access Committee for England as subcommittee of CEH	UK	Applied pressure for access to be added to national building regulations A-L (introduced in 1976) but were too late to be included in the Building Regulations 1985
	1990	Americans With Disabilities Act, 1990	USA	
	1995	Disability Discrimination Act, 1995	UK	
	2010	Equality Act, 2010	UK	

## Appendix II

### Initial Screening of Part M2, Volume 1

The following table presents a summary of the analysis of the current sections of Part M2: Approved Document M (Access to and use of buildings) - Volume 1: Dwellings. This table shows screening analysis done for prescriptiveness, implementation and obsolescence. The Literature Reference number indicates which references, presented in Appendix I, have evidence or information related to each particular section. This evidence has been categorised according to the research questions and whether they provide valuable technical information or have been considered as established guidance.

Section	Clause No.	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference Number	Research Phase Questions
Section 1A: Approach to the dwelling	1.6	Approach routes - General	✓	✗	✗	n/a	●
	1.7	Approach routes - External ramps forming part of an approach route	✓	✗	✗	n/a	●
	1.8	Approach routes - External stepped approach	✓	✗	✗	n/a	●
	1.9	Communal entrances	✓	✗	✗	n/a	●
	1.11	Communal lifts and stairs - communal passenger lifts	✓	✗	✗	n/a	●
	1.12	Communal lifts and stairs - communal stairs	✓	✗	✗	n/a	●
Section 1B: Private entrances and spaces within the dwelling	1.14	Private entrances	✓	✗	✗	n/a	●
	1.15	Circulation areas and internal doorways - door and hall widths	✓	✗	✗	n/a	●
	1.17	Sanitary facilities - WC facilities	✓	✗	✗	n/a	●
	1.18	Services and controls	✓	✗	✗	n/a	●
Section 2A: Approach to the dwelling	2.6	Approach routes - general	✓	✓	✗	n/a	●
	2.7	Approach routes - general	✓	✓	✗	n/a	●
	2.8	Approach routes - general	✓	✗	✗	n/a	●
	2.9	Approach routes - general	✓	✗	✗	16	●
	2.10	Approach routes - external and internal ramps forming part of an approach route	✓	✗	✗	47	●
						16	●
	2.11	Approach routes - external steps forming part of an additional route	✓	✗	✗	16	●
	2.12	Car parking and drop-off - parking space	✓	✗	✗	16	●
	2.13	Car parking and drop-off - drop-off point	✓	✗	✗	16	●
2.14	Communal entrances - principal communal entrance	✓	✗	✗	16	●	

	2.15	Communal entrances - other communal doors	✓	x	x	n/a	●
	2.16	Communal lifts and stairs - communal lifts	✓	x	x	n/a	●
	2.17	Communal lifts and stairs - communal stairs	✓	x	x	n/a	●
Section 2B: Private entrances and spaces within the dwelling	2.20	Private entrances - principal private entrance and alternative entrance	✓	x	x	<b>37,59,84</b>	●
	2.21	Private entrances - other external doors	✓	x	x	n/a	●
	2.22	Circulation areas and internal doorways - door and hall widths	✓	x	x	16	●
						<b>37,59,84</b>	●
	2.23	Circulation areas and internal doorways - private stairs and changes of level within the dwelling	✓	x	x	16	●
						<b>84</b>	●
	2.24	Habitable rooms - living, kitchen and eating areas	✓	x	x	n/a	●
	2.25	Habitable rooms - bedrooms	✓	x	x	55	●
						47	●
						16	●
						<b>37,59,84</b>	●
	2.26	Sanitary facilities - general provisions	✓	x	x	<b>84</b>	●
2.27	Sanitary facilities - WC facilities on the entrance storey	✓	✓	x	47	●	
					<b>37,59</b>	●	
2.28	Sanitary facilities - WC facilities on the entrance storey	✓	x	x	n/a	●	
2.29	Sanitary facilities - bathrooms	✓	x	x	<b>47</b>	●	
2.30	Services and controls	✓	✓	x	n/a	●	
	3.8	Approach routes - general provisions	✓	x	x	<b>30</b>	●
						<b>15,91</b>	●
						<b>30</b>	●

Section 3A: Approach to the dwelling	3.9	Approach routes - general provisions	✓	x	x	15,91	●
						42	●
	3.10	Approach routes - external and internal ramps forming part of an approach route	✓	✓	x	30,92	●
						15,91	●
	3.11	Approach routes - external steps forming part of an additional route	✓	x	x	30	●
						15,91	●
	3.12	Car parking and drop-off - parking space	✓	x	x	30	●
						76	●
						15,91	●
	3.13	Car parking and drop-off - drop-off point	✓	x	x	42	●
						30	●
	3.14	Communal entrances - principal communal entrance	✓	x	x	15,91	●
						30	●
	3.15	Communal entrances - other communal doors	✓	x	x	76	●
						15,91	●
	3.16	Communal lifts and stairs - communal lifts	✓	x	✓	30	●
						15,91	●
3.17	Communal lifts and stairs - communal stairs	✓	x	x	42	●	
					30	●	
3.22	Private entrances - principal private entrance	✓	x	x	15,91	●	
					30	●	
3.23	Private entrances - other external doors	✓	x	x	42	●	
					30	●	
3.24	Circulation areas, internal doorways	✓	✓	x	91	●	
					30,92	●	
					3,53,91	●	

Section 3B: Private entrances and spaces within, and connected to the dwelling		and storage - hall and door widths				39,42	
						63	
	3.25	Circulation areas, internal doorways and storage - wheelchair storage and transfer space	✓	✗	✓	30,92	
						53,91	
	3.26	Circulation areas, internal doorways and storage - general storage space	✓	✓	✓	30,58,92	
						91	
						39	
						63,85	
	3.27	Circulation areas, internal doorways and storage - through-floor lifting device provision	✓	✓	✗	30,92	
						91	
	3.28	Circulation areas, internal doorways and storage - through-floor lifting device provision	✓	✓	✗	30	
						91	
	3.29	Circulation areas, internal doorways and storage - through-floor lifting device provision	✓	✓	✗	30,92	
						91	
	3.30	Circulation areas, internal doorways and storage - private stairs and changes of levels within the dwelling	✓	✗	✗	30	
						91	
3.31	Habitable rooms - living areas	✓	✓	✗	30,58,92		
					91		
					42		
3.32	Habitable rooms - kitchen and eating areas	✓	✗	✗	91		
					42		
3.33	Habitable rooms - kitchen and eating areas (wheelchair adaptable)	✓	✗	✗	30		
3.34		✓	✓	✗	30,92		

	Habitable rooms - kitchen and eating areas (wheelchair accessible)				91	●
					42	●
3.35	Habitable rooms - bedrooms	✓	✓	✗	30,54,92	●
					91	●
					42	●
					39,63	●
3.36	Sanitary facilities - general provisions	✓	✓	✗	30,92	●
					91	●
3.37	Sanitary facilities - WC facilities on the entrance storey	✓	✓	✗	30	●
					92	●
					91	●
3.38	Sanitary facilities - WC facilities on the entrance storey (wheelchair adaptable)	✓	✗	✗	30	●
3.39	Sanitary facilities - WC facilities on the entrance storey (wheelchair accessible)	✓	✓	✗	30,92	●
					84,91	●
3.40	Sanitary facilities - WC facilities on the entrance storey	✓	✗	✗	30,92	●
					91	●
3.41	Sanitary facilities - bathroom facilities	✓	✓	✗	30,92	●
					91	●
3.42	Sanitary facilities - bathroom facilities	✓	✗	✗	30	●
3.43	Sanitary facilities - bathroom facilities	✓	✓	✗	30,92	●
					91	●
3.44	Services and controls	✓	✗	✗	30,92	●
					91	●
					39,63	●
3.45	Private outdoor space	✓	✗	✗	30,92	●



# Appendix III

## Initial Screening of Part M2, Volume 2

The following table presents a summary of the analysis of the current sections of Part M2: Approved Document M (Access to and use of buildings) - Volume 2: Buildings other than dwellings. This table shows screening analysis done for prescriptiveness, implementation and obsolescence. The Literature Reference number indicates which references, presented in Appendix I, have evidence or information related to each particular section. This evidence has been categorised according to the research questions and whether they provide valuable technical information or have been considered as established guidance.

Section	Clause No	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference No.	Research Phase Questions
Section 0 - General Guidance	0.13	Car parking and setting down	x	x	✓	n/a	●
	0.14	What requirements apply: i.e. communication aids in auditoria, meeting rooms, reception areas, ticket offices, info points	x	x	✓	n/a	●
	0.26	Contrast visually (30 points LRV difference)	✓	x	x	26	●
	0.26	Level (1:60)	✓	x	x	n/a	●
	0.26	Point of access - vehicle	x	x	✓	n/a	●
	0.26	Steeply sloping plot (over 1:15 gradient)	✓	x	x	31	●
Section 1 - Access to buildings other than dwellings	1.1	Objectives	x	x	✓	n/a	●
		Level approach from the boundary of the site and car parking - Design considerations	x	x	✓	n/a	●
	1.8	Over 1:20 gradient requires ramped approach	✓	x	x	50	●
	1.11	Path widths of 1200 - 1800mm recommended	✓	x	x	15	●
	1.13	Provisions for approach from parking space or site boundary to entrance	x	x	✓	n/a	●
	a.	Widths min 1500mm	✓	x	x	n/a	●
	b.	Path widths of 1200 - 1800mm recommended	✓	x	x	n/a	●

Section	Clause No	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference No.	Research Phase Questions
	c	Gradient max 1:60 and if less than 1:20 with landings every 500mm rise	✓	✗	✗	n/a	●
	d.	Firm, durable, slip resistant, level surface max 3mm under 1m straight edge	✓	✗	✗	n/a	●
	f.	Joints level diff max 5mm if flush, recessed max 5mm and 10mm wide if filled, and max 5mm wide unfilled	✓	✗	✗	n/a	●
	h.	Separate vehicular and pedestrian routes and guidance for uncontrolled crossing	✓	✗	✓	43	●
	On-site car parking and setting down - Design considerations		✗	✗	✓	n/a	●
	1.18	Provisions					
	b.	Dimensions of bay	✓	✗	✗	15	●
	d.	Accessible ticket machines	✓	✗	✗	15	●
	1.19	Ramped approach where gradient over 1:20	✓	✗	✗	31	●
	1.26	Ramped access - Provisions					
	b.	Gradients in accordance with table	✓	✗	✗	36	●
	c.	No flight over 10m, or rise over 500mm	✓	✗	✗	50	●
	d.	Alternative access where rise over 2m	✓	✗	✗	n/a	●
	e.	Widths min 1500mm	✓	✗	✗	n/a	●
	h.	Landings 1.2m clear of obstructions	✓	✗	✗	15	●
	i.	Int landings 1.5m long	✓	✗	✗	87	●
	n.	Steps where rise is over 300mm	✓	✗	✗	n/a	●
	1.33	Stepped access - Provisions					
	c.	Corduroy hazard warnings at top and bottom landing	✓	✗	✗	43	●
✓			✗	✗	24	●	
✓			✗	✗	93	●	

Section	Clause No	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference No.	Research Phase Questions
			✓	✗	✗	79	●
			✓	✗	✗	25	●
	d.	Warning at intermediate landings where side access	✓	✗	✗	n/a	●
	f.	Flight widths 1.2m	✓	✗	✗	n/a	●
	h.	Max 12 risers in flight for going under 350mm and max 18 risers for going over 350mm	✓	✗	✗	n/a	●
	i.	Nosings highlighted 55mm on tread and riser	✓	✓	✗	83	●
	j.	Projection of step nosing max 25mm	✓	✗	✗	n/a	●
	l.	Rise between 150-170mm	✓	✗	✗	87	●
	m.	Going between 280-425mm	✓	✗	✗	n/a	●
	p.	Additional handrails to divide stairs	✓	✓	✗	n/a	●
	1.37	Handrails to external stepped and ramped access - Provisions					
	a.	Height between 900-1000mm from pitchline and 900- 1100mm at landing	✓	✗	✗	n/a	●
	b.	Lower handrail height 600mm where provided	✓	✗	✗	n/a	●
	d.	Extends 300mm beyond top and bottom of flights	✓	✗	✗	n/a	●
	h.	Profile circular dia 32-50mm, or 50 x 39mm etc	✓	✗	✗	n/a	●
	i.	Projects max 100mm into width of stair	✓	✗	✗	n/a	●
	j.	Clearance 60-75mm between handrail and wall	✓	✗	✗	n/a	●
	k.	Clearance min 50mm between u/side and cranked support	✓	✗	✗	n/a	●
	l.	Inner face max 50mm beyond surface width	✓	✗	✗	n/a	●
Section 2 - Access into buildings other than dwellings	2.7	Accessible entrances - Provisions					
	a.	Clearly signposted incorporating Int Symbol of Access	✗	✗	✓	n/a	●
	d.	Level landing 1500 x 1500	✓	✗	✗	15	●

Section	Clause No	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference No.	Research Phase Questions	
	e.	Level threshold max 15mm	✓	✗	✗	53	●	
	f.	Accessible door entry system	✓	✗	✗	52	●	
	2.13	Doors to accessible entrances - Provisions						
	a.	Door opening forces	✓	✓	✗	n/a	●	
	b.	Effective clear widths	✓	✗	✗	n/a	●	
	2.17	Manually operated non-powered entrance doors - Provisions						
	a.	Opening force	✓	✓	✗	n/a	●	
	b.	Space at leading edge min 300mm	✓	✗	✗	n/a	●	
	2.20	Powered entrance doors - Design considerations: Revolving doors	✓	✓	✗	n/a	●	
	2.21	Powered entrance doors - Provisions						
	g.	Manual controls location	✓	✗	✗	15	●	
	2.29	Entrance lobbies - Provisions						
	a.	Length with single swing doors	✓	✗	✗	15	●	
	b.	Length with double swing doors	✓	✗	✗	n/a	●	
	c.	Width	✓	✗	✗	n/a	●	
	h.	Projections over 100mm protected by guard rail	✓	✗	✗	n/a	●	
Section 3 - Horizontal and vertical circulation in buildings other than dwellings	3.6	Entrance hall and reception area - Provisions						
	d.	Clear manoeuvring space	✓	✗	✗	n/a	●	
	e.	Height of desk	✓	✗	✗	15	●	
	f.	Hearing enhancement	✓	✗	✗	n/a	●	
	g.	Slip resistant floor	✓	✗	✗	11	●	
	3.10	Internal doors - Provisions						
	a.	Opening force	✓	✗	✗	n/a	●	

Section	Clause No	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference No.	Research Phase Questions
	b.	Effective clear widths	✓	✗	✗	n/a	●
	c.	Leading edge space	✓	✗	✗	n/a	●
	h.	Suitable vision panels	✓	✗	✗	n/a	●
	j.	High contrast strip at top or both sides	✓	✗	✗	n/a	●
	k.	Fire doors in corridors held open with electro-magnetic device	✓	✗	✗	n/a	●
	l.	Fire doors to rooms fitted with swing-free devices	✓	✗	✗	n/a	●
	m.	Low energy swing doors capable of being operated in manual, powered or power assisted mode	✓	✗	✗	n/a	●
	3.14	Corridors and passageways - Provisions					
	a.	Visually contrasting guardrail to projecting items	✓	✗	✗	n/a	●
	b.	Width min 1200mm	✓	✗	✗	n/a	●
	c.	Passing places	✓	✗	✗	n/a	●
	d.	Level or ramp if over 1:20	✓	✗	✗	n/a	●
	e.	Where slope between 1:20 to 1:60, level rest areas	✓	✗	✗	n/a	●
	f.	Sloping section full width of corridor	✓	✗	✗	n/a	●
	g.	Door do not project into corridor	✓	✗	✗	n/a	●
	h.	Toilet door projects only where corridor is min 1800mm wide	✓	✗	✗	n/a	●
	3.16	Internal lobbies - Provisions					
	a.	Length with single swing doors	✓	✗	✗	n/a	●
	b.	Length with double swing doors	✓	✗	✗	n/a	●
	c.	Width min 1200mm for single and 1800mm for double doors	✓	✗	✗	n/a	●
	d.	Glazing not reflective	✓	✗	✗	n/a	●
	e.	Surfaces not trip hazards	✓	✗	✗	n/a	●

Section	Clause No	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference No.	Research Phase Questions
	f.	Projections over 100mm protected by guard rail	✓	✗	✗	n/a	●
	3.28	General requirements for lifting devices - Provisions					
	a.	Landing space	✓	✗	✗	n/a	●
	b.	Location of call buttons	✓	✗	✗	n/a	●
	3.34	Passenger lifts - Provisions					
	a.	Conforming to Lift Regulations	✓	✗	✗	18	●
	b.	Accessible from rest of storey	✓	✗	✗	19	●
	c.	Min dims 1400 x 1100mm	✓	✗	✗	n/a	●
	e.	Auto sliding doors min width 800mm	✓	✗	✗	n/a	●
	g.	Car control locations	✓	✗	✗	n/a	●
	h.	Landing call button locations	✓	✗	✗	n/a	●
	3.35	Lifting platforms - Design considerations	✓	✗	✗	17	●
	3.38	Lifting platforms - Design considerations	✗	✗	✓	n/a	●
	3.39	Lifting platforms - Design considerations	✗	✗	✓	n/a	●
	3.43	Lifting platforms - Provisions					
	b.	Vertical travel distance	✓	✗	✗	n/a	●
	c.	Rated max speed 0.15m/s	✓	✗	✗	n/a	●
	d.	Location of controls	✓	✗	✗	n/a	●
	e.	Continuous pressure controls provided	✗	✗	✓	n/a	●
	f.	Location of call buttons	✓	✗	✗	n/a	●
	g.	Dims of platform	✓	✗	✗	n/a	●
	h.	Width of doors	✓	✗	✗	n/a	●
<b>Section 4 - Facilities in</b>	4.5	Audience and spectator facilities - Design considerations	✓	✗	✗	80	●

Section	Clause No	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference No.	Research Phase Questions
buildings other than dwellings	4.9	Audience and spectator facilities - Design considerations - <i>Lecture/conference facilities</i> Hearing enhancement and sight lines	✓	✗	✗	13	●
	4.12	Audience and spectator facilities - Provisions					
	c.	Min no. of wheelchair spaces to Table 3	✓	✗	✗	n/a	●
	g.	Parked wheelchair space 900 x 1400mm	✓	✗	✗	n/a	●
	4.16	Refreshments facilities - Provisions					
	b.	Section of serving counter is at max 850mm height	✓	✗	✗	n/a	●
	c.	Worktop for shared refreshment facility at 850mm height with clear space under and delivery of water complies with 5.4 (a) and (b)	✓	✗	✗	n/a	●
	4.24	Sleeping accommodation - Provisions					
	d.	window controls 800-1000mm height	✓	✗	✗	n/a	●
	f.	Room numbers in embossed characters	✓	✗	✗	n/a	●
	j.	Door complies with opening force and 300mm clear space at leading edge	✓	✗	✗	n/a	●
	l.	Size and layout complies with Diagram 17	✓	✗	✗	n/a	●
	o	Balcony has suitable door, level threshold and no transoms between 900-1200mm	✓	✗	✗	n/a	●
	4.30	Switches, outlets and controls - Provisions					
	a.	Socket outlets between 400-1000mm height	✓	✗	✗	n/a	●
	b.	switches between 400-1200mm height	✓	✗	✗	n/a	●
	c.	switches with precise hand control at 750-1200mm hg	✓	✗	✗	n/a	●
	e.	Pull cord arrangements	✓	✗	✗	n/a	●
	f.	controls needing close vision at 1200-1400mm heights	✓	✗	✗	n/a	●

Section	Clause No	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference No.	Research Phase Questions	
	g.	Socket outlets 350mm from corners	✓	✗	✗	n/a	●	
	h.	Light switches have large push pads and 900-1100mm heights	✓	✗	✗	n/a	●	
	i.	Lighting pull cords set 900-1100mm heights with 50 diameter bangle	✓	✗	✗	n/a	●	
	4.35	Aids to communication - Design considerations	✓	✗	✗	n/a	●	
	4.36	Aids to communication - Provisions						
	e.	Text phones for deaf and hard of hearing people	✗	✗	✓	n/a	●	
<b>Section 5 - Sanitary accommodation in buildings other than dwellings</b>	5.4	Sanitary accommodation generally - Provisions						
	d	WC compartment doors fitted with light action privacy bolts with low operating force	✓	✗	✗	n/a	●	
	5.6	Provision of toilet accommodation - Design considerations: <i>Changing Places Toilets</i>	✓	✗	✗	23	●	
	5.7	Provision of toilet accommodation - Provisions						
	d	Where 4+ cubicles, one should be enlarged	✗	✓	✗	n/a	●	
	5.9	Wheelchair-accessible unisex toilets - Design considerations	✓	✗	✗	31	●	
	5.10	Wheelchair-accessible unisex toilets - Provisions	✓	✗	✗	75	●	
	a	One located close to entrance/ waiting area	✗	✓	✗	n/a	●	
	c	Location similar on floors and alternative right and left hand transfers	✗	✗	✓	n/a	●	
	e	When only toilet facility, width is increased to 2m to include standing height basin	✗	✓	✗	n/a	●	
	h	Travel distance 40m	✓	✗	✗	65	●	
	i	Size and arrangement of fittings to Diagram 18	✓	✗	✗	66	●	
	j	Rules on drop down rail	✓	✗	✗	70	●	
	k	Rules on drop down rail	✓	✗	✗	60	●	

Section	Clause No	Guidance	Highly Prescriptive (Does the evidence exist?)	Challenging to implement (Likely to be challenged)	Risk of Obsolescence (Is this guidance still relevant to today's needs?)	Literature Reference No.	Research Phase Questions
	l	Arrangement of fittings complies with Diagram 19 and 20	✓	✗	✗	n/a	●
	r	Cisterns flush handles to transfer side	✗	✗	✓	n/a	●
	5.14	Toilets in separate-sex washrooms - Provisions					
	b	Ambulant cubicle dimensions	✓	✗	✗	n/a	●
	d	enlarged cubicle 1200mm wide with grab rails	✓	✓	✗	n/a	●
	5.18	Wheelchair-accessible changing and shower facilities - Provisions					
	h	Changing room fittings to Diagram 22	✓	✗	✗	n/a	●
	k	Shower room fittings to Diagram 23	✓	✗	✗	n/a	●
	p	Shower terminal meets regulations	✓	✗	✗	n/a	●
	q	Shower controls 750-1000mm high	✓	✗	✗	n/a	●
	5.21	Wheelchair-accessible bathrooms - Provisions					
	a	Arrangement of fittings to Diagrams 25 and 26	✓	✗	✗	n/a	●
	d	Bath has transfer seat 400mm deep	✓	✗	✗	n/a	●

# Appendix IV

## Social Engagement - Research Material

Reviews collected from Trip Advisor ([www.tripadvisor.com](http://www.tripadvisor.com)) & Euan's Guide ([www.euansguide.com](http://www.euansguide.com))

### 1. Hotels

#### 1.1. Hotels- Lack of provision of disabled rooms

*"If only they had warned us..."*  
Reviewed 27 March 2015

We had booked two rooms (at reasonable rates) some months in advance, we were very impressed with the location and the actual hotel itself, very new & modern and spotlessly clean - it would have had an 'excellent' rating but there were a couple of issues... When we got to our rooms (which were ready) we immediately noticed the scaffolding directly outside our window...no problem at all, but the next morning, we opened the curtains to several workmen standing there - one of who waved at us - not good when in PJs & about to have a shower!! We felt that as four women with various things planned which involved getting changed at various times during our stay, this was unacceptable! We reported our concerns to one of the reception staff, who frankly was argumentative! She stated there is 'something on the website' - we checked this & it mentioned 'building work in the local area' - a slight difference! The manager was lovely and gave us the option of moving room or having a refund on one night of our stay - as one of our party is **disabled**, we elected for the refund & kept the curtains closed for the rest of our stay....We did wonder why, if there were free rooms, we had been placed in these? Our other gripe, was that we had been to the O2 for a concert & returned at approximately 11.40pm to find the bar locked up which we weren't expecting - we have stayed in several , all over the country & have never known this before. On the plus side, apart from the one stropky receptionist, the other staff were lovely, the breakfast was good & they were the comfiest beds we have have ever slept in! The rooms we were in were 116 & 118, so if you do get one of them, be prepared for an audience!

Stayed March 2015, travelled with friends

Value Cleanliness Service

Helpful?  2 Thank Howesthat Report

See all 15 reviews by Howesthat for London

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC

*"Disappointed"*  
Reviewed 28 September 2015

We always stay at hotels and we stayed at this one as it was a new build. But we were disappointed. The reception was two small desks tucked away in the corner of the reception area. rooms are getting smaller, which is disappointing. We had a bath with a very high side which was not easy to get in and out of and a not very good shower above. We would have expected a nice new shower unit. We booked a **disabled** room for my 90 year old mother. We telephoned twice to confirm this, a week before and on the day. On arrival my mother was given an ordinary room!! On the plus side we had a fantastic evening meal in the restaurant and the staff were very good.

Stayed September 2015, travelled as a couple

Sleep Quality Cleanliness Service

Less ▲

Helpful?  2 Thank SueJim126 Report

See all 10 reviews by SueJim126 for London

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC

### Information from website of same hotel

#### Disabled access

What facilities are provided for customers with disabilities?

Most have specially-adapted rooms allowing easier access for customers with disabilities.

If there is no specially-adapted room available at the hotel of your choice, we will be happy to offer you alternative accommodation at a nearby . If you have difficulty walking, but do not need a specially-adapted room, please feel free to request a room near reception on the ground floor for easy access.

View our [Disabled Access Statement](#).

#### Wet rooms

Some of our hotels have adapted bathrooms with walk-in shower facilities; however it is best to check with the hotel directly before booking.

#### How do I call for assistance?

There are emergency assistance alarms located by the bed and in the bathroom.

## 1.2. Hotels- Lack of proper facilities- Toilets, restaurants etc.

*"It went from bad to worse"*

●○○○○○ Reviewed 23 October 2014

I arrived at about 3pm and, after 15 minutes they couldn't allocate me a room (I had booked weeks before) so I went away and returned at about 6pm. Still after 15 minutes they could not allocate a room until I complained to the manager and, surprise, a room was instantly available. The room was spacious but had the window obscured by a polythene sheet - so no view. The wheelchair-accessible toilet had all the usual problems of : difficult to transfer onto the toilet, hard-to-reach sink, towels miles from the sink, alarm pull-cord in the wrong place. The tables in the restaurant were difficult for my wheelchair and most items on the "buffet" breakfast were placed too high to reach. Rubbish.

**Room Tip:** Don't stay there.

[See more room tips](#)

Stayed October 2014, travelled solo

●○○○○○ Value

●●●●● Cleanliness

●○○○○○ Service

[Less ▲](#)

Helpful?

 3 [Thank Barry N](#)

 [Report](#)

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC

**General Manager**  
to this review, 30 October 2014

responded

Dear Sir,

I'm sorry to hear your stay with us at did not live up to your expectations.

Please accept my apologies for the delay in checking into your room, the reception team work hard to ensure all of our guests are checked in efficiently and on this occasion unfortunately we did not live up to our promise.

I have passed on your feedback regarding the bedroom and breakfast facilities to our Accessibility Co-ordinator to look into further and I would like to come back to you next week with our findings.

If you would like to discuss this any further please do not hesitate to contact me at

### 1.3. Hotels- Not suitable building entrances and access

#### “Not suitable for wheelchair users”

●●○○○○ Reviewed 10 April 2013

The hotel declares that it has facilities for the disabled. For a wheelchair user the hotel is not suitable. The entrance is down a steep slope and through the back entrance to the lift, and the exit is only with assistance of a member of staff and up a steep slope. Hard work for a small carer pushing a wheelchair! There is no plug by the bed for equipment. Eventually the handyman found an extension cable on a reel (an extension lead is now included in my baggage). The bathroom door was heavy and opened inwards. If someone has a fall in the bathroom against the door it would be impossible to get in (the hinges are inside the bathroom). Fortunately the staff were wonderfully helpful, but I will not stay here again.

Stayed June 2012, travelled with family

●●○○○○ Value      ●●○○○○ Rooms  
 ●●●●○○ Location      ●●●●○○ Cleanliness  
 ●●●●○○ Sleep Quality      ●●●●○○ Service

Less ▲

Helpful? 1 Thank Sally582712

Report

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC

Online Customer Service at  
 responded to this review, 12 April 2013

Thank you for taking the time to review our hotel. At [redacted] we take the needs and equal treatment of all our guests extremely seriously. We have invested heavily in this area in recent years and are committed to ensuring our facilities and services are accessible to all. Therefore, [redacted] aims to comply with the requirements of the relevant Building Regulations and British Standards. As such, the fixtures and fittings within the UA bedrooms and bathrooms are installed in accordance with their guidance. [redacted] has a very large and diverse estate of over 600 hotels, including purpose built new builds, conversions of existing buildings and acquisitions of going concerns. Most [redacted] have universally accessible bedrooms, which are adapted for guests with disabilities. These rooms will generally have a double bed, a lowered bath and grab rails in the bathroom. In all of our new build hotels and extensions 50% of the accessible bedrooms will incorporate a wet room, with the other 50% having shallow, accessible baths. This will offer greater flexibility for our guests and will be in accordance with best practice recommended in the relevant British Standard. As part of our ongoing refurbishment programme, we are also looking to convert half of our existing accessible bathrooms to wet rooms where the size, layout and suitability of the hotel allow. In addition, we are working with an Access Consultancy Company who are currently auditing our UA facilities within the estate and on completion of the audits, this in-depth information will be available on our website, thus, improving our communication for our guests and offering the feature of wet room locations.

#### “Not a premier experience”

●●○○○○ Reviewed 31 May 2015

First, the good points: good location near the London Eye, clean room, comfortable beds, spacious room for European standards, friendly staff.

What needs improvement : breakfast buffet (limited choices), toiletries in the bathroom (no toothbrushes/toothpaste), wifi connection, concern for accessibility issues.

I emailed the hotel twice to inquire about accessibility to the hotel entrance and was told I just had to ring for help from the reception. However after having to wait a long time in the chilly London air, we decided to brave the steps of the front entrance. My son and I had to haul our luggages including my wife's wheelchair. My wife who has diabetic peripheral neuropathy had to endure the excruciating climb. Although I had requested for a room near the lift repeatedly, it was only on the third day that my request was granted. I was given the excuse that the hotel was fully booked; however, I had prebooked more than one month in advance and I explicitly stated my wife's need for a room near the lift. Not giving priority to this request smacks of a lack of concern for the handicapped.

Also, my booking was for four persons. For our first two nights, I repeatedly had to ask for additional towels as we only had two in our room. It seems to me that in this inn, you have to repeat your request thrice because they only get it on the third time. Having fully paid for three nights, we had no choice but to accept our fate.

I don't think I will ever repeat this experience. Better to book at a real hotel.

Stayed May 2015, travelled with family

#### “Wheelchair User Review”

●●○○○○ Reviewed 17 May 2014

This review is written from a wheelchair viewpoint. There is no way in to the hotel front door, instead you have to take a long detour around the back and enter through the delivery courtyard, which is unpleasant and a bit scary when you return to the hotel in the late evening. The rear entrance has a security gate which has to be opened to allow a wheelchair through, sometimes the guard is not there and there is a delay while he is contacted.

Once inside the hotel, the lift does not take you down to the rear door, instead we had to go to the reception every time we wanted to leave the hotel, and someone would come with a key to take us down to the lower floor. Our disabled room was not good, very small and the hot water to the wash basin did not work. After several discussions, we eventually got another room which surprise surprise, was large and had much more suitable storage etc.

The hotel is no doubt good for able bodied guests, but not recommended if you are in a wheelchair, we felt like 2nd class citizens (not the fault of the staff BTW who were all very polite and helpful).

Stayed March 2014, travelled with family

●●●●○○ Value      ●●○○○○ Rooms  
 ●●●●○○ Location      ●●●●○○ Cleanliness  
 ●●●●○○ Sleep Quality      ●●○○○○ Service

Less ▲

Helpful? 1 Thank hillcrestroad

Report

See all 10 reviews by hillcrestroad for London

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC

Online Customer Service at  
 responded to this review, 19 May 2014

Thank you for reviewing your recent stay at our hotel. At [redacted] we always strive to provide customers with everything they need to have a comfortable stay, and I apologise that on this occasion we have failed to do this. Most of our [redacted] sites are equipped with full disabled facilities, including wet-rooms, though some older sites are still in need of updating. We do however state the available facilities on our website, and would advise customers to contact the hotel to check availability. Please be assured that your feedback is very important to us as we endeavour to improve standards and meet all our customer's needs. Once again thank you for your review, we hope to welcome you back to [redacted] in the future.

### 1.3 contd. Hotels- Not suitable building entrances and access

**“Fantastic.”**

Reviewed 16 February 2014

Had to LOOK for imperfections in the room and still couldn't find any. Flawless with cleanliness, big spacious rooms. literally spotless.

Food was excellent, if a little restricted as we had meal deal vouchers. Friendly staff. Great location.

Disabled room facilities could have been slightly better planned out as the grab rails weren't particularly well positioned in the bathroom. Would bring portable ones next time just in case. Also no wheelchair access at the front as it is a listed building so there was a little bit of faffing having to go all the way around the back entrance and through the basement. When going out, the basement could then only be accessed if accompanied by a staff member with a basement lift key. The hotel's taxi company also didn't cater for wheelchairs but there is a black cab taxi rank a minute away which usually have built in ramps.

Stayed February 2014, travelled with family

Value: 5/5, Location: 5/5, Sleep Quality: 5/5, Rooms: 5/5, Cleanliness: 5/5, Service: 5/5

Less

Helpful? 1 Thank Yell0wRanger

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC

**“Disabled traveller”**

Reviewed 30 September 2013

Great hotel very friendly and helpful staff, travelling with a wheelchair not a great entrance for wheelchairs down in the service yard with smelly skips etc need to look at a more convenient entrance to building.

Stayed September 2013, travelled with family

Value: 5/5, Location: 5/5, Sleep Quality: 5/5, Rooms: 5/5, Cleanliness: 5/5, Service: 5/5

Review collected in partnership with

Helpful? Thank Ian\_braemaruk

**“Not the best for disabled guests”**

Reviewed 7 December 2014

Although this hotel offers rooms for disabled guests, it has accessibility issues. It is a listed building so is all steps at the front. This hotel was booked on our behalf otherwise I probably would have looked into it more. To gain access if you are in a wheelchair, you have to go in through the delivery entrance at the side gate and wait for a staff member to then come and bring the lift down. When wanting to leave the hotel, you also have to wait for a staff member to come with the key and take you down. On the morning, we had to leave to be at an appointment by 7am. We tried to leave through the delivery gate at 0645 to be told by a member of staff coming through the turnstile that it doesn't open until 7. We rang the bell to be greeted with a grumbly man who told us the same but said he would come and open the gate. A few minutes, nothing and then finally someone came and opened the gate when we rang the bell again. We were late for our appointment which was disappointing. The rooms were once and clean and the staff were friendly and helpful.

Stayed November 2014, travelled with family

Less

Helpful? Thank Us3Dxons

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC

Manager at responded to this review, 9 December 2014

Dear guest,

Thank you very much for reviewing your stay with us, all feedback we receive is incredibly important to how we improve our facilities and service. I can only apologise for the problems you had when exiting in the morning. Unfortunately due to the design of the building all entrances and exits on the external sides are step access and our accessible entrance is situated in the internal courtyard where guests can gain access to the hotel reception, restaurant and bedrooms via the main lifts.

I have spoken to our team and we will ensure that all guests using the accessible entrance are made aware of the security gate opening times and if access is required outside of this, we will ask you to inform us, so we can ring ahead and ensure that the gates are open.

Again I do apologise for the inconvenience caused here. I hope we can welcome you back soon to the hotel.

Kind regards,

Report response as inappropriate



## 1.3 contd. Hotels- Not suitable building entrances and access

### "Not so good for powerchair users "

1 stars 

Visit Date: 21/01/2016

This visit included a person who uses: **Powerchair**

#### Overview

The hotel is well positioned being on the main thoroughfare of . Unfortunately, access to get in requires negotiating a step, followed by several steps and then a lift.

4 stars 

#### Transport & Parking

The hotel is ideally placed for the various forms of public transport that pass along ; including the many buses and the trams.

1 stars 

#### Access

Access in and around the building: As I could not use the portable wooden ramp deployed to get up the steps in the entrance foyer but review stops here. My powerchair would have been in danger of tipping over if I attempted the gradient of the ramp. That said, some manual wheelchair users would be able to negotiate the ramp. Access in the accessible bedrooms and bathrooms: I was unable to access other areas including the reception, dining area and accessible bedrooms. I have awarded a one-star rating in acknowledgement that other manual wheelchair users may be able to use the facilities.

0 stars 

#### Toilets

3 stars 

#### Staff

The hotel staff I met were helpful to a point but it didn't resolve my inability to access the building. The rating reflects their willingness to have a conversation.

#### Anything else you wish to tell us?

As I have said, I could not access the building myself as I use a powerchair. However, other wheelchair users may be able to negotiate the portable ramp. Equally, other disabled people may find the hotel to be suitable for them.

5 stars 

Visit Date: 10/06/2015

This visit included a person who uses: **Wheelchair, Hearing Aid or Cochlear Implant**

#### Overview

This hotel is on and is great place to access the shops and tourist stops in . The view from the Restaurant of the Castle and the rest of the Skyline is fantastic. There is not too much noise as the windows are designed to reduce this problem. The location of the hotel is near to the this gives you an idea of location.

4 stars 

#### Transport & Parking

There is no parking in this area however as the hotel is on there is a good bus service going along the street. There is also the tram system that runs between and the Airport. Waverly train stations is about 10 minutes walk away and the bus station about 15 to 20 minutes away.

4.5 stars 

#### Access

Considering this hotel is on they have done a good job on access there is a step at the front door however there is an assist button if you need help. They have a ramp that they can put down. There is a wheelchair lift to cover the 4 or 5 steps up to the entrance lobby. From this area you take any of the two lifts to the first floor reception area. This is the location of the restaurant and bar area as well.

4 stars 

#### Toilets

There is one accessible toilet on the first floor located next to the lifts. there is room for a carer to assist in this area if required. Access is via 2 doors. There was a red cord in this toilet but was tied up Red Cord card left

4.5 stars 

#### Staff

All of the staff made you very welcome and very helpful any time we meet them. Nothing was a problem if you ordered drinks at the bar they were happy to bring them to your table.

3.5 stars 

Visit Date: 21/01/2016

#### Overview

The sits on and has some great views over the gardens and the castle.

3.5 stars 

#### Transport & Parking

The hotel is on the and ideally placed for buses to all parts of the city as well as the city's tram service. There is no parking on site.

3.5 stars 

#### Access

Access in and around the building: I found getting into the building to be OK once I found the front entrance. The entrance has a step to the front door followed by several steps inside the lobby to take you up to the next level. I was accompanied by a companion who happens to be a wheelchair user and he could not proceed beyond this point. I did take the opportunity to look around the hotel. Access in the accessible bedrooms and bathrooms: The accessible bedrooms (if you can use the ramps to get in the hotel) where very spacious and well appointed. Access in the dining area: The dining area was large and spacious.

0 stars 

#### Toilets

4 stars 

#### Staff

The staff were friendly and helpful in enabling me to take a look around.

## 2. Restaurants & Cafes

### 2.1. Not suitable access to building entrances, disabled toilet facilities

#### Reviews collected from various restaurants

##### *"Lack of disabled access"*

●●●●● Reviewed 8 April 2015

Along with my son and my wife, who has limited mobility and uses a wheelchair, I called at this location for an ice cream after a night at the theatre, where I should the staff could not have been more helpful. We made our way to the side entrance which was signed as **disabled access** the takeaway staff told us to contact the staff inside to arrange **access**. My son explained to the staff but was told that the wheelchair would take up too much room and there were no suitable tables. I also noticed that the **access** door was blocked by seats which would have made getting in very difficult. Very disappointed in staff's attitude

Visited April 2015

●●●●● Service

Less ▲

Helpful?



1

Thank Phil M

Report

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC

##### *"Not equipped for disabled customers in any way"*

●●●●● Reviewed 11 December 2014

On Saturday 6th December 2014 a group of friends and I had booked a table for our annual Christmas night out. My friend had booked on a recommendation and had also contacted the restaurant to confirm they had **disabled** access and a **disabled** toilet. She was assured this was the case and our group would be seated on the ground floor where the **disabled** toilet was situated, as I require the use of crutches. The day prior to the meal she was contacted to confirm the booking and again the caller confirmed they were aware a member of our party would need **disabled** access etc.

However upon our arrival the manager ushered us to the rear of the restaurant and stated he and a colleague would somehow get me down the two flights of stairs. I assured him this would not be happening as the only way for me to use stairs is to actually get on my hands and knees which in a restaurant full of people would have been highly embarrassing. He implied I could be carried down the stairs, which again I would not do due to the embarrassing nature and also risk of further injury! He then informed us that we would have to sit downstairs as there were no tables left on the ground floor and the **disabled** toilet was out of order. I again informed him we had only spoken to staff the previous day, who confirmed that the booking stated **disabled** access was required. He denied this so we asked to see the booking on the computer screen. He did so and the booking stated in bold letters marked with numerous exclamation marks, 'Member of party is **disabled** and requires ground floor seating and access to **disabled** toilet'. When confronted with this he replied, 'But it doesn't say she cant use stairs' !!

After much discussion he then moved a party of eight on the ground floor to the basement level which again was an awkward situation as they were confused as to why they were being moved, understandably. I then pointed out that we still had the problem of a **disabled** toilet that was not in use. He then informed us that actually it was in use and when we asked him to show us, we saw that two tables had been placed up against the toilet door allowing for more people to be seated within the venue. He then said I had to make him aware when I needed to use the toilet and he would 'try to sort something out'!!! As you can imagine for a 37 year old woman to have to declare to a man she has never met before that she needs to use the toilet is quite humiliating. I explained he needed to remedy this ASAP. As a result two groups of diners had their tables moved across a few feet allowing me to pass rather awkwardly through the narrow space to reach the toilet. As you can imagine this all raised quite a lot of attention in the restaurant with diners listening to the tale unfolding. Once inside the toilet I realised it was also used as a store room containing various items including staff rotas, equipment and staff clothing, but with a toilet and basin in. Not at all equipped to be classed as a **disabled** toilet.

We then ordered some drinks and saw that there was a 2 for 1 offer on cocktails. The manger initially stated this offer was not open to us as it was only for customers seated on the street. It was then pointed out that given the recent events it was the least he could do which he did concede to. At the end of the meal we were given a few complementary deserts to share and the food we ordered was very nice. However in no way did this make up for the night being ruined for all of us. This was the first night and only night I had planned over the festive period and I had high hopes of the evening given the meticulous planning we had undertaken to ensure everything ran smoothly. I will not be planning another evening out in fear of this happening again anytime soon. It also makes me wonder what they would do if I had arrived in a wheelchair which I originally was due to do. The access to the toilet would have been completely unacceptable. Sadly it appears I have paid to have been humiliated in this restaurant.

##### *"Poor and insensitive treatment of disabled people"*

●●●●● Reviewed 8 April 2015 via mobile

In short, if you are a person who has a disability, do not expect the staff to even attempt to make your time enjoyable.

After a lovely evening at the theatre, my parents and I decided to go for an ice cream. We had never been to the cafe before, but were all keen to see what it was like. My mother is in a wheelchair, so we made our way to the **disabled access** door and assumed that there we would be able to get served like any other customer. However we were informed by a member of staff that I would have to go round to the abler persons entrance and ask for a table there, then we would be allowed to enter through the staff entrance (I have no idea what a single person in a wheelchair would have done). I went round asked for a table for 3 and was told there was one and thankfully it was right beside the door my mum would be pushed through. I then said to the member of staff that my parents were outside and asked if she could let them in through the staff door since my mother was in a wheelchair. The person seemed to freeze up, became incredibly uncomfortable and told me I would have to wait another 10/20 minutes before we could get a table even though I assured them the one offered would be fine. The person seemed to panic and said I would have to wait as the table was not suitable, even after I confirmed it would be fine.

We were refused a perfectly good table for no clear reason other than there was a **disabled** person in our party.

I will not be returning to this establishment and would advise thoughts with disabilities to stay away.

Visited April 2015

●●●●● Reviewed 6 February 2014

1930's splendour greeted me in the vibrant and elegant restaurant. On entry the first thing that struck me was a sparkling bar, heaving with top end whisky's and crystal decanters. We were seated at a leather booth table with a curved glass window opposite boasting dramatic views of Throughout the afternoon we were serenaded by live jazz music from an exuberant band on a spot-lit stage.

Sadly, the impressive décor is where the breathtaking elements of this restaurant halted. Although the service obeyed all the rules of high standards of etiquette, it was cold, and unfortunately so were our orders. The food arrived at different times, was confused and chaotic. The shiny façade of Boisdales was cracked by the substandard food reflected in the £17 truffle hamburger which was below average and a poorly presented undercooked plate of lamb.

That said, the encyclopaedic wine list and covetable cocktail menu coupled with a second to none ambience means that Boisdales would serve as a fantastic place to visit for a drinks with friends.

Should you wish to visit, you will find that the restaurant has a car park below in although this appears to have no allocated **disabled** parking. A ramp with automatic doors leads up to the lifts, which take you directly into the spacious lobby of the restaurant. The restaurant is bright and airy and the flooring is wooden. There are no awkward doors or passageways. The tables are a good width apart from each other and there is a free cloakroom. There is a wide entrance to the **disabled** toilet, though there is an annoying little ridge to get into the toilet, which takes a bit of force to get the wheelchair over. Sadly, the **disabled** toilet has been neglected, and was dirty, smelly and unkempt.

Personally, I would visit the restaurant sooner than the restaurant. It boasts the biggest cigar humidifier in the world, a balcony that overlooks and a selection of the finest caviar that I've always wanted to try. In terms of access ticks most of the boxes for a fairly stress free night out, although beware it does get very busy.

## "Absolutely shocking"

Reviewed 4 weeks ago

I booked a table online and explained that one diner was a wheelchair user. I followed up with an email confirming that we would have a wheelchair user and would need access to the disabled toilet. On arrival we were ignored repeatedly by the staff. One even 'shooed' us out of the way. Finally a waiter came up to us and said 'Has anyone spoken to you?'. I said that no one had and he said 'Wait at the bar'. I explained that we had a reservation and he snapped 'I know, wait at the bar'. I don't know how we would know as he hadn't asked for my name and our wheelchair user had not arrived. At the bar the barman asked us if we wanted anything. We said we were just waiting for a table. He asked if we had a reservation and asked for my name. At this point the first waiter came over and said 'I know you have a table, I'm just getting it ready'. He then went to a table in the corner, behind a pillar that was inaccessible. I went to speak to him to explain that we wouldn't be able to get a wheelchair to that table. He was impatient and rude and after us pointing to another table near the disabled toilet that was free and accessible. Finally he said we could have that table and walked off. Some time later the manager (I assume as he was wearing a jacket) asked us for our order. We explained that we didn't have menus. He said 'Oh' and walked off. The disabled toilet was blocked - it had bottles, high chairs, stacks of chairs and a fan heater with the cable stretched out in front of it, blocking access. Finally, we gave up, got up and left and went to Browns opposite where the staff were lovely and it was fully accessible. The rudeness was shocking and unnecessary. I don't think we've ever felt so unwelcome in a restaurant from the moment we arrived. Truly awful. I can't recommend this restaurant for anyone and certainly not anyone with any kind of limited mobility.

## "A very disappointing experience "

★☆☆☆☆

Visit Date: 12/03/2015

This visit included a person who uses: **Wheelchair**

### Overview

Disappointing on many counts. Step-free entrance locked, no tables suitable for wheelchair users, the way to the toilet blocked by large packing boxes.

★☆☆☆☆

### Transport & Parking

Victoria Station is very nearby. If you're arriving at Victoria by train, you're likely to get ramp assistance (though it's very hit-and-miss at this station). Many buses will drop you off here. The tube is completely un-accessible - a disgrace for such a major London transport hub.

★☆☆☆☆

### Access

This branch of has several entrances, and one of them is step-free. Great! But when I visited, it was locked. So I had to wave at someone inside to let me in. Luckily a friendly customer sprang to my assistance and unlocked the door for me. It would have been better, and friendlier, if the staff hadn't locked it. There are no tables anywhere in this branch suitable for wheelchair users. All tables and shelves are much too high. Altogether a very disappointing experience.

★☆☆☆☆

### Toilets

There is an accessible toilet. At first I was unable to access it at all because the staff had piled a huge number of cardboard packing boxes and a metal-framed object in the short corridor leading to the toilet. They removed these objects, which took some time, before I was able to gain access to the toilet.

I was also dismayed to find that the lighting in the toilet was broken. So the staff had resorting to opening the door to the adjacent store room to light the toilet. This is hardly ideal. Why not just fix the lighting?

★☆☆☆☆

### Staff

Although the staff were sweet and friendly, they seem to have a blank area where their disability awareness should be, and they don't seem to have had any training about the Equality Act 2010 and the obligations it imposes on them, and on the company as a whole.

### Anything else you wish to tell us?

This was my second bad accessibility experience with in under a week.

## "Good food, awful disabled access"

Reviewed 25 July 2013

The food at is good. Not quite good enough to justify the price tag, but good. However, I turned up having called to book and check that there was wheelchair access and a wheelchair accessible toilet. I was told that there was. In actual fact, the "wheelchair access" meant a temporary ramp set at a very steep angle, and the sturdiest chef giving me a push. After this somewhat ungainly entrance, we were seated at a group table. When I wanted to go to the toilet, I had to ask half a dozen people to move their chairs because the aisles were so narrow, and as the toilet door opened into a table, I had to interrupt a romantic dinner for two and ask one of the diners to stand up, move their chair and wait for me to finish. When I finally managed to get inside the toilet, I found that there was no room to maneuver. At all. It was full of spare chairs and pushchairs, to the extent that I could only just fit my wheelchair in and could not turn around at all. If I had been a less able wheelchair user, I would not have been able to use the facilities at all.

It is deeply embarrassing to have to ask other people to move so that you can go to the toilet, and indeed it is horrible to have to interrupt the special moments of others to do so. In some restaurants, disabled patrons are treated with respect and dignity. In others, it feels as though facilities have been installed in order to comply with regulations, and nothing more. definitely falls into the latter category.

Visited September 2012

Value  
Atmosphere

Service  
Food

Less ▲

## "Access of "

★☆☆☆☆

## "Not accessible to wheelchairs despite website promise "

★☆☆☆☆

Visit Date: 06/04/2015

This visit included a person who uses: **Wheelchair**

### Overview

own website lists this branch with 'Wheelchair Access: Yes' but there is a step into the shop and I was not able to enter. They don't have a ramp. Zero stars.

★☆☆☆☆

### Transport & Parking

The nearest step-free station is drop you off in nearby which is more than half a mile away. A few bus routes will which is a short distance away. There is a multi-storey car park in

★☆☆☆☆

### Access

Zero stars. A step at the entrance to the shop. There are two doorbells. I rang both. Nothing happened. I rang again several times. Eventually the manager appeared, after I had waved at the staff from outside. "No, no ramp, sorry." Doorbells? "They ring a bell in the basement, they are for deliveries." I was unable to get into the shop.

★☆☆☆☆

### Toilets

I never got inside to find out whether there's a toilet.

★☆☆☆☆

### Staff

Zero stars. They ignored me for a long time while I was waving at them from outside, and the manager has not fulfilled her obligations to provide accessibility, despite the promise on own website that this branch is wheelchair accessible.

### Anything else you wish to tell us?

This branch is near the junction of and a particularly awful place for kerb-drops. It is impossible to get across this junction without a huge detour, because there aren't any kerb-drops. Shame on for not providing them in this very busy area.

## "No access for wheelchair users "



Visit Date: 01/07/2015

This visit included a person who uses: **Powerchair**

### Overview

There are two steps up into the shop and the staff told me they have no ramp. I was not able to get into the shop.



### Transport & Parking

is very nearby and is completely step-free :) and several bus routes run past this branch of .



### Access

Two steps into the shop. I asked for a ramp. "Sorry, we don't have a ramp." I queried this, and the member of staff said they would be getting a ramp soon. I asked how soon. "In a week." As I always hear the words "in a week" whenever I ask anyone anywhere when a promised ramp will be arriving, I remain sceptical about this claim.



### Toilets

I did not get into the shop. So I don't know.



### Staff

To their credit, the staff did offer me a coffee on the house, but as this branch has no outdoor seating I declined. One star gained for this, four stars lost for not bothering to obtain a ramp.

### Anything else you wish to tell us?

If anyone visits this branch after 8th July 2015, and there is no ramp available, remind the staff of their promise made on 1st July!

## "Good wheelchair access, poor toilet layout "



Visit Date: 05/02/2016

This visit included a person who uses: **Powerchair**

### Overview

Generally a good experience, though there is a problem with the toilet layout.



### Transport & Parking

is nearby and has step-free access to both Northern and Jubilee Lines, but check before you travel because the lifts are damned unreliable and often out of service for months at a time. Several bus routes pass up and down nearby . I wouldn't dream of trying to park in this area.



### Access

A fine paved ramp leads up from the pavement to the front door, which has step-free access. The café is a tiny bit cramped in places, and there was one of those absurd plastic A-board signs saying cleaning was in progress (when it wasn't) right in the middle of the floor. There are several tables at just the right height for a wheelchair user.



### Toilets

The accessible toilet was generally good but it had an extravagance of bins - \*three\* of them, crowding out the space where a wheelchair user needs to park in order to achieve a smooth sideways transfer to the toilet. Very thoughtless to put these enormous bins in such a silly place. See my picture below.



### Staff

The staff were lovely, but they lose two points for their ridiculous arrangement of the bins in the accessible toilet.

### Anything else you wish to tell us?

The chocolate brownies are excellent, and the cappuccinos are the best ever.

If could fix the toilet bin issue, this would be a five-star review.

## "Very good apart from the front doors and the toilet door "



Visit Date: 09/02/2016

This visit included a person who uses: **Powerchair**

### Overview

Overall this place is wheelchair-friendly and easy to get around inside. The front doors are \*not\* wheelchair friendly and the toilet door is absurd.



### Transport & Parking

There are no step-free stations nearby at the time of writing, though should be step-free later in 2016. Several buses go up and down nearby. I wouldn't dream of trying to park in this area.



### Access

The entrance to this branch of is a double door: one of the doors is kept locked, and both need to be open if a wheelchair user wants to get in, as each individual door is very narrow. When I arrived today the left-hand door was locked and there was no doorbell or other way of alerting staff to the need for assistance with the locked door. I waited for quite a while, unable to get anyone's attention, until a kind random passer-by took the initiative and undid the bolts on the locked door. Note please install a doorbell at the entrance. Once you're inside it's all fine.



### Toilets

There is a basically well laid-out and usable accessible toilet, but the door has a door handle \*and\* two locks as well. The door handle is ridiculously high up, and would not be reachable by many wheelchair users. Very thoughtless. See my picture below.



### Staff

The staff are friendly enough, but their thoughtlessness concerning the front entrance and the toilet door design has lost them two stars.

## "A good place to eat, one big gripe about the toilet "



Visit Date: 11/11/2014

This visit included a person who uses: **Powerchair**

### Overview

Easyish to get into, good toilet (BUT see below), slightly difficult to find a comfortable spot to eat.



### Transport & Parking

Several bus routes will drop you off nearby but there are no step-free stations in the vicinity.



### Access

There is a ramp to the front door. The ramp is of a solid stone construction and is rather steep. Not horribly or impossibly steep, but a bit of an effort in a manual wheelchair and it could be a bit of a skid if you come down it in the rain.

The front door is a bit heavy but there are always people who jump out of nowhere to help.

The café is small and it can be quite difficult and awkward to find a comfortable place to park in your wheelchair for a nice relaxed snack or drink, because the tables and seating are quite crammed together.



### Toilets

An excellent accessible toilet, but one thing really spoils it: the red emergency cord has been tied up so that it ends well over a metre above floor level. Anyone who falls out of their wheelchair (not unusual when transferring to a toilet) will be left stranded with no means of summoning assistance. I'm subtracting three stars for this because it's really dreadfully ignorant and dangerous to hang the cord so high.



### Staff

Wonderfully friendly and helpful in every way. One star subtracted for not having the sense to provide and maintain a suitable emergency cord in the toilet.

### 3. Museums

#### "Good, with reservations about awful lifts & filthy toilets "

2.5 stars 

1 user agree

Visit Date: **24/08/2015**

This visit included a person who uses: **Wheelchair, Powerchair**

##### Overview

Generally good for accessibility, but constant problems with lifts & horrible toilets - see below.

2 stars



##### Transport & Parking

The nearest step-free stations are \_\_\_\_\_ and \_\_\_\_\_ both very far away. A few bus routes will drop you nearby in \_\_\_\_\_ just a block away.

1 stars



##### Access

In theory accessibility is fine. In practice, I've often had problems with lifts. There are two outdoor platform lifts at the front of the museum, to get you to the front entrance. One or other is often out of order. They are old, worn out, and unreliable, their doors are heavy and hard to manoeuvre. Lifts inside the museum are often broken. Several times I have encountered broken lifts in the \_\_\_\_\_ making access to/from exhibitions inside it very awkward. Avoid the ancient lifts at the back of the building - I once got very stranded on an upper floor when one broke down.

1 stars



##### Toilets

There are not enough accessible toilets. They are ridiculously over-subscribed, and they are often disgustingly messy, with wet floor and bits of wet bogroll scattered around. Ugh. The red emergency cords do not all have the usual triangular plastic attachment, so they are very hard to grab hold of in an emergency, and they're often tied up out of reach. See my attached pics. The cleaners' activity/inspection logs on the toilet walls are often left unsigned/uninitialled for a whole week.

2 stars



##### Staff

Staff on the information desk in the Great Court are friendly and helpful. Other staff are variable. On this visit I tried to enter the Museum via the back entrance. The lift there was out of order, but without any sign or information to tell us it was out of order. Eventually a pig-rude member of staff came and barked at me that it was broken and that I had to go outside and work my way round to the front of the Museum. Here I found one of the two platform lifts was, as usual, broken down.

#### "Cultured Day Out... "

4 stars 

3 users agree

Visit Date: **13/04/2015**

This visit included a person who uses: **Powerchair**

##### Overview

Overall the \_\_\_\_\_ museum provided a good day out. The only let down was that the cafe on the second floor was not accessible to wheelchair users unless a member of staff was notified, who then led me through a locked door into dimly lit corridors and then into a 1000kg lift with reduced 31 inch width opening to go up 2 levels. We eventually emerged into the cafe through the cafe kitchen. Thankfully it looked clean! If I was to go again I would use the restaurant on the 3rd floor. It has much better access but is a bit more pricy.

4 stars



##### Transport & Parking

Flat step free disabled parking. Ring the \_\_\_\_\_ Museum before hand on the number on their website for access to disabled parking right by the museum main entrance via \_\_\_\_\_. There is a 500kg open platform hydraulic lift from the parking level up to the main entrance. There were two of these lifts - one either side of the main entrance - but only one was working on the day.

4 stars



##### Access

Disabled access was good. I followed the Tour 1 route which had plenty of ramps provided to see the statues on display. I enjoyed my visit and would recommend it to anyone who fancies indulging in a bit of culture for the day. I cannot rate the whole museum as good as I did not visit all of the museum on the day.

3 stars



##### Toilets

The disabled toilets I used were adequate for space and facilities - grab handles etc. Unfortunately I didn't see a disabled toilet with hoist or showering facilities. The toilets I used on the day were quite grubby and would have benefited from a good clean.

## "Interesting museum - some really dangerous ramps - beware! "



1 user agree

Visit Date: 10/02/2016

This visit included a person who uses: **Powerchair**

### Overview

This could so easily have been a five-star review. The museum has tried hard to provide a fully accessible experience, but has failed badly with the indoor ramps. This failure reduces my rating from five stars to two stars.



### Transport & Parking

There are no step-free stations nearby except for the DLR part of which allows step-free access from train to street level. Many buses serve the area, and I wouldn't dream of parking in this area. If you are VERY patient you could wait until becomes fully accessible in 2021.



### Access

At the main entrance there is a sign telling wheelchair users to press a button for assistance - see my picture below. I pressed the button, and after a while a doorkeeper came out to tell me someone would be along soon to take us into the museum via a step-free entrance elsewhere. After a long wait someone did appear, apologised for keeping us waiting, and led us into the museum through some fascinating corridors with beautiful floor mosaic. So far so good. But the temporary ramps installed at several places within the museum are much too short. This means that they are dangerously steep. I had some terrifying experiences on these ramps. My powerchair very nearly tipped over backwards on one of them. They are not fit for purpose. One day someone will have a very serious accident on them. I never want to use them again! I do \*not\* recommend this museum to wheelchair users.



### Toilets

There is a very well laid-out accessible toilet in a corridor off the circular display at the far end of the museum. Full marks for this.



### Staff

All staff were friendly and helpful. The member of staff who led us to the step-free entrance also gave us a very informative talk about all sorts of aspects of the museum - five stars for her. But two stars lost overall because the staff have simply not researched or thought through what constitutes a \*safe\* wheelchair ramp gradient.

### Anything else you wish to tell us?

With the dangerous indoor ramps the is exposing itself to possible legal difficulties, in the event that someone eventually sustains a very serious accident on one of the ramps. It is imperative that these ramps are replaced as soon as possible by some other solution. The museum has replied to this review stating that "unfortunately [the museum] is in a historic building and there is sadly not enough space for longer ramps" - but there are other viable solutions which are equally non-intrusive and would not harm the fabric of the historic building, so I don't accept this excuse. Meanwhile, visitors in wheelchairs are put at very serious risk of accident and injury.

## "Nice shame about the toilet "



Visit Date: 22/04/2015

This visit included a person who uses: **Wheelchair, Powerchair, Assistance Dog**

### Overview

The Museum houses a wonderful collection, but makes no parking charge concessions for Blue Badge holders and has just one not-very accessible toilet.



### Transport & Parking

The carpark is spacious, but there are no concessions for Blue Badge holders, and the venue is too far away from the roads for yellow line parking to be possible.



### Access

From a wheelchair user's perspective, the museum is on one level, and most of the exhibits are to be viewed not climbed inside so the experience is not markedly second-class. However, self-propellers and pushers may tire easily as the venue is very large. The shop is relatively accessible too, but expensive. The cafe does not cater for specific dietary requirements, although there is a picnic area for groups.



### Toilets

Although the venue is vast, the single 'accessible' toilet was only designed to meet the legal minimum standard and then fails because of the way it has been fitted out. The sliding door does not open the entire width of the doorway, while the side transfer space is impossible to use because a baby change table and grab rails juts into it. There is no first aid room that can be used as a changing space.



### Staff

Staff took our access complaints seriously and did their best to make what immediate adjustments they could.

### Anything else you wish to tell us?

If you have restricted mobility, wheels are the only way to get round a building this size. If you lack a powered chair or a strong pusher, phone and ask if scooter hire is possible; if not think again.

## 4. Sports facilities

### "Don't believe the hype! "



Visit Date: 02/05/2015

This visit included a person who uses: **Wheelchair, Powerchair, Assistance Dog**

#### Overview

The [redacted] is advertised as being "the most technologically advanced and stunning swimming facility in the World". That may well be true if you are a swimmer - though Blue Badge users will face a long trek to the facilities - but if you are a wheelchair-using spectator then you will often find better provision in much older venues. As a local with free tickets we still enjoyed the event, but would have been very disappointed if we'd paid and/or travelled further.



#### Transport & Parking

Both the Blue Badge parking zone and the drop-off point are much further away from the venue entrance (itself up one floor via an unmarked lift) than anyone can walk who qualifies for a Badge. If your mobility is restricted, don't think about coming here without a powered chair or scooter, or - unless you are a [redacted] - someone to push you in a manual chair. Not sure how this got past the planners.



#### Access

Wheelchair-users' spectator access to the competition area is restricted to the very back of the venue, up in the roof where it is also very hot and humid and visibility is poor. Families and friends cannot sit together; there is just one (small, uncomfortable) companion seat per wheelchair space. There is nothing dividing the wheelchair seating from the corridor behind where popcorn etc is sold, which is intrusive. The limited number of wheelchair spaces were reduced further by situating the PA speakers in them, which were very loud.



#### Toilets

I crossed my legs rather than travel the distance back to the entrance where the nearest toilets appeared to be.



#### Staff

The venue staff were very rude to one of our PAs when she arrived early to check out the access, but the security staff were later very helpful when it turned out that the Box Office had given our party (5 wheelchair users plus 2 PAs) the wrong tickets.

#### Anything else you wish to tell us?

If you are a wheelchair user and don't have good eyesight, or find a lot of loud noise and constant bustle around you and behind you spoils your enjoyment of an event, don't consider coming here.



#### Staff

The [redacted] volunteers and [redacted] carpark workers are courteous and very helpful. However, we found the [redacted] security staff to be rude and disabilist, telling me I "should have a carer with me" when I asked for my bag to be searched on my wheelchair because I was unable to remove it independently. They also told my companion that she should not be in the grounds on a scooter without a 'wheelchair ticket', although the access guide recommends bringing a manual chair or scooter to people who have difficulty walking long distances, and provides some spaces by the courts where these can be left.

#### Anything else you wish to tell us?

If you have mobility needs but aren't a wheelchair user, be aware that access to the rest of the seating is via steps with no handrails, and that the paint marking the edges of the steps is low-contrast and hard to distinguish. The seats have no arms which can cause difficulties getting in and out of them.

Assistance dogs are allowed but there is no 'spend' area, which means owners have to leave the ground and cross a dangerous road to use the carpark. It is also difficult to see where a dog would sit - I leave mine with a PA - as space is very tight.

### "While the tennis improves annually, the access doesn't "



1 user agree | 1 user visited

Visit Date: 07/07/2015

This visit included a person who uses: **Wheelchair, Powerchair, Mobility Scooter**

#### Overview

Access to [redacted] is generally good and many other sports bodies could learn from them. However, the problems that do exist - which are very real ones - remain the same year after year. This is despite the [redacted] employing the [redacted] to carry out an annual access survey, with the stated intention of continuous improvement.

Problems begin with the ballot rules. While non-disabled people can apply for a pair of tickets, wheelchair users can only apply for one ticket. This comes with a free companion ticket, which is great if your partner is non-disabled and also provides any personal care needed, but is not so good if you are both wheelchair users. Then the only way you can enjoy the tennis together is to leave support workers outside the ground, and for one of you to leave your chair or scooter - if you can - and walk into the seats.



#### Transport & Parking

There are no accessible stations near by, yet Blue Badge users receive no discount on the official carpark charge of £25 if booked in advance of the Championships opening, or £30 cash on the day. Despite the high charge, access within and from the carpark is highly problematic, with a mud and gravel track that wheelchair users share with cars, and which is particularly steep and uneven at the top. There is no pedestrian crossing and no stewards assigned to the road, which makes crossing over to the ground frightening and dangerous. However, a buggy service does operate within the carpark.



#### Access

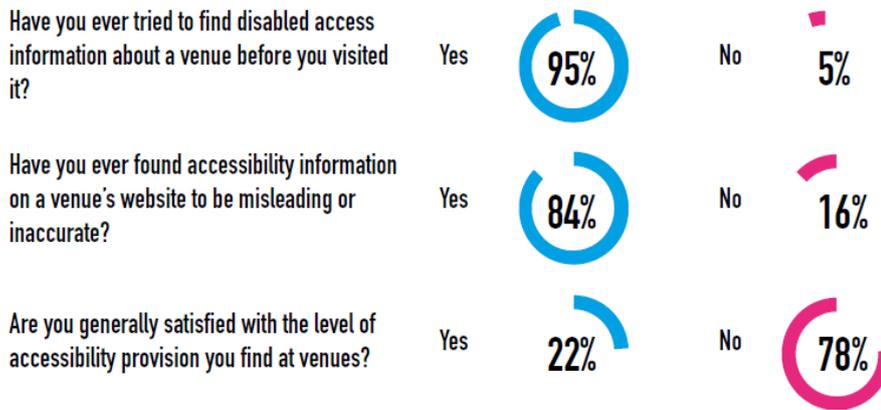
Over the past few years we have visited courts 1, 2 and 3 and have found the view from the wheelchair spaces to be very good. However, the signage for accessible routes around the ground and accessible facilities could be better, and neither the workers on the information stands nor the forces volunteers had been briefed so couldn't help us.



#### Toilets

The toilets are Radar-key operated, which cuts down on misuse, but queues are still common. The 'accessible' toilets vary in size, and the entry to the sole accessible toilet on Court 1 is off the corridor to the rest of the toilets which makes getting in and out and waiting problematic. When I visited the emergency cord had been tucked behind the pipes, so I left a [redacted] card explaining how it operated and needed to be maintained.

# The Access Survey 2015. We asked...



In your experience, which of the following would you rate as having 'poor' or 'good' accessibility?



(Source: www.euansguide.com)

When visiting somewhere new, which of the following do you agree with?



How likely are you to return to venues that have good accessibility?



When 'out and about', most of the time I am...



How can venues improve their accessibility?



What factors influence your decision to visit somewhere?



How do you find out the information you need to plan a visit?



(Source: www.euansguide.com)

The Access Survey 2015 was completed by 203 respondents who self identified as:



---

### Other things you told us...

- Physical access is not such an important issue for me as welcome and inclusion. However, I am very aware with other friends and colleagues how important this is. Getting this information easily and in advance makes a big difference.
- I distrust information so often these days. I have often phoned venues to be told oh yes, there's access for a powerchair..only to find there isn't and I have made a wasted journey and effort for nothing.
- If a key venue/attraction is accessible, it still can not be great as other things around said attraction may be not accessible..so if I'm out with a group of people, we visit the main attraction..then we go off nearby to eat etc..and hey, no access etc starts to loom large yet again.
- I'm lucky - we go on holiday 3 times a year and have weekends away too. I'm unlucky - I have to do all the research for these trips!
- Helpful and well informed staff is the most important aspect. Even if the venue isn't great, if the staff are helpful then all is well!
- Access is improving but still chronic in independent shops, cafes etc. you get the feeling unless they have to comply with the law they don't.
- We are often put off visiting a venue if there is no information on their website - should be a legal requirement for accurate information about accessibility.

---

(Source: [www.euansguide.com](http://www.euansguide.com))