Building for Everyone:

A Universal Design Approach

Building management

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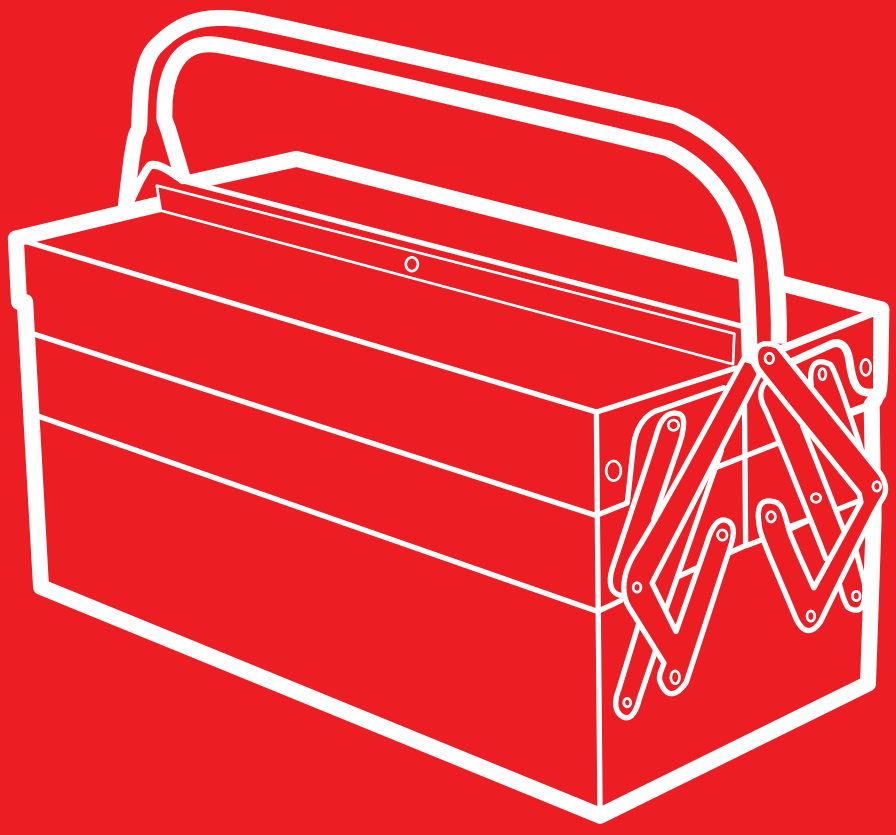


Centre for Excellence in Universal Design

Creating an environment that can be used by all people, regardless of their age, size, disability or ability.

The National Disability Authority's Centre for Excellence in Universal Design has a statutory role to promote the achievement of excellence in universal design in:

- the design of the built and external environment
- product/service design
- information and communications technologies (ICT)
- the development and promotion of standards
- education and professional development
- raising awareness of universal design

More information and updates on the website at: **www.universaldesign.ie**

Building for Everyone

Booklet 8 - Building management

The other booklets from the
Building for Everyone series:

Booklet 1 - External environment and approach

Booklet 2 - Entrances and horizontal circulation

Booklet 3 - Vertical circulation

Booklet 4 - Internal environment and services

Booklet 5 - Sanitary facilities

Booklet 6 - Facilities in buildings

Booklet 7 - Building types

Booklet 9 - Planning and policy

Booklet 10 - Index and terminology

Contents

8.0 Objectives

The guidance in this booklet promotes the concept and philosophy of universal design and encourages developers, designers, builders and building managers to be innovative and think creatively about solutions that meet the needs of all building users.

The objectives of the series of booklets are to:

- identify and promote best practice with regard to universal design of the built and external environment
- provide best practice guidelines that in no way conflict with the requirements of existing regulations in Ireland
- provide guidelines that are usable by and accessible to the target audience
- promote universal design in Ireland

This booklet aims to:

- identify and promote best practice and understanding of the management of buildings with regard to universal design
- increase awareness of, and to encourage building managers to identify, the needs of all those who require access to a wide range of buildings to undertake daily activities
- highlight the wider benefits experienced by all when effective building management and universal designed features of buildings are provided
- encourage building managers to provide effective building management and universal design solutions for a wide range of buildings that look beyond the minimum requirements of national building regulations

8.1 Introduction

This booklet is part of the series "Building for Everyone – A Universal Design Approach," which aims to provide practical guidance on the universal design of buildings, places and facilities.

Universal design places human diversity at the heart of the design process so that buildings and environments can be designed to meet the needs of all users. It therefore covers all persons regardless of their age or size and those who have any particular physical, sensory, mental health or intellectual ability or disability. It is about achieving good design so that people can access, use and understand the environment to the greatest extent and in the most independent and natural manner possible, without the need for adaptations or specialised solutions (see full definition in **Appendix A1**).

Why universal design?

People are diverse - some are left-handed and some right-handed - and people vary in their age, size and functional capacities. Illness or disability (whether temporary or permanent) can also affect characteristics such as people's mobility, dexterity, reach, balance, strength, stamina, sight, hearing, speech, touch, knowledge, understanding, memory, or sense of direction. A reference list with these booklets indicates some of the key differences in human abilities that should guide design of buildings and of outdoor places. (See full description of Human Abilities in **Appendix A2**).

People of diverse abilities should be able to use buildings and places comfortably and safely, as far as possible without special assistance. People should be able to find their way easily, understand how to use building facilities such as intercoms or lifts, know what is a pedestrian facility, and know where they may encounter traffic.

Given the wide diversity of the population, a universal design approach that caters for the broadest range of users from the outset can result in buildings and places that can be used and enjoyed by everyone. That approach eliminates or reduces the need for expensive changes or retro fits to meet the needs of particular groups at a later stage.

It is good practice to ascertain the needs of the range of expected users as early as possible, and to check the practicality and usability of emerging designs with a diverse user panel.

Designing for one group can result in solutions that address the needs of many others. For example:

- level entry (Step-free) entrances facilitate not just wheelchair users but also people with buggies; people with suitcases or shopping trolleys; people using walking or mobility aids; and people with visual difficulties.
- larger toilet compartments provide easier access to wheelchair users; those with luggage or parcels; parents with pushchairs or accompanying small children; those using walking or mobility aids; and larger-sized people.
- clear, well-placed signage that uses recognised symbols or pictograms helps people with reading or cognitive difficulties, and those whose first language is neither English nor Irish

Sometimes one solution will not suit all and a range of options will need to be provided, for example:

- providing both steps and a ramp where there is a change in level
- providing parking ticket machines that offer slots at different heights to facilitate use at standing height, at sitting height, and by people of small stature

This series of booklets is for architects, engineers, planners, developers, designers, building contractors, building workers, building managers and others involved in designing, commissioning and managing buildings and their surroundings. It provides guidance on a universal design approach to all new buildings, the use and adaptation of existing environments.

Those who commission, design, construct or manage any part of the built and made environment also have a duty of care to adhere to relevant legislation and regulations including equality legislation, building regulations and health and safety regulations.

The guidance is based on a best practice approach drawing on up to date international best practice, guidelines and standards; previous guidance by the National Disability Authority; and extends beyond disability access matters to incorporate a universal design approach. The series is fully compatible with Part M (2010) of the Building Regulations and associated Technical Guidance Documents related to Part M.

A disability access certificate is required for new buildings other than dwellings (including apartment buildings) and certain other works (as set out in Article 20 D (1) of SI 351 of 2009) to which the Requirements of Part M of the Building Regulations apply, which commence or take place on or after 1 January 2012. Further details on these and other relevant standards, codes of practice, and professional codes of practice are listed in **Appendix A3** Further Reading.

The detailed guidance provided here does not represent the only possible solution. Designers may come up with other ways to meet a diversity of users. New materials and technologies that emerge may open up further possibilities of accommodating the diversity of the population.

This booklet covers issues that are essential to all organisations, whatever their size or purpose and irrespective of the type of building or environment they occupy. All the issues are essential in achieving universal design.

Building management encompasses the many practical tasks involved in the day-to-day operation of a building, including building maintenance, planning for emergency evacuation, customer service and staff training. Effective building management is essential in ensuring that people are able to access, understand and use a building safely, conveniently and independently.

Effective communications are essential in ensuring people are able to access, understand and use information easily, in a suitable format and at the time it is needed. All organisations will need to consider how best to communicate with customers and staff and, for many, with the rest of the world via the internet.

An access audit is an essential component of planning for change within any building or environment, with recommendations for improvements taken forward into an access plan. This process is an integral part of the building management task and is an effective means of implementing change.

Checklists are included in each section. They provide a summary of the main considerations and technical criteria that are discussed in detail in the main text and illustrated in the accompanying diagrams. The checklists should not be regarded as a substitute for reading the main text and are not an exhaustive list of all the relevant issues. They are provided to give a quick reference and may be used as an aide-mémoir, for example, when reviewing design proposals or undertaking an access audit.

A comprehensive index is also available with the suite of booklets.

The Building for Everyone series is available online at **www.nda.ie** and **www.universaldesign.ie**. Electronic links are provided to relevant sections in the different booklets. As standards and requirements develop, the electronic versions of these booklets will be updated.

The electronic version is produced in accessible PDF format in accordance with the Web Content Access Guidelines 2.0. If you have any difficulties in this regard or require the document, or particular sections, in alternative formats, please contact the Centre for Excellence in Universal Design at the National Disability Authority, **info@ceud.ie** or (01) 6080400.

8.2 Terminology

Accessible facilities – Facilities that are designed for all users of a building or external environment, including the young and old, and those of all sizes, abilities and disabilities.

Building – A permanent or temporary structure of any size that accommodates facilities to which people have access.

Building user – A person regardless of age, size, ability or disability using facilities in a building or associated external environment.

Egress – Independent emergence of a person from a building and the immediate vicinity.

Evacuation – Egress in an emergency situation, from a place of danger to a place of safety.

Extranet – A private network that uses the internet to securely share part of an organisation's information or operations with others such as suppliers, customers or other businesses. An extranet may form part of an organisation's intranet that is extended to outside users.

Intranet – An in-house website that serves the employees or members of an organisation. An intranet is not a site accessed by the general public.

Internet – A worldwide system of computer networks that uses the public telecommunication network to link millions of computers for communication purposes.

8.3 Design Issues

The role of building management: The accessibility and usability of a building relies as heavily on good management as it does on the physical characteristics of the environment.

Good management is essential to the effective functioning of a building at all levels, from policy making and strategic planning to practical tasks, such as restocking toilet tissue, soap and paper towels.

Good management practice will ensure that suitable emergency evacuation procedures are in place, regularly reviewed, practised, and communicated effectively to everyone who uses the building. It will ensure that staff and volunteers receive appropriate training and that customer service is exemplary throughout the organisation. All of these issues contribute to the correct functioning of a building and that it's facilities are accessible, useable, and understandable to all.

Poor management may mean that elements or areas of a building become difficult for people to use due to lack of maintenance. This may be the case where door self-closing devices are not regularly maintained and consequently become very stiff to operate, or in cases where a corridor is dimly lit because light bulbs have not been replaced.

Poor management may also result in facilities such as lifts being taken out of action for routine servicing at a time when their availability is essential.

Good management will consider the needs of all building users regardless of age, size, ability or disability and ensure that facilities such as these are always available, with routine servicing undertaken out of hours.

Checklist – The role of building management
• Good management is essential to the effective functioning of a building.
• Good management pays particular attention to the maintenance of accessibility to all building users, regardless of age, size, ability or disability, and to those features of a building that are critical to maintaining accessibility.

8.4 Building Management

A well-managed building is welcoming, safe and convenient for everyone to use. Good management and effective customer service can improve the accessibility and usability of even a badly-designed building.

By contrast, poor management and a lack of attention to customers' need can compromise the most accessible venue.

A badly fitting door, for example, which catches on the carpet as it is opened, presents an obstacle to many people. Building managers must ensure that accessibility to a building and the services it offers is not inhibited by poor maintenance nor by the actions of employees, customers or visitors.

Building management encompasses a range of practical tasks including cleaning, maintenance, servicing, and repairs. It also covers operational issues such as customer service, staff training and emergency evacuation procedures.

The nature of these tasks will vary widely depending on the size and function of the building. Effective management of heating and ventilation services will also help to ensure the energy use in a building is kept to a minimum, as will early treatment of defects in the building's fabric.

In larger organisations, there may be a dedicated team of building management and human resources personnel who undertake these functions in-house, or a small team who outsource the practical tasks, such as cleaning and maintenance.

Smaller organisations, such as a residents' association with a small community building, may have to undertake these tasks themselves, and seek training to develop skills or obtain voluntary support.

The production of an access handbook is one way of listing and explaining the features and facilities of a building that must be maintained in order to ensure universal design for all.

A template access handbook is available to download on the NDA's website. The handbook should include a set of plans of the building that indicate all the locations where clear dimensions must be maintained for access and safety. It should also include a listing with appropriate commentary of all the features that facilitate access for all people regardless of their age, size, ability or disability within the building, such as automatic door-opening devices, assistance alarms, platform lifts, and others.

An explanation of particular colour schemes within a building may also be useful as these will have been carefully selected in order to provide effective visual contrast between surfaces and fixtures and this contrast should be maintained during future redecoration.

The access handbook should be kept together with the safety file or building manual and be available for all staff to consult. Please also refer to the NDA publication Access Handbook Template - A Tool to Help Manage the Accessibility of the Built Environment available as a free download on the NDA's website

Checklist – Building management

- Prepare an access handbook to record and explain features of a building that are key to universal design for people regardless of their age, size, ability or disability.
- Ensure the access handbook is available for all staff to consult.

8.4.1 Access audits

An access audit is a means of assessing the accessibility of a building or environment against predetermined criteria. It is used to identify existing barriers to access and to guide an action plan for improvements. The audit is the first step on a long journey, and is not an end in itself.

It is important that anyone commissioning an audit has a clear plan for how they are going to use the audit report, and has communicated those expectations to the auditor.

An access audit should be undertaken whenever alterations or refurbishment works are planned to a building or environment so that improvements to access can be incorporated from the outset.

Access audits are not restricted to buildings; they are also applicable to facilities in outdoor environments, such as country parks, play areas, and cemeteries, to name but a few.

Access audits are an essential tool in planning for change where buildings and services are available to members of the public. However, they are also useful in places of employment as a means of identifying improvements that will facilitate easier access for members of staff, including existing and future employees. When undertaking an access audit of a workplace, current staff should be consulted wherever possible in order to highlight existing barriers to access and in order to address individual need when recommending improvements or alterations to the building fabric or fixtures.

In addition to looking at the physical features of a building, access audits should include an assessment of issues such as communications, information, customer service and staff training should also be reviewed. These make a significant contribution to the accessibility of services in all organisations.

The NDA publication *Guidelines for Access Auditing of the Built Environment* offers comprehensive best practice guidelines on how to carry out an access audit. The sections below supplement these guidelines.

The NDA's Centre for Excellence in Universal Design also provides guidance on carrying out a web accessibility audit - http://www.universaldesign.ie/useandapply/ict/webaccessibilityauditing

Checklist – Access audits
• Undertake an access audit to identify works required to improve accessibility and usability of building and facilities.
• Undertake an access audit in particular whenever alterations or refurbishment works are planned in order to identify potential improvements.
• Consider access audits for places of employment as well as for buildings or environments available to members of the public.
• Assess issues such as communications, information, customer service and staff training in addition to physical features.
• Refer to Guidelines for Access Auditing of the Built Environment for comprehensive guidelines.

8.4.1.1 Audit recommendations

Access audits are likely to include a number of recommendations for improving access. These may range from items that are relatively easy to implement in-house, such as the provision of information in large print, to substantial physical alterations, such as the installation of an evacuation lift. Other recommendations – such as redecoration to improve visual contrast – can often be incorporated into routine maintenance schedules. Some will require extensive consultation with different statutory authorities and consequently may take some time to implement.

Recommendations in an access audit should always be thoroughly considered, and it should be borne in mind that there may be several different ways of overcoming an existing barrier.

In some cases, there may be one or more simple changes that can be made in the short term, whilst funding or permissions are obtained for longer-term, permanent solutions.

For example, if the entrance to an existing building has a series of steps, it is likely, subject to there being sufficient space available and obtaining the relevant permissions, that the construction of a permanent ramp will be recommended. However, it may take several months before the permanent ramp is completed and during this time the main entrance will remain difficult or impossible for some people to access. The recommendations in an access audit should include short-term improvements that may, in this example, include the provision of a temporary ramp or the availability of an alternative accessible entrance.

In other situations, there may be more than one possible solution to overcome a particular barrier; if so, they should all be set out in the access audit.

For example, if a particular service is located in a room that is inaccessible to some people, two obvious solutions are available: one is to implement physical changes that will make the room universally designed, and the other is to relocate the service to another room that is already accessible. Within each of these two solutions there may indeed be further options such as how to make the existing room accessible. All possible options should be explored and set out in the access audit for the client to consider further.

Checklist – Audit recommendations
• Always consider different ways of overcoming an existing barrier to access.
• Set out in an access audit all short- and long-term, temporary and permanent solutions.
• Set out alternative solutions to an existing barrier, where more than one option is possible.
• Always aim for solutions that will provide the most equitable means of access and a universal design approach.

8.4.1.2 Priority ratings and categories

Some clients require recommendations to be prioritised in order to give them a clearer understanding of which items really should be implemented, and in what order. Where this is the case, priority ratings should be discussed and agreed in advance with the client.

It is important that priority ratings reflect the urgency and importance of the task, irrespective of the size of the work or how long it is likely to take to implement. Priority ratings should not be confused with categories, which are discussed below.

Table 8.1 below sets out an example of priority rating definitions together with items that may fall within each band. It is important to note that items within each band may vary considerably in size and complexity.

Essential items, for example, may include the installation of an evacuation lift, a passenger lift, or platform lift to a building with more than one floor level where there is currently no means of vertical circulation other than the stairs. Although this item is significant and may take several months to complete, it is considered essential in ensuring access and usability of the services and facilities. Therefore the process of implementation should be commenced with a degree of urgency.

Other essential items might include the procurement of a portable induction loop for use in various locations in a building. This will be much quicker and easier to implement, but still represents an essential item to service users.

Table 8.1 Example of priority ratings	
Priority rating	Definition and examples of access audit recommendations.
1 (Immediate)	Items that present a potential risk to the health and safety of building users. Examples include: Removal of items obstructing emergency exit routes both inside and outside a building. Repairing loose handrails to steps and ramps.
2 (Essential)	Work that is essential in order to improve access to services and facilities. All items are important and should be implemented with a degree of urgency. Examples include: Provision of designated accessible parking bays within an existing car park. Installation of an evacuation lift, passenger lift or platform lift. Creation of a universally designed toilet. Provision of a portable induction loop.
3 (Best practice)	Work that is recommended in order to meet best practice guidelines and to improve access for all building users. Examples include: Provision of audio guidance to supplement printed information. Provision of supplementary tactile and Braille signage within certain areas of a building.

Categorising the recommendations in an access audit is useful for many clients and, where required, should be discussed and agreed with the client in advance. In larger organisations, tasks can be categorised or attributed to different departments such as building management (maintenance and cleaning tasks), human resources (staff training) and capital planning (substantial physical

alterations). Categories can also be used to establish a likely timescale for implementation, although care should be taken to ensure that such categories are not confused with priority ratings which, as described above, have an inherent degree of importance and urgency.

Tables 8.2 and **8.3** below set out examples of categories that could be used to classify recommendations in an access audit. **Table 8.2** categorises recommendations according to departments in an organisation, and is useful in situations where responsibility for implementing tasks needs to be established as part of the audit process. **Table 8.3** categorises recommendations according to the likely timescale for implementation. Items that require immediate attention – such those that pose a potential risk to health and safety and those that can be easily and quickly implemented – can be highlighted in this way.

It may be decided that other recommendations should be implemented in the short, medium or long term, or that they require review on an ongoing basis. Both tables include the same recommendations. It is important to note that the use of categories defined by timescale is not necessarily an expression of the urgency or importance of a recommendation, but more of a realistic assessment of the order in which changes can be made.

Table 8.2 Example of categories defined by departments in an organisation		
Category reference	Category name	Examples of access audit recommendations.
A	Building maintenance	Remove furniture currently obstructing emergency exit route. Regularly test hearing enhancement systems. Replace worn entrance matting.
B	Cleaning	Remove cleaning equipment stored in accessible toilet. Modify cleaning regime, possibly involving a change in cleaners' working hours, to ensure circulation routes are not wet whilst the building is open to the public. Obtain the correct equipment and materials to effectively clean the specialist floor surface.
C	Human resources	Arrange disability awareness training for new reception staff. When online services are implemented, ensure web authors are fully briefed in the development of accessible websites. Provide large-print format of information for existing regular service users.
D	Building management	Improve visual contrast between surfaces and fixtures during next redecoration. Review and practice emergency evacuation procedures. Ensure the access handbook is regularly updated.
E	Capital planning	Upgrade the existing lift to an evacuation lift. Improve the car park layout and increase the number of designated accessible bays when procurement of the adjacent site is complete. Consider options for relocating a particular department to a more accessible location in advance of a new service becoming publicly available.

Table 8.3 Example of categories defined by likely timescale for implementation		
Category reference	Category name	Examples of type of work covered by access audit recommendations.
A	Immediate	Remove furniture currently obstructing emergency exit route. Provide large print format of information for existing regular service users. Remove cleaning equipment stored in accessible toilet.
B	Short term	Replace worn entrance matting. Arrange disability awareness training for new reception staff. Obtain the correct equipment and materials to effectively clean the specialist floor surface.
C	Medium term	When online services are implemented, ensure web authors are fully briefed in the development of accessible websites. Modify cleaning regime, possibly involving a change in cleaners' working hours, to ensure circulation routes are not wet whilst the building is open to the public. Improve visual contrast between surfaces and fixtures during next redecoration.
D	Long term	Consider options for relocating a particular department to a more accessible location in advance of a new service becoming publicly available. Upgrade the existing lift to an evacuation lift. Improve the car park layout and increase the number of designated accessible bays when procurement of the adjacent site is complete.
E	Ongoing	Regularly test hearing enhancement systems. Review and practice emergency evacuation procedures. Ensure the access handbook is regularly updated.

Checklist – Priority ratings and categories
• Agree and clearly define priority ratings in advance with the client.
• Ensure that priority ratings are not confused with categories.

8.4.1.3 Access plan

An access audit is often the first stage of a process of improvement for a building or environment and the services delivered from it. The recommendations from the audit should be taken forward to form an access plan, which sets out a strategy for implementation.

The development of an access plan will help to ensure that access is an ongoing consideration within an organisation. It should also help to identify opportunities for implementing change within any programme of planned or routine maintenance. An access plan should ideally be cross-functional, and include responsibilities of different areas of the organisation such as ICT, customer services, HR, health and safety, safety, or procurement, as well as the building responsibility. It is important that access audits be reviewed / revisited periodically, for example every three years.

An access plan should set out targets, outcomes and a timeframe for completion of identified improvements.

In some cases, such as where significant structural alterations are required, it may be appropriate to set out targets for different stages.

These stages could include the receipt of various statutory permissions, completion of a fundraising programme, and the commencement and completion of construction works. The access plan should be reviewed regularly and updated whenever goals are achieved. As well as driving a programme of change, the access plan will provide documentary evidence of an organisation's commitment to improving a universally designed environment and of successfully bringing about positive change.

Checklist – Access plan
• Take forward the recommendations from the access audit to prepare an access plan.
• Ensure the access plan sets out targets, outcomes and a timeframe for completion of identified improvements.
• Ensure that access is an ongoing consideration within an organisation.
• Ensure that the access plan is regularly reviewed and updated.

8.4.2 Customer service

The delivery of good customer service is a priority for all organisations and is the key to a successful business.

For public service organisations and businesses, such as shops and restaurants, customer service is a daily and integral part of their operation. For other businesses such as factories or research establishments, direct interaction with customers or clients may be infrequent or more typically in the form of written communications as opposed to face-to-face meetings. Nonetheless, all interaction with customers and clients is important and should promote the ethos of universal design for people regardless of their age, size, ability or disability.

Good customer service should encompass effective communication, whether face-to-face, via the telephone, textphone or video link, via email, or in printed format. Staff should be able to manage the expectations and needs of all customers and service users so that everyone is able to access, use and understand the services they require.

The provision of assistance for customers and clients may be required in some circumstances and this is a key component of customer service.

Some people may require assistance in locating or retrieving items in a shop, for example, or in finding their way to a particular department in a large building.

Assistance should be readily available and tailored to meet the customer's individual need. Some people may require or prefer to have assistance using a platform lift, but it should not be assumed that everybody who uses the lift will require or want assistance.

Checklist – Customer service
• Ensure customer service in all situations promotes the ethos of universal design for people regardless of their age, size, ability or disability.
• Ensure customer services encompass effective communications, in the different formats that suit different customers.
• Provide tailored assistance to customers when required.

8.4.3 Staff training

Everybody in an organisation contributes to the efficient running of a building. All members of staff in an organisation, including volunteer staff, are recommended to undertake appropriate training to know and understand what are the difficulties faced and what facilities or measures promote access to all, regardless of age, size, ability or disability.

This training could be one-to-one training by a supervisor, use of video or eLearning tools, contractors, or formal classroom training. Staff and volunteers should be fully aware of features within buildings and environments that help to facilitate universal design for people, such as unobstructed circulation routes, the availability of suitable seating and clear signage.

Staff should also be aware that certain actions may inadvertently create barriers to access, such as placing large waste bins in the transfer area of an accessible toilet, removing or covering signage during redecoration, or obstructing circulation routes with boxes or surplus furniture.

Where particular items of equipment are installed, such as textphones, platform lifts, and induction loops, staff should be fully trained in the use and maintenance of this equipment.

Checklist – Staff training
• Provide training to all staff and volunteers in an organisation around what promotes and what inhibits access for all.
• Provide training in the use of equipment such as textphones, platform lifts and induction loops.

8.4.4 Building maintenance

All buildings require regular maintenance to ensure that they function as efficiently as possible, are safe and clean to use and to minimise deterioration of the building fabric.

Older buildings are likely to require more in the way of fabric repairs and replacement than newer buildings, but even entirely new structures should have in place a scheduled maintenance programme and procedures for undertaking ad hoc repairs.

Regular, effective maintenance is an essential component in ensuring universally designed buildings.

Tenders for work in relation to a building should explicitly seek written information to be included on how safety and access issues are to be addressed during the works, and these commitments on maintenance of access to all should be incorporated into contract documentation. Specific issues to cover would include keeping routes free of obstruction; adequate warning of hazards to have regard for people with visual difficulties; and provision of alternative means of access/egress that are usable by people with disabilities if main access/egress temporarily out of action.

Procedures should be in place to facilitate the prompt repair or replacement of components in a building.

Light bulbs should be replaced as soon as they have blown in order to maintain adequate lighting levels. If floor finishes become worn, they should be replaced before they present a slip or trip hazard. Door handles and other door ironmongery

should be repaired or replaced if they become loose or damaged or are no longer functioning correctly.

Items such as these may be considered relatively minor to some people, but to others they present a significant barrier to access and also make the building unsafe for many people.

Planned maintenance of a building is likely to include internal and external redecoration. Whenever internal redecoration is planned, particular care should be taken to ensure that colour schemes are designed to maximise visual contrast between surfaces and fixtures. Conversely, in buildings where this has not previously been considered, the opportunity should be taken during redecoration to improve visual contrast. For further guidance on visual contrast, refer to **Booklet 4: Internal environment and services, Section 4.4.3**.

In buildings that are to remain in use while redecoration is underway, particular care should be taken to ensure that decorators' work areas are adequately guarded and that circulation routes are not obstructed.

External redecoration is likely to require the use of ladders, scaffold towers or mobile lifting platforms. Where these are positioned within or adjacent to access routes, they should be adequately protected so as not to present an obstruction or hazard to people moving around the building.

Historic building fabrics need particular care when it comes to restoration, and specialist conservation designers and contractors will be required for their sustainable preservation. See **Booklet 7: Building types, Section 7.13.1** for more information.

Features in the external environment, including access routes, planting areas, signage, and lighting, should also be adequately maintained.

Access routes should be kept clear of obstructions at all times and this may require the regular removal of litter, dead leaves, and other items. Some surfaces may be prone to become slippery when wet or if moss or mould is permitted to grow. If this is the case, they should be regularly cleaned. Planting adjacent to access routes should be regularly cut-back so that it does not encroach into an access route either at low- or high-level.

External signage should be regularly checked to ensure it is clearly visible. Any planting adjacent to signage should be regularly cut-back to ensure that the sign is clearly visible at all times and from all directions.

External lighting is essential for illuminating access routes, entrances and exits during the hours of darkness and should be fully functioning at all times.

It is important to mention the value of highlighting accessibility and safety concerns in any relevant documentation, such as requests for quotes, supplier tenders and particularly the supplier's safety statement or work method statement.

It is recommended that safety concerns like guarding, keeping routes unobstructed, and ensuring availability of safe alternative facilities (such as lifts) are covered in the supplier's work method statement. Additionally it is recommended that contractor staff undergo disability equality training, to build confidence that these requirements work on the ground.

All equipment including ventilation and air conditioning systems, lifts, platform lifts, automatic door-opening devices, alarms, and communication systems should be regularly tested and serviced according to manufacturers' recommendations and relevant European and international standards.

The timing of routine tests and servicing should be carefully planned to minimise disruption to building occupants and to ensure that access is not unnecessarily prevented.

Wherever possible, in public-service buildings, offices and other premises visited by the general public, equipment, such as lifts and platform lifts, should be tested out of normal working hours so that full access can be maintained when the building is in use.

If it is necessary to carry out tests or servicing when the building is in use, advance warning should be given to inform building occupants that this is the case and alternative arrangements put in place to enable staff and visitors to access the necessary services and facilities.

Checklist – Building maintenance
• Ensure procedures are in place for undertaking scheduled maintenance and adhoc repairs.
• Ensure carefully-designed colour schemes are preserved during redecoration.
• Make sure decorators' work areas are guarded and positioned so as not to obstruct access routes.
• Ensure external access routes are kept clear of overhanging vegetation, fallen leaves and litter.
• Keep vegetation well trimmed so as not to obscure external signage.
• Clean external access routes regularly where they are prone to moss and mould.
• Ensure external lighting is well maintained at all times.
• Test and service all equipment and machinery regularly.
• Wherever possible, ensure testing and repair of essential equipment, such as lifts, is undertaken out of hours.
• Ensure procedures to maintain areas during works are built-into tender and contract documentation.

8.4.5 Cleaning

All buildings should be cleaned regularly. Some buildings such as healthcare and laboratory environments will require a particularly high standard of cleanliness and guidelines or regulations relating to these and other such building types should be followed. Other buildings or parts of buildings may require daily or weekly cleaning, depending on the frequency and type of use.

Regular and effective cleaning contributes to the maintenance of a safe and healthy environment that is pleasant for everyone to use.

All areas and facilities in a building should be cleaned, including facilities that may not be used very often but are essential in providing access for all people.

All buildings should provide a dedicated cleaners' room with a cleaners' sink or bucket sink and in multi-storey buildings, cleaners' rooms should be provided on each floor level.

The provision of suitable cleaners' rooms should ensure that cleaning materials and equipment are not stored in inappropriate locations, such as in the transfer area of accessible toilets where they will obstruct access.

Internal floor surfaces require regular cleaning to ensure they are safe to use, maximise their durability, as well as being attractive to look at and hygienic. The slip-resistance of sheet and tile finishes may be compromised if they are not cleaned regularly or if they are cleaned using the wrong materials or equipment. The perception of light reflectance and colour of a floor finish may also be affected if the surface is not regularly maintained and this may compromise the effectiveness of a carefully designed colour scheme.

The correct method and materials should always be used to clean floor finishes and manufacturers' guidance should be followed in all cases. Information on cleaning regimes should be retained in the building manual and be available for relevant personnel to view. Ideally, floors should not be left wet after cleaning if the building is still in use as they will present a slip hazard.

The cleaning regime should ensure that floors are cleaned to a dry finish wherever possible. If floors are still wet, they should be adequately guarded using temporary signs. The signage should follow the sign design guide guidance regarding colour contrast and lettering. The signs should be removed as soon as the floor is dry.

Generally, floor materials should be selected so that they do not become slippery when wet. More specifically, the standard building cleaning regime should be such that the floor is dry by the time the building is open to the public. In cases where there is a spillage, and the building is already open to the public, a person should be designated to stand beside the spillage until it is cleaned up. The floor should be fully dry following the clean up.

Checklist – Cleaning
• Ensure all buildings are cleaned regularly to ensure the environment is safe and healthy.
• Ensure all buildings incorporate a dedicated cleaners' room.
• Clean floor surfaces regularly with appropriate materials to maintain slip-resistance and other characteristics.
• enaure information about cleaning methods and materials is retained in the building manual.
• Endeavour to clean floors to a dry finish wherever possible.
• Use guarding and temporary signage wherever surfaces remain wet.

8.5 Emergency Evacuation

Every organisation should have in place policies, procedures and equipment to facilitate the safe evacuation of everyone in an emergency. Universal design for people requires not only convenient access to buildings and services but an environment that facilitates safe, independent, and dignified evacuation for all.

Design solutions that facilitate independent evacuation should be fully explored and incorporated into buildings wherever possible. If they are not, there are likely to be significant implications for the ongoing operation and management of the building, which will mean additional running costs.

Good design and thorough planning are likely to result in reduced operational costs and will also result in a building that is better for everyone to use.

In new buildings, procedures and routes for emergency evacuation should be fully considered at the outline and detailed design stages.

Good planning should result in the elimination of potential problems, such as internal and external changes in level, which may preclude independent evacuation for some people, particularly those who may walk slowly or have other

mobility difficulties. If these are not addressed at the design stage, they are likely to require additional management resources once the building is complete, such as the provision of personal assistance, the use of assistive equipment, and associated training, all of which have significant ongoing financial implications.

The position of a building on a site, the manipulation of external ground levels and a well-designed internal layout can all be used to make a building more convenient to access and safer for everyone to evacuate.

Fire engineering technologies should be considered from the outset as these may offer innovative solutions that improve safety and reduce the need for potentially costly future adaptations.

Fire safety systems (also referred to as life safety systems) including fire detection and alarms, emergency escape lighting, fire suppression systems, wayfinding, and smoke control systems should also be considered at an early design stage. These will all form part of the emergency evacuation system and should be used to facilitate, wherever possible, independent evacuation of everybody in a building.

The use of systems, such as those facilitating a phased or progressive evacuation, should be explored at an early stage as they may influence issues such as the size and layout of adjoining compartments in a building and the fire resistance of particular elements of construction.

In existing buildings, emergency evacuation procedures should be continuously under review, and improved or adapted when necessary. People who require assistance or auxiliary aids in order to evacuate a building safely may join the staff. Procedures should be in place to consult with individual members of staff from the outset to discuss and implement a personal evacuation plan.

The needs of people who visit a building, or attend for a meeting or conference, may vary on a daily basis and should constantly be reviewed so that the needs of everyone can be accommodated safely and efficiently.

When existing buildings are to be refurbished or converted, all aspects of emergency evacuation should be considered at the design stage. As with new buildings, this should ensure that all aspects of emergency evacuation including

exit routes, fire safety systems, signage, equipment, and procedures are able to facilitate safe evacuation for all.

In buildings with more than one floor level, evacuation of people from areas of the building other than the exit level is likely to present one of the biggest challenges to designers and building managers. In smaller premises, such as those with only two floor levels that are served by a platform lift or stairs only, the use of evacuation chairs may be considered as a potential means of assisting people to the exit storey. However, the use of evacuation chairs should not be considered a panacea solution for moving people vertically in a building as they have significant disadvantages from the user's point of view. Their use also depends on the availability of assistance, which means they do not facilitate independent evacuation - which should be the aim in all situations.

Evacuation chairs vary widely in style from lightweight metal-framed folding seats with two wheels to battery-powered portable stair climbers that are able to carry people whilst remaining seated in their own wheelchair, including self-propelled and electrically-powered wheelchairs.

The lightweight folding style of evacuation chair requires people to transfer out of their wheelchair into the evacuation chair. This is suitable for some people, but not all.

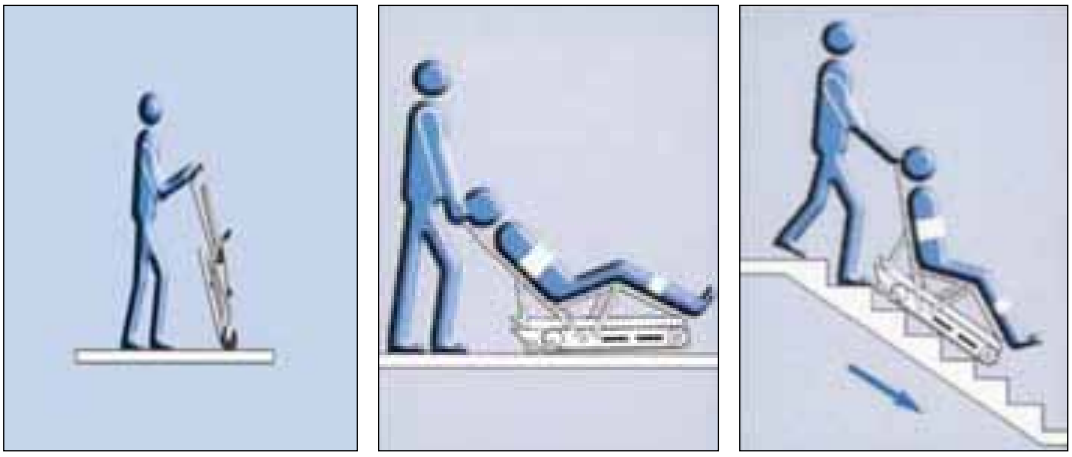
Some people risk significant injury if they are required to transfer out of their own wheelchair and for other people, the evacuation chair will be unable to provide sufficient support to enable them to be evacuated safely or with any degree of comfort.

The use of powered evacuation chairs addresses some of these issues, as they enable people to remain seated in their own wheelchair.

However, many people regard the use of evacuation chairs as undignified and some experience high levels of anxiety whilst using the equipment. The use of evacuation chairs should only be considered where all other means of facilitating independent evacuation have been explored.

Image 8.1 Examples of evacuation chairs.

Image 8.2 Illustration on how to use evacuation chairs.



In many situations, particularly in multi-storey buildings, the preferred means of evacuation from floor levels other than the exit storey is via an evacuation lift. This is a lift specifically designated for evacuation purposes. Evacuation lifts are constructed with additional protection against fire and are able to facilitate unassisted escape in the event of an emergency.

Evacuation lifts enable people who are not able to use stairs to safely and quickly access the exit storey of a building. The availability of an evacuation lift in a building reduces reliance on other people and is better able to facilitate independent evacuation for all.

In new buildings, the provision of one or more evacuation lifts should be considered, depending on the size and expected occupancy of the building. In existing buildings, where a new lift is proposed to improve access between floor levels, consideration should be given to installing a new evacuation lift to IS EN 81-70 standard 'Safety rules for the construction and installation of lifts – Particular applications for passenger and good passenger lifts.' Accessibility to lifts for persons including persons with disability (Amd A1:2005) to facilitate safe, independent and dignified evacuation for everybody and ensuring the relevant technical and safety systems are incorporated.

It may also be possible to upgrade an existing lift to evacuation lift standard.

As many people with disabilities are unable to use stairs unassisted, it is necessary to ensure that they can stay in a safe location until help arrives. A common way to facilitate this need is through the provision of refuge areas within protected stair enclosures. This is not always possible and may not always be desirable, particularly when dealing with existing buildings where space in the stairs is limited or where larger numbers of people who require assistance to escape are anticipated.

The use of refuge areas will often require a person with a mobility difficulty to wait whilst others escape past them. It should be realised that people can become fearful and concerned about being left behind. It is essential that the use of refuges is discussed fully in advance with those who might need to use them. This will need to be discussed with employees as part of the drawing up of Personal Emergency Evacuation Plans (PEEPS). Where people are unfamiliar with the use of refuge spaces or the spaces' locations in a building, the intervention of staff will be necessary to provide direction and reassurance. It may also be necessary for staff to remain with those waiting in refuge areas to assist with the use of communication systems or provide general support.

Refuges should be provided so that people with mobility difficulties are not placed at a greater risk from fire than other occupants. This will usually require an assessment of the numbers of people likely to require the use of a refuge space and assistance with vertical evacuation of the building. Inherent in this assessment is the availability and suitability of appointed staff who can provide assistance.

The subject of refuge areas is covered in more detail in Booklet 3: Vertical circulation and in NDA publication 'Safe evacuation for all'.

Checklist – Emergency evacuation
• Ensure policies, procedures and equipment are in place to facilitate safe evacuation for everyone.
• Aim to facilitate independent evacuation wherever possible.
• Consider procedures and routes for emergency evacuation at the design stage.
• Consider fire engineering technologies and fire safety systems from the outset.
• Continuously review emergency evacuation procedures in existing buildings.
• Ensure evacuation procedures include the needs of individual visitors to a building.
• Consider the best means of evacuating people from floor levels other than the exit storey.
• Wherever possible, provide an evacuation lift to facilitate unassisted escape.

8.5.1 Evacuation planning

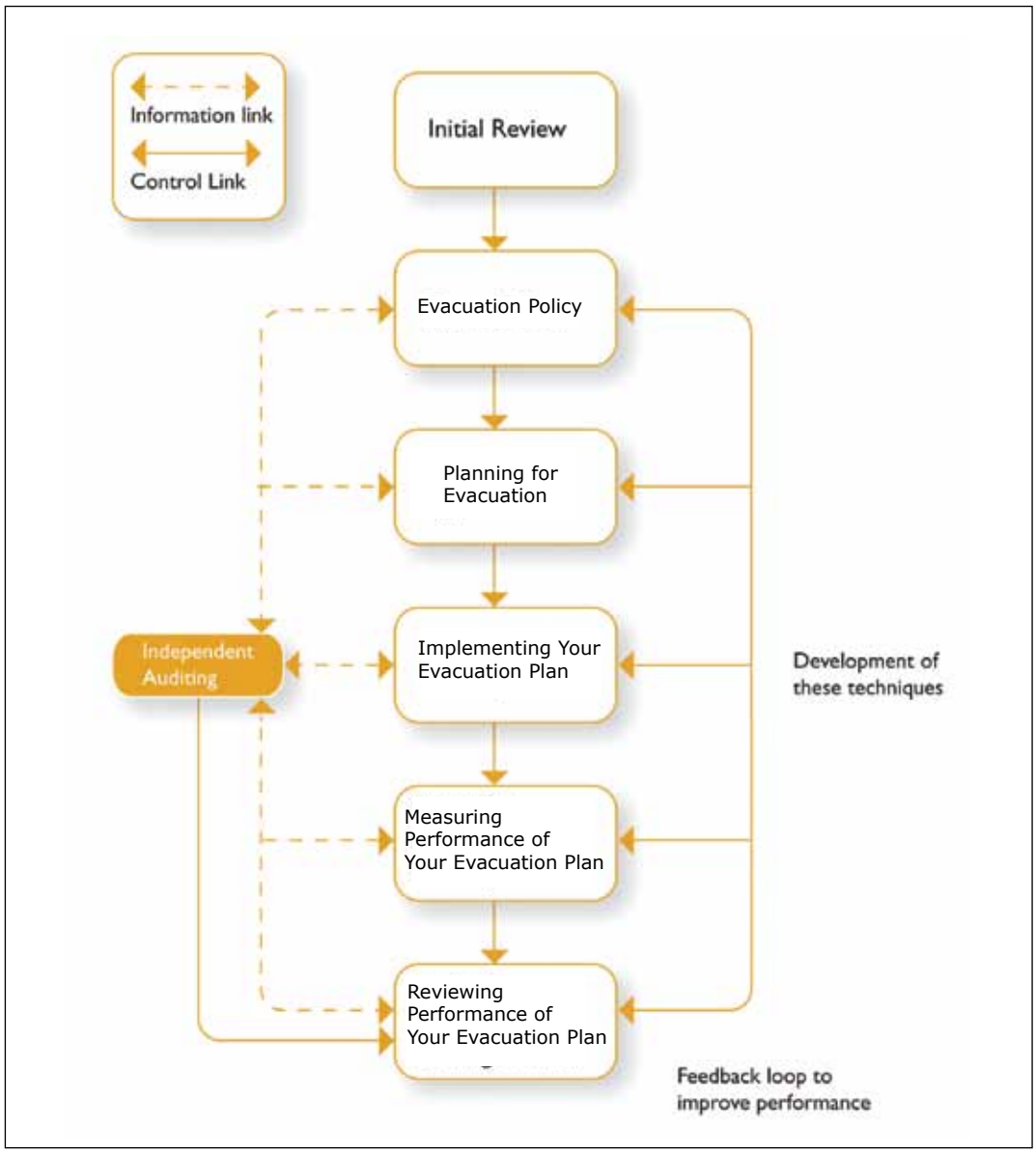
Achieving safe evacuation for all requires a structured planning process. This applies to the design of new buildings, the implementation of refurbishment and conversion projects, and existing buildings.

Comprehensive guidance on evacuation planning is available in the NDA publication ***Safe evacuation for all*** – this can be downloaded from the NDA's website – www.nda.ie.

The Risk Assessment Checklist in Appendix 3 of the Safe evacuation for all publication may be a useful starting point to inform an appropriate plan of action.

The flowchart in **Figure 8.1** below illustrates the key processes involved in evacuation planning and the paragraphs below summarise the aims and objectives of each stage.

Figure 8.1 Key elements of an emergency evacuation management system



8.5.1.1 Initial review

This first stage takes an overview of the existing situation and establishes the desired outcomes of the evacuation planning process. In this stage, all information relating to emergency evacuation including any fire certificates, safety policies and statements, fire safety systems, lifts, and previous activations of the

fire alarm should be gathered. Details of staff training in relation to emergency evacuation and any feedback from building users should also be collated.

The needs of everybody using the building should also be established at this stage so that the evacuation plan can be developed accordingly.

The needs of people who use a building regularly such as staff in an office and students in a college could be established using surveys, questionnaires or during face-to-face interviews.

Questionnaires may also be applicable to people attending a venue for a training course or other pre-planned event and for contractors undertaking a pre-arranged task.

Where people are able to visit buildings unannounced such as to some public-service buildings, people should be encouraged to seek information about evacuation procedures and to alert staff if they are likely to require any form of assistance. Refer also to **Section 8.5.3 Consultation** below.

8.5.1.2 Evacuation policy

All organisations should have a formal policy in relation to emergency evacuation and the policy objectives should state clearly that the needs of everyone will be met in order to achieve safe evacuation for all.

The policy should acknowledge the various statutory requirements that impact on fire safety and clearly state who holds responsibility within an organisation for safe evacuation.

8.5.1.3 Planning for evacuation

This stage of the evacuation planning process involves the development of a plan that will facilitate the safe evacuation of everyone in a building.

The plan will consider the needs of everyone using a building so that arrangements can be discussed and agreed in advanced.

8.5.1.4 Implementation

The implementation stage involves making physical changes, where required, to the building and its fire safety systems, communicating the evacuation plan and training staff.

The evacuation plan should also be tested regularly to ensure that people are familiar with the evacuation routine, that the systems and procedures work effectively and that they continue to meet the needs of everyone in the building.

8.5.1.5 Measuring performance

The effectiveness of the evacuation plan should be monitored, with measurements taken wherever possible as a means of recording performance on an ongoing basis.

The monitoring process will help to highlight potential problems and enable modifications to be made to the plan as circumstances change. Issues that can be measured will vary according to the type and size of building, but are likely to include evacuation times for fire drills, the degree of awareness amongst staff of particular procedures, the regularity of maintenance and testing of safety systems and equipment and staff satisfaction in relation to the effectiveness of the plan.

8.5.1.6 Reviewing performance

The evacuation plan should be regularly reviewed to ensure that it continues to meet the objectives established in the initial review.

Whenever changes occur to the building or its occupants, the suitability of the evacuation plan should be reviewed and amended to ensure it continues to facilitate safe evacuation for all.

8.5.2 Personal emergency evacuation plans

In buildings that are used regularly by people who require assistance during evacuation, individual personal emergency evacuation plans (PEEPs) should be developed.

This applies in all cases where it is known (or identified during a process of enquiry) that an individual may require assistance during an emergency

evacuation and covers staff, volunteers, contractors and some visitors. It is also applicable in cases where an individual requires assistance on a temporary basis, such as while recovering from a broken leg and using a wheelchair or crutches to aid mobility.

PEEPs should always be prepared in direct consultation with the individual to whom it relates and it should be tailored to meet the individual's particular capabilities.

The PEEP should be developed within the context of the organisation's emergency management systems and should take into account the characteristics of the building and its safety systems.

A PEEP is not a transferable document – a person cannot take their PEEP from a particular place of work and expect it to be applied without modification to another building or another organisation. PEEPs are entirely specific to an individual, to a particular building and within a particular management system.

A PEEP developed in conjunction with a person attending a training course may only be applicable for the duration of the course, but is essential in ensuring the safety of the person in that particular setting. The PEEP is an essential component in facilitating full access to employment, services and training.

The use of an emergency evacuation questionnaire is an effective way of identifying people who need assistance in an emergency. This is certainly recommended for staff and people who are known to the organisation, such as regular contractors and visitors. The questionnaire sets out pertinent information relating to the existing evacuation plan and seeks to identify the type of assistance required. The information gathered in the questionnaire can then be used, in discussion with the individual, to prepare and record aspects of the PEEP.

Questionnaires should be available in a range of formats, such as electronic or large print, and assistance should be available in reading, understanding, and recording responses when required.

A sample emergency evacuation questionnaire is included in the publication *Safe evacuation for all* available on the National Disability Authority website.

As with the evacuation planning process outlined in the section above, it is essential that PEEPs are continuously reviewed and improved or modified where necessary.

In some cases, changes to a PEEP will be required to reflect physical alterations in a building or to its safety systems. In other cases, modifications will be required because an individual's capabilities have changed, because they have been assigned to a different place of work or because people previously designated to provide assistance are no longer available. Changes such as these could occur at any time and PEEPs should be promptly reviewed and updated in consultation with the individual so that safe egress is ensured at all times.

Scheduled reviews of PEEPs may be incorporated into the evacuation planning process, but there should also be an expectation that change will be required at other times and procedures established to enable this to happen promptly.

Checklist – Personal emergency evacuation plans
• Develop a PEEP for every individual in a building who requires assistance.
• Consult directly with the individual to establish needs and preferences and to agree the plan.
• Consider the use of an emergency egress questionnaire, which should be available in a range of formats.
• PEEPs should be continuously reviewed and updated.

8.5.3 Consultation

Consultation is essential in the development of effective emergency evacuation procedures. Individuals, groups and organisations that should be consulted include:

- People of any size, age, ability or disability who use the building on a regular basis.
- Organisations representing people of any age size ability or disability.
- Staff who will be involved in implementing the evacuation procedures, such as those designated as fire wardens or fire marshals and those designated to provide assistance.
- The relevant fire and rescue service.
- Landlords and other building occupiers.
- Professional advisers with a specialist knowledge of access issues, fire safety, and emergency evacuation procedures.

In many buildings, the individual needs of visitors are unknown. This is likely to be the case in buildings freely accessed by members of the public, such as shops and supermarkets, museums and galleries, transport terminals, and other assembly buildings. In these environments, the preparation of egress plans to meet individual needs is unrealistic, yet it must be assumed that there will be people who require assistance and the evacuation plan must acknowledge and provide for this. In these instances, the advice of organisations representing people of any age size ability or disability, and appropriate professional advisors, is likely to be invaluable.

In buildings where there is more than one organisation, such as in multi-tenanted offices and shopping centres, it is important that each organisation is aware of procedures established by the other tenants and by any landlord or operator controlling the common areas.

Fire safety systems in multi-tenanted buildings should be linked so that all building occupants are alerted to the out-break of fire in any single area. Evacuation procedures for each tenancy should be compatible and collectively facilitate the safe egress of every person from the building.

Checklist – Consultation in the development of effective emergency evacuation procedures
• Ensure effective consultation with all individuals and with relevant groups and organisations as part of evacuation planning.
• Ensure that evacuation procedures for different tenants in a multi-occupancy building are compatible.
• Liaise with landlords and operators of the common parts of buildings in relation to emergency evacuation procedures and safety systems.

8.6 Communications

Communication and information are vital to the proper provision of any service. Information can be made available in many ways, including printed material, signage and notice boards, by telephone, from staff, and via the internet; and all should be universally designed.

Public bodies and other service providers should ensure full access to all information and to mainstream services for all.

Service providers and building managements are encouraged to let building users know that their communication and information needs can be met in different ways or in different formats where requested.

8.6.1 People with hearing difficulties

Individuals and organisations involved in delivering lectures, seminars, public meetings, or training events should ensure that information is available in accessible and understandable formats and that alternative forms of communication are available when required.

Alternative forms of communication could include the use of an Irish Sign Language interpreter, lip speaker, or the use of real time captioning. As qualified

experts will need to be booked in advance, prior notification of any needs will therefore need to be made.

Where appropriate and requested in advance, spoken information should be available in alternative formats such as Irish Sign Language. Equipment such as textphones, video relay services or real time captioning may also be requested. Many people with hearing difficulties are able to lip read and the physical environment should facilitate this by clearly illuminating the person's face.

Personnel giving the information should be trained in speaking clearly and directly to others to facilitate effective lip reading. It may also be appropriate to provide written versions of some types of information, such as directions, maps and guides, opening times, and lists of services or contacts. This will vary depending on the organisation and services available.

Lip speakers may be required to facilitate one-to-one communication at a meeting or private consultation or to aid understanding at a seminar or conference. A lip speaker is a hearing person who aids communication between people with hearing difficulties using unvoiced speech. Lip speakers repeat a speaker's message silently, reproducing the shape of words, rhythm and stress used by the speaker. People with hearing difficulties who are able to lip read are able to access and understand the information via the lip speaker.

In all locations where spoken information is given, such as reception desks, ticket offices, and service desks, an induction loop should be provided to benefit people who wear hearing aids fitted with a T-switch. For further guidance on induction loops, refer to **Booklet 4: Internal environment and services, Section 4.10.1**.

Textphones should be considered for all reception desks in public buildings to facilitate use by reception and other staff to make and receive calls to people who prefer text-to-text communications. Where textphones are provided for use by staff in an organisation, they should be fully trained in using the equipment and also be familiar with the text relay service. For further guidance on textphones, refer to **Booklet 6: Facilities in buildings, Section 6.7.2**.

A video relay service is a telecommunication service that enables people to communicate over the telephone using a sign language interpreter. The video relay service uses a videophone or webcam to provide a visual link between the sign

language user and interpreter. The interpreter acts as a neutral, non-participating third party, as with speech-to-text interpreters. A video relay service should be considered for organisations that provide information over the telephone as an alternative or supplement to text-to-text communications.

Real time captioning (also referred to as palantype, speedtext or speech-to-text display) is the simultaneous display of spoken announcements, presentations or lectures in a readable format and should be considered for public events, seminars, conferences and in learning environments. The readable information can be displayed on a computer or television screen, overhead projector, or other type of audiovisual device, depending on the number of viewers and the arrangement of the venue in which the service is being provided.

Where real time captioning is used for seminars or educational purposes, transcripts of the presented material can be easily produced and circulated to participants if required.

Real time captioning is not the same as speedtext. A speedtext operator is trained in condensing language, thus transmitting the meaning of the points discussed, not the actual word-for-word transcription. Speedtext is not a verbatim service.

Checklist – Communications
• Ensure all forms of communication and information are universally designed.
• Ensure all methods of communication and formats of information are clearly apparent and readily available.
• Ensure the availability of alternative formats is actively promoted by service providers.
• Provide alternatives to spoken communication at public meetings, lectures and seminars, where required and requested in advance, such as an Irish Sign Language interpreter, lip speaker, or real time captioning.
• Ensure adequate lighting is available to facilitate lip reading and communication using sign language.
• Provide an induction loop in locations such as reception desks, ticket offices, and service desks, as **Booklet 4: Internal environment and services, Section 4.10.1**.
• Consider the provision of a textphone for reception desks in public buildings.
• Consider the provision of a video relay service.

8.6.2 Printed information

For many organisations, printed material is the most common format for the provision of information. All printed information should be carefully considered and well-designed.

A well-designed leaflet with a logical layout, clear print, and information that is easy to understand will help everyone who reads it. Small print and a cluttered layout can be difficult for everyone to understand and may discourage people from accessing relevant information.

Useful information that is easily extracted from a document will reflect well on an organisation, is likely to be more welcoming and will encourage more people to access, use and understand the appropriate services and facilities.

The National Council for the Blind of Ireland (NCBI) has created 'clear text' guidelines on producing written information that is accessible and usable to everyone www.ncbi.ie/files/make_it_clear_ncbi.doc

The Royal National Institute of Blind People (RNIB) clear text guidelines have been used to develop these guidelines.

With more material now being presented on websites, such as reports and documents it is important that these are useable and accessible for as wide an audience as possible. Where possible provide this type of information in accessible PDF or HTML format. See **Section 8.6.4** on making websites accessible.

The following checklist is guidance to support authors of printed documents to make them more usable and accessible

Checklist – Printed information
• Ensure printed information is well-designed and easy to read.
• Make sure information is logically arranged, clear and concise.
• Keep sentences and words short wherever possible.
• Avoid splitting words using a hyphen at the end of a line.
• Avoid acronyms and jargon.
• Explain abbreviations where their use is essential.
• Consider the use of diagrams or flowcharts to explain complex information.
• Use pictograms and graphics to supplement written information.
• Avoid the use of distracting graphics and pictures overlaid with text.
• Use a consistent format for page numbering or other references.
• Provide a contents list for longer documents.
• Leave space between paragraphs of text and between columns of text.
• Arrange text left-aligned and horizontal.
• Avoid wrapping text around images.
• Provide adequate space on forms for people to write.
• Ensure information and instructions on forms are easy to understand and unambiguous.
• Use a sans serif font with good letter spacing and good line weight.
• Avoid the use of wholly capitalised words.
• Ensure adequate visual contrast between text and background.
• To emphasise text, use bold text instead of italics or underlining.
• Ensure standard documents use at least 12 point type for a font like Helvetica or Arial with larger letters, or 14 point type for a font like Times Roman with lower-size lettering.

• Use a font size of 16 point or above in large print documents.
• Select a font which has clear number shapes.
• Offer a range of background colours for printed documents to meet individual need.
• Ensure words are spaced evenly.
• Use single spacing on a computer, or in typeset documents 14 point leading where text is in 12 point.
• Use matt, not glossy, paper.
• Ensure that paper has sufficient weight to prevent text being seen through from the back.

8.6.3 Audio information

Audio information should be available as an alternative to printed information and is particularly valuable to people with visual difficulties who do not read large print or Braille.

Audio information is also beneficial to people who have difficulties reading documents and people who can understand and speak a language but who do not read it. The provision of audio information in other languages is beneficial to people whose first language is not Irish or English.

Depending on the size and nature of the organisation, audio information may be created in-house or it may be produced by a specialist audio transcription agency. In general, information for individual customers may be suitable for in-house production, while more complex documents and large publications are likely to require the specialist skills of a transcription agency to structure and present information that is easy for people to listen to and navigate.

Audio information covers a number of different formats, including the conventional audio cassette tape, CD, Daisy CD, and MP3 download.

Daisy CD (also termed a digital talking book or Daisy talking book) is a combination of audio and electronic text. The Daisy player or special computer software enables a person to see the book on a screen while corresponding portions of text are highlighted and read out.

Audio information is increasingly offered in full-text digital format for download, circulation by email, and on CD. Electronic files can then be transferred onto a personal computer where it can be accessed through the use of large screens or software that is able to customise font size for an individual viewer. Electronic text can also be converted into synthesized speech using screen reader software or translated into Braille. It is also important to highlight the provision of transcripts for any podcasts or audio clips published to the web for those who have hearing difficulties.

Specialist advice should be sought by any organisation producing or commissioning audio information. A useful source of information is COTIS (Confederation of Transcribed Information Services), which provides guidelines on the production of audio information including basic principles, recording techniques, reading skills, describing illustrations, labelling, and general presentation. www.cotis.org/uk.

Checklist – Audio information
• Provide audio information as an alternative to printed information.
• Consider the benefits of providing audio information in a range of languages.
• Consider whether audio information is suitable for in-house production or requires the specialist skills of a transcription agency.
• Consult specialist organisations such as COTIS when planning or commissioning audio information.

8.6.4 Websites

The internet provides access to a vast array of services and information as well as access to a global communication network. Websites are often the first source of

information for people wishing to visit a place or particular attraction, to find out about services and to obtain contact information.

Websites also enable people to purchase and arrange delivery of almost any product, from fresh food to furniture, clothes and toys, to mention but a few, all from the comfort of their home. The internet enables people to communicate easily, directly, and relatively cheaply with other people and organisations around the world.

Websites have the potential to make a wide range of services, information and communications easily accessible and understood. Well-designed accessible websites carry many advantages, including the ability to attract a wider audience and be used more successfully by everyone. The content of accessible websites is more easily transferred to other media outputs such as mobile telephones, interactive digital television, and handheld computers, which broaden its application and usability. Accessible content in websites also increases recognition by search engines, leading to higher rankings and a greater number of web page viewings, which is important for many organisations.

A badly designed website can present a barrier to many people, making information hard to extract or denying access altogether. Simple visual features such as a small font size, inadequate visual contrast between the background colour and text or the presence of distracting graphics can make a web page difficult to read.

The coding used to structure, format, and identify web content is not immediately visible to the user but dramatically affects accessibility and understanding. Coding that does not conform to the appropriate guidelines may make the website difficult to navigate or completely inaccessible in cases where it is not compatible with a user's screen reader, other software, or media player.

Websites, as with any other service or form of communication, should be universally designed. This is essential for internet websites that are publicly available and is also recommended for intranet and extranet websites. Achieving universal design requires good planning, adherence to best practice guidelines and regular user testing.

Any individual or organisation commissioning the development or review of a website should ensure that every possible step is taken to maximise accessibility from the outset. This will involve the application of the most up-to-date standards and guidelines, which are represented by the Web Content Accessibility Guidelines (WCAG). These guidelines have been established by the Web Accessibility Initiative, www.w3.org/WAI, and are continuously being tested, reviewed and updated. When followed, WCAG aim to make websites, web applications, and other web content accessible to people with disabilities.

Websites should be tested and evaluated by potential users during the design and development stages and on a regular basis once they are available online. The testing should be undertaken by a range of people who use different hardware, software, and access technologies in order to eliminate any potential difficulties and technical problems.

A number of automated testing tools (sometimes referred to as automated conformance testing tools) that enable websites to be tested to assess compliance with particular guidelines and standards, such as the WCAG, are available. These are a useful aid to compliance testing, but are not able to fully predict how different people will chose to interact with features on a web page or respond to information and instructions given on any website. It is important that the input of individuals with a range of skills should always form part of the testing and ongoing review process.

The Centre for Excellence in Universal Design maintains a number of resources for the procurement, development, management, and editing of accessible and usable web content.

Checklist – Websites
• Ensure websites, web applications and web content are universally designed.
• Ensure intranet and extranet websites are as accessible as internet websites.
• Ensure all websites adhere to the Web Content Accessibility Guidelines.
• Ensure all websites are tested during the design and development stages by a range of potential users.
• Use automated testing tools to assess compliance with the relevant guidelines.

A1 Definition of Universal Design

Universal Design

‘Universal Design refers to the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people, regardless of their age, size, ability or disability.’

Synopsis of the Disability Act, 2005.

A2 Human Abilities and Design

The following piece of text is an extract from European Ref: CEN/CENELEC Guide 6 ‘Guidelines for standards developers to address the needs of older persons & persons with disabilities’.

It states that: Physical, sensory and mental abilities vary from person to person and for individuals as they get older. Diversity is normal. Designers need to be aware of difference across the range of human abilities, and of associated design considerations.

(a) Physical abilities

This includes walking, balance, handling, pulling, pushing, lifting and reaching. Many activities involve simultaneous use of more than one of these skills. Physical strength and stamina may also affect people’s abilities to perform these actions.

Walking

For some people walking on the level or up gradients is difficult. Some people may have a limited walking range, may have difficulty with turning movements or may use mobility devices such as crutches or a walker. They may need to stop frequently, to regain strength or catch breath. Design considerations include provision of handrails, seats at regular intervals, convenient set-down parking and adequate time for slower pedestrians at road crossings. Designers should also consider the needs of people walking and engaging in sign language when designing access to and from buildings plus within the buildings themselves.

Balance

Balance limitations can affect someone's gait or control of hand movements. Design considerations include handrails, regular seating, and providing controls within easy reach. A surface against which a person may stumble against or walk into should be designed to limit abrasion.

Handling

A significant minority of people are left-handed. Some people may have restricted use or no use of one or both hands, or may have limits on strength or precision. Facilities and components should be designed to be suitable for use with either hand or with one hand only. Handling includes gripping, grasping and manipulation. Each of these has a different purpose with specific design considerations. For instance, components should be designed to be easily held. The circumference of the supporting structure and stability are critical. Manipulation involves the moving, turning and twisting of components with a hand or hands. For those who have limited manipulation abilities, size and shape and ease of movement are critical. Another option to consider is to design for manipulation by using a pushing, pulling or pressing action using a clenched fist, or by using the wrist or the elbow.

Strength and endurance

Strength and endurance may be required on sloping paths and floors, stairways and long travel distances, when sustained effort may be needed.

For those with limited endurance, frequent resting-places are essential.

People generally find it easier to push a component, than to pull it. This is particularly so if the individual uses a wheelchair. Self-closing devices on manual doors can be difficult for some people to operate, particularly if the doors are required to resist wind forces. For these reasons, doors that open and close automatically are preferred.

Lifting

Activities such as opening a vertically sliding sash window and an upward opening access gate, should be designed to be easily operated with minimal force.

Reaching

Design has a role to play in ensuring that key components in a building or environment are in easy reach, bearing in mind the range of people's sizes and abilities. Having components within easy reach is particularly important for those with more severe limitations in mobility. The reach range is dependant on the height and arm length of the person, use of the arms, and the balance and mobility of the upper body. A 'comfortable reach range' has been defined as one that is appropriate to an activity that is likely to be frequent and in need of precise execution and that does not involve stretching or bending from the waist. Putting things within comfortable reach can ensure use by a greater number of people. An 'extended reach range' has been defined as one that is appropriate to an activity that is likely, neither to need precision nor to be frequent and that can involve stretching or bending from the waist.

(b) Sensory abilities

Speech

Some conditions affect the capacity for or quality of speech. Two-way communication can be facilitated by environments designed to minimise barriers to hearing low or indistinct speech.

Hearing

People differ in their capacity to hear sound, to determine its direction, its source, to discern pitch, frequency, volume and variation and to separate out different sounds. Hearing quality is important for communication, for information, and for detection of hazards such as traffic. Many people with hearing difficulties

use a hearing aid which amplifies all sounds caught by the microphone, making communications very difficult in noisy environments. Keeping background noise level low is essential. The selection of structural and surface materials can make a substantial difference in audibility. Auditoriums, meeting rooms and reception areas can benefit from additional sound enhancement such as a loop system. The careful design of illumination can assist in communication such as lip reading and sign language. Provision of visual information and visual alarm systems can communicate information to those who have hearing difficulties or who cannot hear. Designers should also consider the colour and size of rooms and even the furnishing arrangement as this is very important for visually based communication. Also the use of vibration as means of sensing others should be considered.

Sight

Vision allows an individual to be aware of the luminance of surfaces, objects, form, size and colour. For people who are blind or who have visual difficulties, the provision of suitable tactile walking surface indicators and tactile or acoustic warnings at hazardous locations, should provide information on using the built environment and should limit the risk of injury. The built environment can be designed for orientation by providing sound cues and tactile cues. An easily discernible system of 'way finding' should also be considered. For people with limited, but low vision, effective visual contrast between surfaces or objects helps to identify critical locations. Warning markings on glass surfaces, and markings on the edges of stair treads, help minimise hazards.

Differences in friction between one floor surface, or one stair tread surface, and the next should be avoided. Therefore, adjacent surfaces that display different standards of slip-resistance, or that depend on raised surfaces, should be carefully considered

Touch

In selecting surfaces in the built environment that people will need to touch (such as handrails, handles, knobs and controls, tactile information), it is important to select materials that avoid distress, injury or allergies. Surfaces should be free of abrasions. Metals that may cause adverse reactions when touched should be avoided.

(c) Mental abilities

Mental abilities include cognition, intellect, interpretation, learning and memory. People differ in their knowledge, their capacity to understand, reason, or interpret information. Designing for differences in these capacities helps provide a usable environment for the population at large, from the very young to the old, and people of diverse abilities. Means of communication in the environment should be designed to be immediately and easily understood, and correctly interpreted. As people age, some experience loss of memory or find it increasingly difficult to absorb new information, so changes in the environment should be carefully considered before implementation.

Design considerations that take account of mental abilities

Aural and visual messages should be simple, clear and have immediate impact. Figures, symbols and simple words are likely to be the most effective. Symbols should be instantly recognisable as representing images seen and activities undertaken in everyday life.

Way finding should be simple, such as tactile, graphic, audible or architectural cues that are easy to follow. Signage should be large and clear. Way-finding maps should be clear, indicate the person's whereabouts in the building or facility, and be free from extraneous information.

(d) Age and size

Accommodating the developing child

It is important to create environments that are safe, accessible and useable for children. Individual components should be safe and useable as age-appropriate. Learning to manage risk is an essential part of a child's development.

Accommodating ageing adults

Life span within the human population is increasing. More and more we expect to maintain an economic and social life within both the public and private domains as we age. However, many human faculties are in decline as we age, such as mobility, dexterity, stamina, strength, hearing, sight, or memory. Familiarity with a particular environment is important.

Diversity of size

The population contains a diversity of sizes and heights, from children, to the diversity in the height of fully-grown adults. The positioning of components and the heights of building elements such as steps should recognise the diversity of height. Increased weight and girth is now also a feature of the population.

Ref: CEN/CENELEC Guide 6 'Guidelines for standards developers to address the needs of older persons & persons with disabilities'.
http://www.cen.eu/cen/Sectors/Sectors/ISSS/About_ISSS/Documents/cclcgd006.pdf

A3 Further Reading

National and international standards and codes of practice

AS 1428.1-2001 Design for access and mobility. General requirements for access – New building work.

AS 1428.2-1992 Design for access and mobility. Enhanced and additional requirements – Buildings and facilities.

AS 1428.3-1992 Design for access and mobility. Requirements for children and adolescents with physical disabilities.

AS 1428.4-2002 Design for access and mobility. Tactile indicators.

BS 4800: 1989 Paint colours for building purposes (whilst the colours in this standard cannot be seen on CD-ROM or online the text can still be used).

BS 5395-1:2000 Stairs, ladders and walkways – Part 1: Code of practice for the design, construction and maintenance of straight stairs and winders.

BS 5588-8:1999 Fire precautions in the design, construction and use of buildings – Part 8: Code of practice for means of escape for disabled people.

BS 5776:1996 (incorporating amendment No.1) Specification for Powered stairlifts

BS 6440:1999 (Incorporating amendment No.1) Powered lifting platforms for useby disabled persons – Code of practice.

BS 6440:1999 Powered lifting platforms for use by disabled persons – Code of practice (partially superseded by BS EN 81-40:2008. The remainder of BS 6440:1999 will eventually be superseded by EN 81-41: 2009 Safety rules for the construction and installation of lifts – Special lifts for the transport of persons and goods – Part 41: Vertical lifting platforms intended for use by persons with impaired mobility).

BS 6465-1:2006+A1:2009 Sanitary installations. Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances.

BS 6571-4: 1989 Vehicle parking control equipment – Part 4: Specification for barrier type parking control equipment.

BS 7036-1:1996 Code of practice for Safety at powered doors for pedestrian use – Part 1. General.

BS 7036-4:1996 Code of practice for Safety at powered doors for pedestrian use – Part 4. Low energy swing doors.

BS 7997:2003 Products for tactile paving surface indicators – Specification.

BS 8300:2009 (Incorporating amendment No.1) Design of buildings and their approaches to meet the needs of disabled people – Code of practice.

BS 8493:2008 (+A1:2010): Light reflectance value (LRV) of a surface – Method of test.

BS 8501:2002 Graphic symbols and signs – Public information symbols (AMD 16897).

BS EN 115:1995 Safety rules for the construction and installation of escalators and moving walkways.

BS EN 15838:2009 Customer contact centres, Requirements for service provision.

BS EN81-70:2003 Safety rules for the construction and installation of lifts – Particular applications for passenger and good passengers lifts – Part 70: Accessibility to lifts for persons including persons with disability.

Building Regulations (Part M Amendment) Regulations 2010 (S.I. No. 513 of 2010).

Citizens Information Board – Accessible information for all (2009).

DD 266:2007 (Draft for Development) Design of accessible housing – Lifetime home – Code of practice.

I.S. EN 1991-1-1:2002 – Eurocode 1: Actions on structures Part 1-1: General actions – densities, self weight, imposed loads for buildings (including Irish National Annex: 2005).

I.S. EN 81-1: 1999 Safety rules for the construction and installation of lifts – electric lifts (Amd 1) (+A3:2009).

I.S. EN 81-2:1999 Safety rules for the construction and installation of lifts – hydraulic lifts (Amd 1) (+A3:2009).

I.S. EN 81-70:2003 Safety rules for the construction and installation of lifts – Particular applications for passenger and good passenger lifts. Accessibility to lifts for persons including persons with disability (Amd A1:2005).

I.S. EN 997:2003 (+A1:2006) WC pans and WC suites with integral trap (AMD Corrigendum 14805) (AMD 16965).

IEC 60118-4:2006 Electroacoustics. Hearing aids. Induction loop systems for hearing aid purposes. Magnetic field strength (ISBN 978 0 580 50047 3).

International standard for Induction loops. IEC 60118-4.

Irish Code of Practice on Accessibility of Public Services and Information Provided by Public Bodies www.nda.ie/website/nda/cntmgmtnew.nsf/0/3DB134DF72E1846A8025710F0040BF3D/$File/finaldrcode_nda.htm

Key cards should conform to EN 1332. For further information on key cards please see: http://www.universaldesign.ie/useandapply/ict/itaccessibilityguidelines/smartcards/guidelines/smartcardguidelines/cards

Lifetime Homes Standard: http://www.lifetimehomes.org.uk

Norwegian Universal design of building standard, 2009.

Passenger Lift Design: The Machinery Directive 2006/42/EC; Lifts should conform to BS 6440.

National and international reference documents

2020 Vision – Sustainable Travel and Transport: Public Consultation Document. Department of Transport.

Bus Based Park and Ride – A Pilot Scheme. A Report to: Dublin Transportation Office. The TAS Partnership Limited, 2002.

City of London 2006 Facility Accessibility Design Standards. London, Canada, 2006 Promoting Safe Egress and Evacuation for people with Disabilities - National Disability Authority.

Gallaudet DeafSpace Design Guidelines 2010.

Department of Transport & the National Disability Authority Guidelines for Accessible Maritime Passenger Transport http://www.nda.ie/website/nda/cntmgmtnew.nsf/0/45AA46D1F77D7EF2802576DC005C5954?OpenDocument

Department of Transport, UK 'Traffic Signs Manual'.

Dublin City Council (2007) Variation (No. 21) of the Dublin City Development Plan 2005 – 2011. Available from: http://www.dublincity.ie/Planning/DublinCityDevelopmentPlan/VariationstotheDevelopmentPlan/Documents/AdoptedVariationNo21Spec.pdf.

Guidance on the use of tactile paving surfaces. Department for Transport, UK.

Guidelines for an accessible public administration. Towards full participation and equality for people with disability. Office of the Disability Ombudsman, Sweden.

Inclusive Mobility. Department for Transport, UK.

International Best Practices in Universal Design. A Global review. Canadian Human Rights Commission, 2006.

Irish Wheelchair Association: Best Practice Access Guidelines 2010.

Joseph Rowntree Housing Trust.

Parking for disabled people. Department for Transport, UK.

Promoting Safe Egress and Evacuation for people with Disabilities - National Disability Authority.

Rail Park and Ride Strategy for the Greater Dublin Area. Dublin Transportation Office, 1994.

Regulation of Bus services outside the Greater Dublin Area. Department of Transport.

"Sign Design Guide and Inclusive mobility," Oxley, P. (2003), Inclusive Mobility. Department for Transport, UK. www.mobility-unit.dft.gov.uk

Smarter Travel 'A Sustainable Transport Future' – A New Transport Policy for Ireland 2009 – 2020. Department of Transport.

List of Illustrations

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