museums

Glasgow Museums Display Guidelines

A Practical Guide for Exhibitions

Glasgow
CITY COUNCIL

Contents

1. Introduction

This document sets out the display standards for Glasgow Museums, clarifying the principles and methods by which we display our collections. It refers to the requirements of the Interpretation Plan, the Audience Development Plan, and Project Management Guidelines which are all available as electronic links in this document.

It takes into account the legal requirements of the Building Regulations and the Disability Discrimination Act.

This guide will help exhibition planners provide physical, sensory and intellectual access to exhibitions on our museums and galleries.

The approach to design and interpretation should be seen as providing better access for all, and solutions should be incorporated at the outset of all exhibition planning.

This document is relevant for all Glasgow Museums' venues:

The Burrell Collection

Gallery of Modern Art (GoMA)

Glasgow Museums Resource Centre

Kelvingrove Art Gallery and Museum

People's Palace

Provand's Lordship

Riverside Museum

St Mungo Museum of Religious Life and Art

Scotland Street School Museum

2. Audiences

2.1 Specific Audiences

Glasgow Museums has defined the following audiences because they have identifiable and discrete needs.

Our target audiences include:

- Families (that it, adults or older siblings with children)
- Under-5s
- Young People
- Teenagers
- Adults
- Visually impaired people
- Hearing-impaired and deaf people
- Sensory-impaired
- People on the autistic spectrum (see Autism Action Plan for details)
- School groups:
  - Nursery schools
  - Primary schools
  - Secondary schools

Refer to the Audience Development Plan for each venue.

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3. Languages

People whose first language is not English benefit from clear, non-idiomatic language in displays. This also benefits people with a learning disability, and helps all our visitors grasp messages, information and instructions quickly and clearly.

All our interpretation, communication and displays should meet CSG's Equality Policy.

The community languages other than English that are spoken in the City of Glasgow include:

Mandarin
Polish
Arabic
Farsi
Urdu

The languages above are the ones that are most commonly requested from the Glasgow Translation Service. GTC provide translation of materials for Glasgow City Council. GCC no longer provides print material in other languages.

From the 2001 census the largest community populations in the city are:

Pakistani (Urdu)
Indian (Hindi, Bengali)
Chinese (Mandarin)

As of March 2010 the key languages spoken by new asylum seekers* in Scotland are:

Mandarin (China)
Farsi (Iran)
Arabic, Kurdish Sorani (Iraq)
Tigrinya (Eritrea)
Somali (Somalia)
English (Zimbabwe)
Arabic (Sudan)
Pashto (Afghanistan)
French (DRC)
Urdu (Pakistan)

* Source: Scottish Refugee Council

In terms of visitors to Glasgow data from Visit Scotland (2009) indicated that the top 6 non-English speaking tourists to visit Glasgow are:

German
French
Spanish
Italian
Dutch
Polish

Correspondingly the download data from Glasgow Museums indicates that the most popular downloads for our translated material are:

Polish
French
German
Spanish
Italian

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3. Languages

Riverside Museum provides a limited amount of material in languages other than English, on the e-Intros to the interactives in the museum.

Having analysed the available data Riverside chose to produce their e-Intros in:

- English
- French
- German
- Urdu
- Simplified Chinese
- British sign langauge

When considering the translation of interpretive material it is vital to consult with the venue manager and the rest of the project team to ensure consensus of opinion on the best use of resources. Professional translation services are expensive however in the interests of inclusivity we should aim for parity across our venues. Any decisions on translation must comply with Glasgow Life's Equality Policy, which is available from the Policy and Research team.

4. Generic Learning Outcomes (GLOs)

Using the MLA Inspiring Learning for All framework of five generic learning outcomes (GLOs) is a recognized method of planning for and providing evidence of the impact of museums displays and activities.

This framework emphasizes the importance of consultation with users and potential users to deliver relevant and stimulating opportunities for learning that reflect the diversity of learning styles and learning needs. Evaluating the outcomes to explore what people have learnt is central to the overall vision of Inspiring Learning.

The five Generic Learning Outcomes are:

1   Knowledge and understanding

2   Skills

3   Attitudes and values

4   Enjoyment, inspiration and creativity

5   Activity behaviour and progression

All interpretation plans must identify GLOs for the display. For further information on GLOs and the ILFA framework refer to 'Audiences, Learning and Interpretation'.

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5. Interpretation

5.1 Interpretative Methods, Communication Methods, Scripting

1	Graphic Panels	Incorporate text and images
2	Object Labels	For individual objects
3	E-labels	Incorporate text, images, video, audio and interactivity
4	Images and Illustration	Photographs, maps, drawings and diagrams
5	Audio	Spoken word, oral testimony, music, foreign languages
6	Video	Film, interviews, archive film, moving image effects
7	Immersive Effects	Sequenced presentations with audio, film and lighting
8	Lighting Effects	Sequenced presentations
9	Low-tech Interactives	Incorporate text, film, flipbooks, audio
10	High-tech Interactives	Programmed and computerized
11	Hand Boards	Incorporate text and images
12	Models	Scale models, dioramas, props, reconstructions
13	Live Interpretation	Staff or actors in role-play
14	Printed text	Leaflets, trails and education packs
15	Events	Workshops

6. Graphics and Text

6.1 Writing

Know your audiences, and bear in mind that visitors will have a wide range of literacy levels. (one in five adults in Scotland is functionally illiterate meaning that he or she finds it difficult to read at the level required to cope best with all aspects of daily life.

To cater for a wide range of literacy, use Plain English and aim at a reading age of 12 or 13 for main messages, and up to 15 for additional information. Further museum studies publications are available on this topic. Such language need not be over-simple and patronising, but should allow for fast comprehension and be accessible to a wide range of visitors.

These are general guidelines, for further information, see Glasgow Museums' House Style Document.

6.2 Text Development Process

The text development team is comprised of:

- Story author and L&A Curator
- Editor
- Research Manager
- Venue Manager

Final text and images should be issued to the designer.

6.3 Exhibition Graphics and Labels

When writing text for an exhibition, it should always be remembered that it is a storyline that supports objects in a physical space or environment. The readers will mostly be standing and have the distraction of other exhibits and visitors around them.

The visitor will probably have a maximum visiting time of an hour to read, consider and understand the exhibition as well as interpret and enjoy the objects shown. This is why suitable text lengths are crucial.

More detailed information can be provided on hand-outs, exhibition publications or by computer or audio interactives for visitors who wish to find out more about a topic or particular object, and this requires Research Manager approval.

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6. Graphics and Text

Type of Graphic	Element	Words and Images	Type Size
Intro Panel	Title Body Text Captions Images	8 words 60–100 words 10–30 words 4–6 images	240 point 80 point 20 point
Topic Graphic Panel	Group title Body text Captions Images	12 words 60–100 words 10–30 words 2–4 images	80 point 48/52 point 20 point
Single Object Label	Heading Body Text Images	 30–80 words (50 words ideal) 1 image	30 point 22/26 point
Hand Boards	Heading Body Text	8 words 60–100 words	30 point 22/26 point
Large print handouts	Body Text	60–100 words	16–26 point
Interactive Instructions	Heading Body text	8 words 10–30 words	30 point 22/26 point
Electronic Flipbooks	Heading Body Text	8 words 30–100 words	30 point 22/26 point

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6. Graphics and Text

Type of Graphic	Element	Word and Images	Type Size
Touch Screens	Heading Body Text	8 words 30–100 words	30 point 22/26 point
Captions for illustrations	Body Text	30 words	20 point
Investigative Caption	Body Text	20–60 words	20 point
Numbering Systems			26 point
Object Registration			10 point
Credit Line			10 point
Screen Subtitles			14 point
Children's Activity Instructions			14 point
Signage	Min 2030mm FFL		75mm high
A4 and A3 Public Notices	Title Body Text	8 words 30 words	30 point 24/26 point

6. Graphics and Text

6.4 Images for Exhibition Graphics and Labels

Photographs and illustrations can be more arresting and informative than lots of text. Photographs, illustrations and other images should be printed onto a matt surface, and the text should be closely linked to the image. The image should be clear and be printed as large as possible, or the important part of the image enlarged.

As a rough guide, allow a viewing distance of at least double the diagonal measurement where possible, and the same for large objects.

Try to provide label information in an alternative format, such as large-print handouts or Braille. The availability of these formats should be clearly signed at the entrance to the exhibition.

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The Great *Comet* of 1812

CUTTING EDGE – PAST, PRESENT, FUTURE

Henry Bell had a vision – a world where everyone travelled by steam. Not for him sailing boats and horse-drawn carts. Henry imagined people "fleeing and bizzing about" on steamboats and steam-powered vehicles.

Not everyone shared Henry's passion for steamboats. Navy chiefs and engineers such as James Watt all had their doubts. Henry wasn't put off. He had a boat built, and bought a steam engine and boiler to power her.

Henry's little steamboat *Comet* began working in August 1812. She was an instant success – Glaswegians rushed to have a shot. Within a few years, Henry's dream was turning true.

Graphic panel (above) and object label (right) used at Riverside Museum.

When drafting a list of images for an exhibition or publication always check with the Photo Library to see what (if any) photographs have been taken of the objects. Never assume that because an object is in the collection that it has been photographed already. Images on MIMSY are usually inventory standard, and are not of a high enough resolution to be used for graphics or in publications, so you may have to complete a Photography Requisition form requesting that new images be taken.

Bear in mind copyright costs for images. Even if an object is in our collection it may still be under the artist's copyright, so we will have to pay to use it. Note also that comparative images can be expensive and can take a long time to source. When requesting new copyright licenses note that they should run for a duration of 10 years.

This simple model of *Comet's* hull belonged to John Wood. He used it, along with paper plans, to build the steamboat.

Builder's model of paddle steamer *Comet*, about 1811–12
Given by Miss Reid
T.1929.2.b

6. Graphics and Text

6.5 Positioning of Graphics

- Wall/screen-mounted graphics should wherever possible be positioned within the optimum viewing band [1100–1675mm]

- People with low vision may need to be within 75mm of a label in order to read it.

- Object labels should be located as near as possible to the object, so that both the object and the label can be seen from the same vantage point.

- Object labels should be positioned consistently next to the object.

Labels should be mounted at 90 degrees to the line of vision and as close to the viewer as possible. They should also be visible to wheelchair users.

- If label rails are used, don't position the top of the label above the maximum recommended height.
- Position Braille labels at a consistent height and position, and on a horizontal or near horizontal plane (at between 600 and 700mm from floor level at the left-hand side) for the best reading angle.

Viewing bands for adults (pink) and pre-fives (blue).

1675mm

1100mm

1075mm

700mm
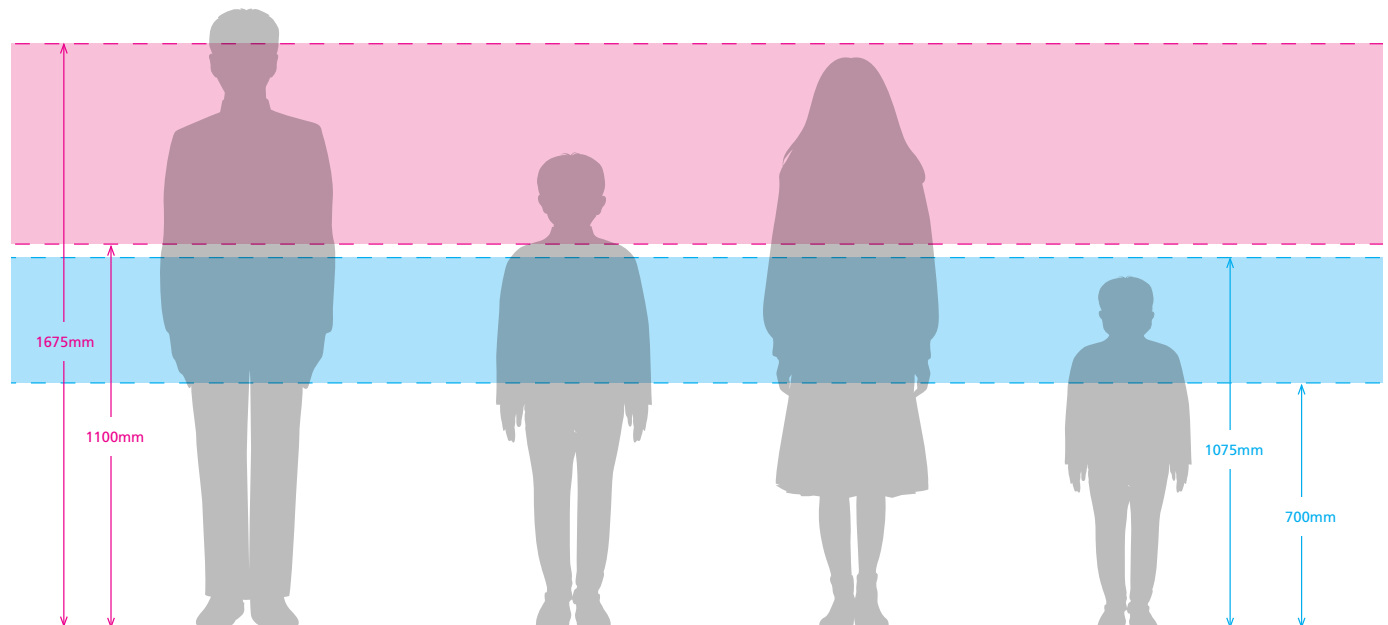
6. Graphics and Text

6.6 Viewing Bands – General

Wall, screen and rail mounted interpretation optimum viewing bands for main text	Min height FFL mm	Max height FFL mm
E-Introduction NB Glare at child height falls between 1000mm and 1060mm	1100	1675
Graphic panels	1100	1675
Label rails	750	1225
Braille rails	750	900
Optimum centring level	Height FFL mm	
Panels	1100	
Labels (for pictures, etc)	1225	

6.7 Viewing Bands – Pre-five

Wall, screen and rail mounted interpretation optimum viewing bands for information	Min height FFL mm	Max height FFL mm
Screen based interpretation NB Glare at child height falls between 1000mm and 1060mm	700	1075
Graphic panels	700	1075
Optimum centring level	Height FFL mm	
Panels	1400	
Labels (for pictures, etc)	1225	

7. Typography

7.1 Introduction

Glasgow Museums' default display typeface is Frutiger, a sans serif font. The following standards are set using the typeface Frutiger for baseline comparisons.

Frutiger 55 Roman
Frutiger 65 Bold
Frutiger 56 Italic

- All body text should be in Frutiger.

- Any typeface may be selected for the graphic panel heading, as long as it is legible.

Heading typeface ✓
Heading typeface ✓
Heading typeface ✓
Heading typeface ✗
Heading typeface ✗

- Use your font in its true form: avoid applying effects such as outline or shadowing.

Outline ✗
Shadow ✗

7. Typography

7.2 Type Layout and Usage

Use simple, clear, and consistent numbering systems. All interpretive text should have a high contrast (80%) between text and background. The higher the contrast, the greater the legibility; this is essential for people with impaired vision.

80% contrast

80% contrast

80% contrast

80% contrast

- The graphic panel or label should have good contrast with the background colour or case lining.

- Headings can appear in other colours and the title can be printed on different backgrounds for different storylines, but a high contrast should always be maintained (80%).

- Arrange text in short chunks with headings and subheadings.

- Use images to support the text.

- Range main body text left, with a ragged right hand margin, while headings or titles can be placed separately to add interest.

- The orientation of body text should be horizontal, and vertical orientation is only acceptable when used sparingly on headings and captions. Lettering placed on curves should also be used sparingly and should only be used for headings. Stacked lettering should never be used.

- Avoid combinations of colours indistinguishable by people with colour blindness (especially red and green together, but also brown, orange and yellow).

- Avoid overprinting (type on an image, textured or patterned background). This can result in illegible areas and is unreadable for people with partial vision and perceptual difficulties. Exceptions may be in very large graphics with large dropout or boldly contrasting type.

Type on image ✓

Type on image ✗

Type on pattern ✗
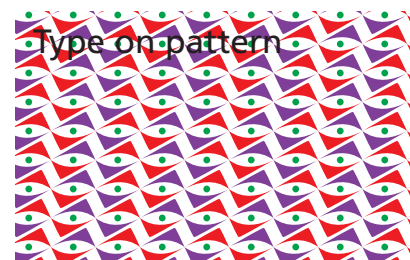
7. Typography

7.3 Illustrations and Text

Avoid running type over or around pictorial images. Overprinting is difficult to read and should be avoided, unless the image is used as a decorative background.

7.4. Braille Provision

Where Braille is found in Glasgow Museums we use Braille Grade I, which is suitable for single words and short signs; and Braille Grade 2 for interpretive text.

7.5 Identity, Branding and Partnerships

Supporters and funding bodies may require acknowledgement on specific design elements. The manner and method of that acknowledgement will vary, and logos and guidelines should be obtained for use early on in a project. The Development Team are responsible for defining funders' requirements.

The Development Team **must sign off** designs that contain supporters' logos, contact:
name.surname@glasgowlife.org

7.6 Signage and Orientation

Signage should be simple, short and consistent in design and layout. As 7.3 million adults in Britain today have literacy problems, recognized symbols should be used wherever possible.

There are four types of signage:

- Information
- Direction
- Identification
- Safety

7.7 Signage Heights

Signage height	Min height FFL mm	Max height FFL mm
General	1400	
Children	1000	1220
Tactile/Braille	600	1000

7.8 Use of Symbols

The use of recognized symbols representing facilities or levels of accessibility must provide accurate, reliable and meaningful information.

- Interactive area
- Female toilets
- Male toilets
- Accessible toilets
- Lift
- Accessible lift
- Café
- Public telephone

Symbols used at Kelvingrove.

7. Typography

7.9 Materials

- Graphic and printing substrates, papers, films, glues, etc. should have passed conservation testing to ensure chemical stability, colourfastness and to ensure consistency between ex-case and in-case materials.

- Refer to the Preventive Conservation: Display Systems, Cases and Barriers Guidelines and Conservation staff for requirements and timescales.

- Use matt or silk papers and inks as glossy surfaces can create glare or reflection. Avoid thin or semi-transparent papers which allow show-through.

7.10 E-Labels

- E-label content should conform to the same standards for typography, colour, lighting, images, audio and video provision, and so on.

- E-labels should conform to the same standards for buttons and operation mechanisms as other forms of interpretation.

7.11 Position

- E-labels should be located out of the way of barriers, protruding objects, stairs, or doorways.

- Avoid placing E-labels where they could create a bottleneck.

- Take care when positioning labels in proximity to display cases as image reflections and glare can inhibit the view of objects. E-labels should always be located next to the object.

E-label in use at Riverside Museum.

8. Interactives

- All interactives will be designed so that they are accessible and usable by all visitors.

- Activity surfaces or computer stations should be no higher than 800mmFFL and fully accessible for a parked wheelchair.

- Work surfaces should be lit to a level of 200lux, minimum.

- Interactives should not require staff or visitors to reset them; they should return to a default position automatically or operate from the position they are left in.

- Interactives should not be located where they or visitors operating them will cause an obstruction, and sufficient space should be provided at and around the interactive so that everyone can use it.

- Push buttons should be easy to operate, visible and easy to comprehend. Buttons and interactive features should be located 1050mm FFL, if wall-mounted.

- Operating instructions should be clear and featured on the desktop or wall mounted between 1200 and 1600mm FFL.

8.1 Interactive Listening and Speaking Activities

For activities that require listening as a specific action, make sure that:

- equipment is accessible to people whether they are small, use wheelchairs, or are standing;

- fixed listening devices are positioned within the recommended height band for the audience;

- listening devices are height adjustable or we may need to provide them at different heights to accommodate different user groups; and

- any adjustable elements are operable by those with low mobility and grip, and return to a position accessible to all.
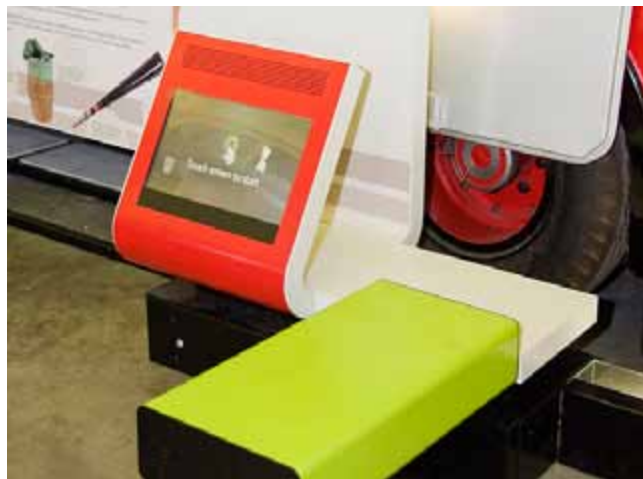
8.2 Location of Controls and Operating Mechanisms

Interactives should be designed so that:

- all the controls and operational mechanisms (such as levers, buttons, peddles, steering wheels, tracker balls) are within reach of people whether they are small, use wheelchairs, or are standing;

and

- they are 725mm above fixed floor level.

Wheelchair-accessible listening device at Riverside Museum.

8. Interactives

8.3 Measurements for controls and operating systems

For further information refer to
[AV Guidelines Doc](#)

Interactive controls	Min height FFL mm	Max height FFL mm
Table mounted – Under 5s	1100	600
Table mounted – standing 5–14	520	825
Table mounted – standing general	670	925
Table mounted – sitting/wheelchair general	670	825
Wall mounted controls – Under 5s	460	800
Wall mounted controls – standing 5–14	520	1020
Wall/rail mounted controls – standing general	670	1050
Wall mounted controls – wheelchair general	670	1020
The recommended control mounting height for general use is 725mm FFL		
Listening device – standing 5–14		1017
Listening device – standing general		1500
Listening device – wheelchair general		1017
Speaking device – under 5		
Speaking device – standing 5–14		1015
Speaking device – standing general		1350
Speaking device – wheelchair general		1015
Viewing device – under 5	700	1075
Viewing device – standing 5–14	1010	1475
Viewing device – standing general	1365	1700
Viewing device – wheelchair general	1060	1275
Reach – standing under 5	430	580
Reach – standing 5–14	545	880
Reach – standing general	827	1048
Reach – sitting under 5	360	490
Reach – sitting 5–14	410	705
Reach – sitting general	624	835

9. Object Display

9.1 Object Display, Maintenance and Security

At Glasgow Museums we aim to make objects as accessible as possible to visitors. Our role is to take responsibility for providing safe access to the objects in our care, and to work with colleagues in Conservation and Design to make this possible. The design of any exhibition or display should safely offer high quality access. By minimizing deterioration, access for audiences in the future is protected. All proposed object display methods must be approved by the Conservation Department.

Glasgow Museums' aim is to improve access to Glasgow's collections by having as many items as possible on open display and without physical barriers. We will find creative solutions to protect the objects without impeding access to them.

Inventory and audit requirements which support security functions

Cases, plinths, screens, walls and each gallery space will include discrete numbering systems to aid staff in identifying locations of any security problems and maintain procedures concerning the inventory and audit of the collections. The Documentation Section of Glasgow Museums will provide these numbers. All proposals for display changes and exhibitions should be forwarded to the Security Manager for comment / approval.

Refer to the Preventive Conservation: Display Systems, Cases and Barriers Guidelines

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9. Object Display

9.2 Open Display

General

- All objects on open display must be secure from theft and damage.

- All objects identified for potential open display will be viewed and agreed on an object-to-object basis depending on their conservation assessments.

	Distance	Distance Min
Recommended distance to place objects out of 'casual arm's length' taken from the edge of the object to the edge of any proposed form of barrier	700mm	600mm*

*In some cases 600mm may be acceptable, provided the plinth height is above 350mm.
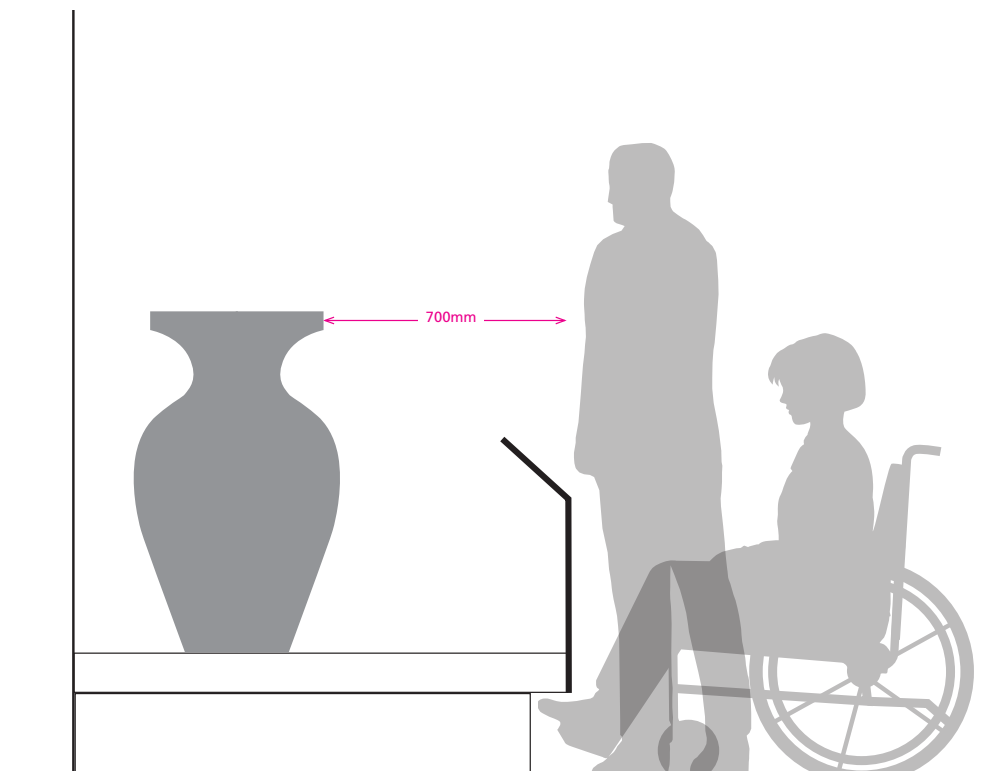
9. Object Display

9.3 Object Placement

- Don't place objects in such a way that they could present a hazard to visitors.

- Avoid placing objects less than 305mm in height on the floor. If objects smaller than this must be placed at floor level, they should be placed away from the circulation route, be well lit, and placed against a contrasting background or protected by psychological barriers.

- All object displays, cased or otherwise, must be viewable by all, including people who are small in stature or in wheelchairs.

- Cased objects will where possible be displayed within the optimum viewing band. Smaller 2D or detailed objects will be displayed within the narrower recommended viewing band.

- Ensure everything is visible from a wheelchair.

9.4 General Visitor

These are the recommended measurements for developing displays for general visitors.

Object display	Min height FFL mm	Max height FFL mm
General – Viewing band	700	2000
Small objects – Viewing band	800	1600
Very small items – Viewing band	800	1015
Wall mounted items over 1000mm deep	600	2030
Ceiling hung items	600	2400
Protective zone (arm's length)	305	N/A

9. Object Display

9.5 Children

These are the recommended measurements for developing child-orientated displays.

Average eye height	Height standing from FFL mm	Height sitting from FFL mm
Under 5s	700–1075	700–865
5–12	1010–1475	865–950
Average reach	Standing	Sitting
Under 5s	430–580	360–490
5–12	545–880	410–705

Tables and worktops	Min height FFL mm	Max height FFL mm
Table top – standing work surface under 5	460	530
Table top – standing work surface 5–12	520	825
Knee space – under 5	400	470
Knee space – 5–12 (NB children's wheelchairs have similar dimensions to adults)	460	620

| Seats	Min height FFL mm	Max height FFL mm	Arm/back support height FFL mm
Under 5s	250	325	350–500 proportional to seat height
5–12	325	450	350–550 proportional to seat height

Wall and screen mounted interpretation optimum viewing bands for information	Min height FFL mm	Max height FFL mm
Graphic panels	700	1075
Screen based interpretation – NB glare at child height falls between 1000–1060mm	700	1075
Optimum centring level	Height FFL mm	
Panels	1400	
Labels	1225	

9. Object Display

9.6 Cased Objects

- All the elements in a display should be visually accessible to all visitors. All cased displays should fall within the general optimum viewing band of 750–2000mm. Ensure everything is visible from a wheelchair. Desk cases should be no higher than 800mm FFL.

- Position small objects or those with fine detail in the front portion of a case, with larger items behind.

- Provide a toe space of 224mm x 180mm deep around cases and plinths to allow wheelchair access.

- Position small items or those with fine detail no higher than 1015mm from floor level. Objects placed above this height are only seen from below by people in wheelchairs or people who are small in stature.

2000mm

750mm
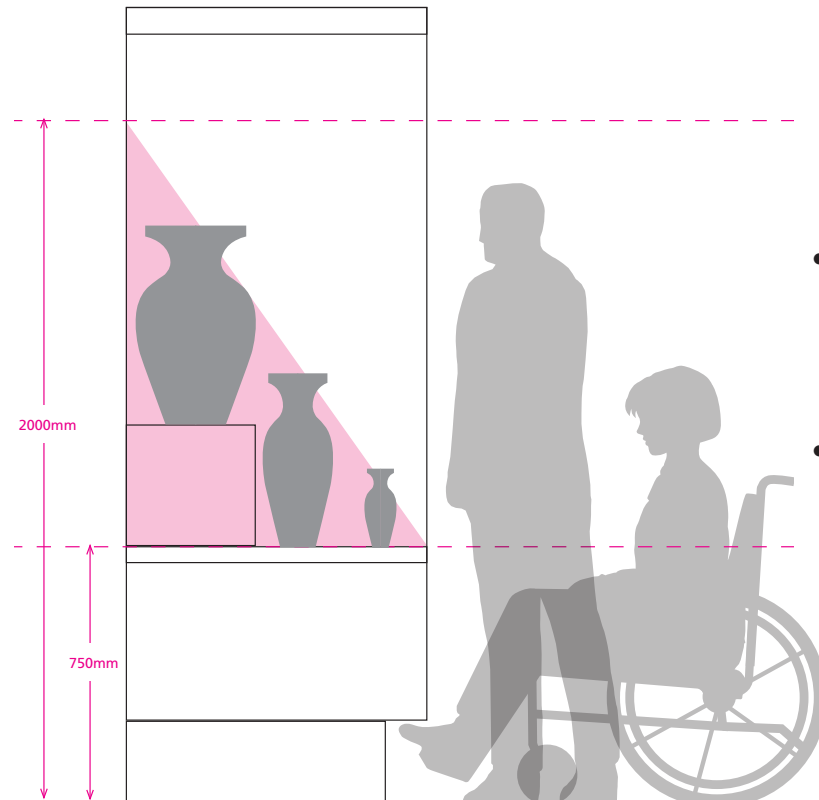
9.7 Materials

- The designer will select suitable materials, sizes, thicknesses, types, and locations of fixings and sealants and guarantee that they are used for the purpose intended by the manufacturer (refer to display case specifications).

- All materials used for display purposes must be approved by the Conservation Department, and must be tested by the recognized bodies.

- Materials and finishes used in construction must meet current fire regulations.

9. Object Display

9.8 Wall and Ceiling Mounted Objects

Things to remember:

- Avoid double or cluster hanging 2D work where possible, except where necessary for interpretative reasons.

- Objects and pictures that are rich in detail are better hung 'on the line', meaning the midpoint of all the works, so that people can look at them more closely. If items are double or cluster hung, those that are rich in detail should be at the lower level.

9.9 Handling Objects

Tactile examination of objects is an important interpretation method; the experience is essential for visitors with visual impairments and helps many people with learning difficulties. You should select objects suitable for tactile examination in consultation with the Conservation Department.

Refer to Preventive Conservation: Display Systems, Cases and Barriers Guidelines

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9.10 Mounts and Backgrounds

- Display objects against a 70% contrasting background wherever possible.

- Display objects against a plain background wherever possible.

70% contrast

70% contrast

70% contrast

70% contrast
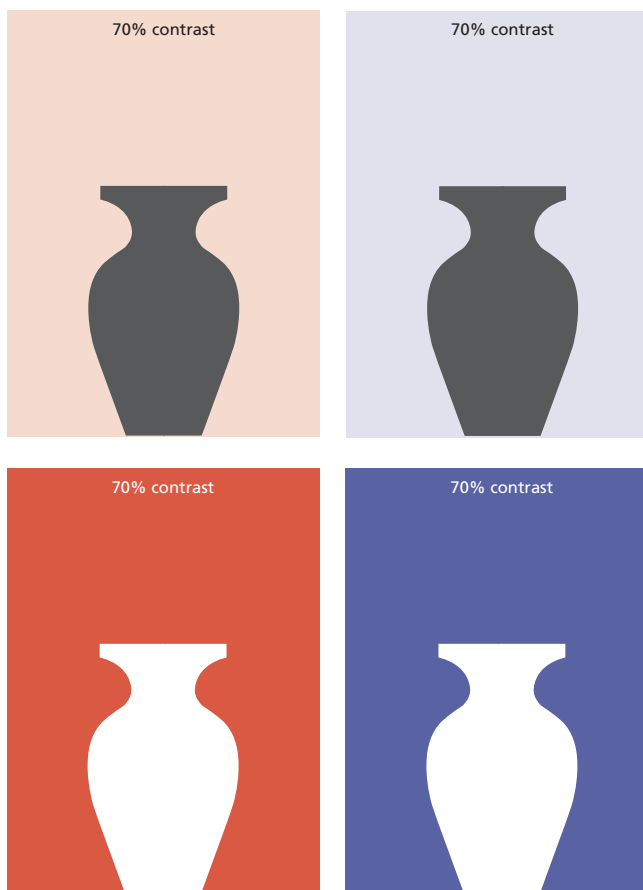
9.11 Display Requirements for Loan Items from Other Institutions

- Paintings, drawings and similar objects must be secured to the walls by mirror plates or security screws.

- Unglazed paintings, fragile/sensitive material or works/objects on open display must be protected by rope or other barriers, which must be at least 1 metre from the exhibits.

- Small portable objects must be exhibited in locked display cases, which should be fitted with anti-bandit laminated glazing meeting British Standard BS5544. If the material consists of gold, silver, jewellery, or items, which are especially valuable, the cases must be fitted with alarm devices. The cases must be secured.

All loans have to be agreed on an individual basis and the Collections Department should be consulted on the requirements for each object, or group of objects, from a specific lender. If the above requirements cannot be met then the level of insurance cover will be negotiated and agreed between both parties.

10. Furniture

10.1 General Furniture

- All furniture should be safe, secure, and free from sharp projections.

- Furniture should not project unpredictably into circulation routes.

- Materials that contrast in colour and texture with the surrounding floor and walls should be used where possible.

10.2 Display Furniture

Glasgow Museums' venues have a range of display furniture types that varies in design, quality, condition and age. A list of all display furniture currently in use at Glasgow Museums is available from the Design Department.

Please refer to the Preventive Conservation: Display Systems, Cases and Barriers Guidelines

10.3 General Guidelines for Display Furniture

- Display furniture must meet Glasgow Museums' security and conservation requirements.

- All sides of display cases and protective glazed screens should be formed where possible from continuous pieces of glass, i.e. there should not be any joints interrupting the elevations.

- If there are joins or opening sashes, they should be detailed to make them as unobtrusive as possible.

- Tables and workstations must have knee space to accommodate wheelchair users.

10.4 Display case interiors

- In display cases, colour should be used to create clear visual access to the elements of the display.

- Background colours should contrast, but not overwhelm or jar, with the items inside the display case and provide 70% tonal contrast.

- Where appropriate, material and finish specifications should indicate the level of colourfastness.

10.5 General Seating

- Seating must be provided and should be robust, hardwearing, comply with museum requirements for cleaning and meet current legislation. A variety of seating should be provided to accommodate visitors' differing requirements.

- Include firm seating. At least 50% of this should have a firm back with arm supports on either or both sides or a support rail. This is essential for people who are elderly or have mobility impairments.

- Provide spaces next to fixed seating for wheelchairs users and their companions. A minimum space of 760 x 1220mm is required at the end of fixed seating for this purpose.

- Seats designed specifically for children should follow the general standards for seating. Other forms of seating could include floor mats or cushions.

- Ensure that seats contrast with the flooring and are not positioned in front of text or control buttons for a lift or door.

- Some visitors will require a lightweight seat, if available, and visitors must be made aware of this provision.

10. Furniture

10.6 Seating Measurements

Seats	Min height FFL mm	Max height FFL mm	Depth	Arm/back support height FFL mm
Under 5s	250	325		350–500 proportional to seat height
5–12	325	450		350–550 proportional to seat height
General	425	500	280–420mm	525–700 proportional to seat height

Tables and worktops	Min height FFL mm	Max height FFL mm	Min width mm	Max width mm
Knee space – under 5s	400	470		
Knee space – 5–12 (NB children's wheelchairs have similar dimensions to adults)	460	620		
Knee space – general and wheelchairs	610	700	760	610

The requirements for wheelchair locations in public spaces are:

Overall seating capacity	No. of wheelchair spaces and seats with back and arm supports required
4–25	1
26–50	2
51–75	3
76–100	4
101–200	5

11. Display and Circulation Spaces

Seating and wheelchair spaces should be provided in main display spaces adjacent to the main circulation routes and evenly dispersed throughout the building. The minimum width of space for one wheelchair user is 760mm; space for two wheelchair users together is a minimum of 1675mm. Avoid tortuous circulation routes and cul-de-sacs. Primary circulation and exit routes should be 1500mm wide, but may be reduced to 1200mm wide where unavoidable. The circulation route around displays can be reduced to 900mm wide, if necessary. Allow 1500 x 1800mm for turning points.

Entrances and doors: level access should be maintained at all entrances and exits, with a circulation space of 1500mm^2 at each door. The entrance to exhibitions should be clearly signed.

Avoid projections onto circulation routes if possible, or provide visual and tactile warnings. Use colour, tone and decoration to contrast wall, floor and ceiling planes. Avoid strong vibrant patterns as they can be disorienting.

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1500mm

1675mm

900mm

900mm
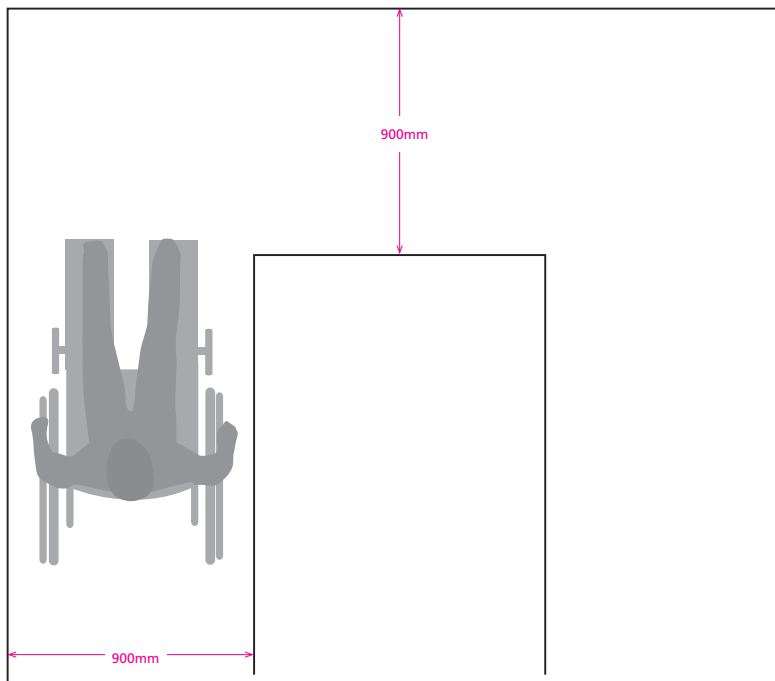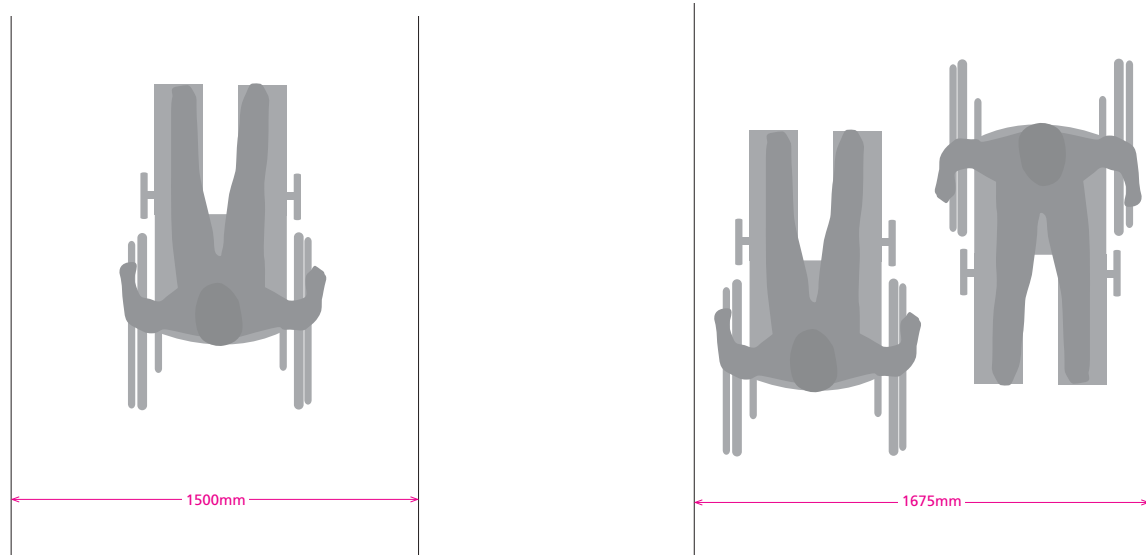
12. Colour

In general visitor areas, display spaces and rooms, colours for graphics panels and labels must maintain a high contrast (80%) between text and background. Other interpretation elements may require alternative approaches and should be addressed on an individual basis.

When choosing colours:

- make sure that walls, doorways, and furniture are visually separated from the floor colour. Remember that people with low vision and visual perceptual difficulties require at least 70% contrast in colour and hue to negotiate a space. If the floor, walls, cases, plinths, and benches are all the same hue all the component parts of the room/space will blend together;

- if adequate colour contrasts between structures are not achievable then think about using contrasting strips of colour around the bases of walls, structures or furniture;

- if a space requires low lighting for conservation or atmospheric reasons, think about using lighter colour ranges to compensate;

- remember that the colours and patterns of display floor surfaces must give accurate information about the depth, height, and condition of the floor surface. Avoid patterned carpets and floor tiles on uneven surfaces and in low-lit areas; and

- avoid certain colour combinations, particularly those within the same tonal range, such as red on green or vice versa and blue/yellow. Remember that 8% of the male population and 0.1% of the female population are red-green colour blind and a smaller number of people are blue/yellow colour blind.

13. Lighting

13.1 General

Light levels can vary depending on the type of exhibition, the material being displayed and the desired ambience. The balance between conservation and display requirements must be carefully considered.

Objects can be grouped into three categories of light sensitivity:

1. Insensitive to light: metals, stone, ceramics, glass and enamels.

2. Sensitive to light: oil paintings, wood, ivory, bone, some works on paper.

3. Textiles, art on paper, fur and feathers, dyed leather.

These are the recommended minimum light levels:

Task	Maintained Illuminance	Limiting Glare Rating	Min Colour Rendering
Ambient lighting	50–300 lux	28	80
Visitor circulation routes	100–300 lux	28	80
Insensitive to light displays	50 lux		No UV light
Sensitive to light displays	150 lux		
Very sensitive to light displays	No maximum		
Work surface (general)	300–400 lux		
Work surface (detailed work)	400–1000 lux		
Text panels	100–300 lux	25	80
Directional signage*	200–300 lux	19	80
Ramps, stairs	150–300 lux	25	80
Objects, specimens	Note 1		90T $\geq$ 4000K
Reading Areas	500 lux	19	80

Refer to Preventive Conservation: Display Systems, Cases and Barriers Guidelines for all objects, prior to display.

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13. Lighting

13.2 Entrances and main routes

Lighting assists visitor circulation and provides visual access and task lighting. It's important for interpretation, decoration, and to create pace and ambience, and the modelling may take different forms to meet these different functions. Generally, avoid extreme contrasts in lighting and aim for uniformity or gradual changes, including a transitional lighting zone between the external and the generally low lighting levels in most galleries.

13.3 Display Lighting

Good lighting is extremely important for visually impaired and older visitors so ensure that adequate lighting is provided on the vertical planes of graphic displays. Use non-reflective glass or film on all interactives, cases, displays and paintings wherever reasonable.

When low light levels are called for, find the best compromise between conservation and disabled visitor requirements. Consider temporary or timed illumination of objects, e.g. by timed push button.

The following general lighting standards do not preclude the need for testing or prototyping lighting solutions for specific design needs. However, all lighting schemes should refer to the following standards:

- BS EN 12464-1:2002 Light and Lighting – Lighting of Work Places
- BS EN 12665:2002 Light and Lighting – Basic terms and criteria for specifying lighting requirements
- BS EN 15193:2007 Energy Performance of Buildings – Energy Requirements for Lighting
- CIBSE Code for Lighting.

For long-term displays, additional consideration should be given to the energy efficiency of the scheme.

13. Lighting

13.4 Labels

- There must be sufficient light on title panels, text panels, group and individual object labels to make them readable by all visitors. Avoid shadows on label text or objects.

- Lighting on text should be between 100 and 300 lux.

- Where possible, all text should be individually lit.

- Position lighting so that visitors themselves don't block the light source.

13.5 Maintenance

- All equipment must conform to BS EN 15193:2007 (EN 60598, EN 60570, EN 61347)

- Select equipment that is robust enough for long-term permanent use.

- Make sure all specified meet museum conservation requirements

13.6 Reflective and Translucent Surfaces – Eliminating Glare

- Take care to eliminate unnecessary reflections and glare from light sources. Items to consider are video monitors, computer screens, glazed objects, highly polished objects, display cases, and so on.

- When assessing potential reflections and glare, consider the aspect for both standing and seated visitors. Where children are the target audience, take special care to eliminate glare at child height (between 800mm and 1060mm).

14. Sound

Good acoustical environments are essential:

- avoid intrusive overlapping sound between different sound sources within a display area. Some people with hearing impairments or people who have difficulty filtering multiple stimuli cannot separate foreground from background noise;
- avoid intrusive overlapping sound from interactive activities; and
- design display layouts and specific story display structures to minimize sound overlap.

15. Health & Safety

The following does not represent a complete list of all Health and Safety issues. You should also refer to Glasgow City Council's Health and Safety Policy 2008.

- All staff, consultants and contractors should comply with the Health & Safety at Work Act 1974.

- Consultants and contractors should provide proof of any insurance cover required prior to commencing work.

- Consultants and contractors should provide proof of any test certificates, staff qualifications, etc. required prior to commencing work.

- Risk assessments should be provided for all qualifying activities as required and in sufficient time for assessment, prior to commencement of the activity.

- Any portable electrical equipment supplied as part of a display should be supplied PAT tested.

- A timetable for the systematic and regular maintenance, inspection and testing should be provided in any operational and maintenance documentation (O & M manuals). Refer to The Institution of Electrical Engineers *Code of Practice for In-service Inspection and Testing of Electrical Equipment.*

16. Statutory Obligations

Designers must ensure that their designs comply with all statutory regulations governing their work. It is the designer's responsibility to ensure compliance of any structures and layouts and to obtain the necessary warrants and certificates. The following is an indication of requirements that affect exhibitions:

- The Building Standards (Scotland) Regulations Act 2003
- The Disability Discrimination Act (DDA) October 2004: for free factsheets see www.disability.gov.uk to contact DDA helpline tel 0345 622633
- Health & Safety at Work Act 1974
- The Fire Precautions Act 1971
- Construction (Design & Management) Regulations 1994
- The Civic Government (Scotland) Act, 1982 – Licensing
- British Standards: (Not strictly legislation, but the standards adopted by many statutory acts). In particular, consult:
  - o BS 8300:2009 Design of buildings and their approaches to meet the needs of disabled people.
  - o Code of practice BS 5873-4:1998 Educational Furniture. Specification for strength and stability
  - o BS 7176:2007 Specification for resistance to ignition of upholstered furniture for non-domestic seating by testing composites
  - o BS EN 356:2000 Glass in building. Security glazing. Testing and classification of resistance against manual attack

- IEE (Institute of Electrical Engineers) Codes of Practice
- The Institution of Electrical Engineers (IEE) "Code of Practice for In-service Inspection and Testing of Electrical Equipment"
- Public Entertainment Licence 2005 (Venue Manager applies for this Licence) www.glasgow.gov.uk/en/Business/Licences

16. Statutory Obligations

The following voluntary organizations have further information, if required:

- Centre for Accessible Environments www.cae.org.uk Resource,
- Creative Scotland www.creativescotland.com
- The Royal National Institute for the Blind Tel 0171 388 2706 www.rnib.org.uk
- Royal National Institute for Deaf People www.actiononhearingloss.org.uk
- Mencap www.mencap.org.uk
- Plain English Campaign www.plainenglish.co.uk

A breakdown of each GLO is provided through the following:

www.inspiringlearningforall.gov.uk/export/sites/inspiringlearning/resources/repository/GLO_checklist.doc

17. Further Information