Guidelines for the Environmental Control for Objects on Display in FuturePlan

Conservation Department

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1. Temperature and Relative Humidity Control (See Appendix 1, 1)

Museum collections are susceptible to deterioration by temperature and/or humidity, and the V&A operates an object-centred environmental strategy with due regard for sustainability issues.

The Museum will display collections in the conditions in which they have existed to date, except where;

- V&A objects are inherently unstable e.g. corroding metals.
- V&A objects are known to react adversely to extremes or fluctuations in the environment e.g. waxes, parchment
- Loaning institutions have stipulated tighter environmental conditions
- Current or future research, together with knowledge of the collections, demonstrates an unacceptable risk to the collections

The design approach should consider the following -:
- Local control should be achieved where possible through the use of appropriately specified display cases.
- Objects requiring similar conditions should be co-located to reduce costs.
-Reducing daily fluctuations in temperature and humidity within the gallery should be considered in the design approach.
- Techniques of control will be used where appropriate that have the smallest environmental impact. A passive approach will be developed for controlling the ambient gallery conditions which exploits the massive nature of the building combined with control techniques to minimise variations in temperature /humidity in the galleries avoiding the used of machinery wherever possible to achieve performance.

2. Open Display (See Appendix 1, 2)

Collections will be exhibited without covers or cases except where this poses an unacceptable risk to their long term preservation. Display decisions are be taken on an object by object basis.
Objects considered to be at risk include:

- Those with porous or decorative surfaces that remain in the gallery without rotation.
- Collections with fragile original or early decorative finishes e.g. early furniture and sculpture
- Collections that are inherently fragile e.g. silk textiles

Airborne dust and dirt may cause damage to some objects either because they have moving parts, or they are inherently fragile or because of the inability to remove dirt without causing damage during the cleaning process.

All air movement systems should be fitted with dust filtration on ingress vents. There are two levels of dust filtration:

- 95% efficiency at 2µm for collections which are environmentally sensitive, inherently fragile or have fragile original surfaces.
- 85% efficiency at 5µm where more robust collections are to remain on long-term open display.

The design approach should consider the following -:
- Environmentally sensitive objects on open display should combine the use of physical barriers and/or distance from dust source with local adjustments to the heating/ventilation system.
- Refinement of any gallery's existing air handling system should only be considered once more sustainable approaches have been exhausted. Introduction of air conditioning systems should only be considered as a last resort.
- Inherently fragile materials and objects should be placed in known air change rate display cases that buffer the objects from temperature & humidity fluctuations and provide dust control.

3. Light (See Appendix 1, 3)

Light causes irreversible damage to light sensitive collections. The museum may display its collections using a combination of natural and artificial light. There are two types of collections which require particular consideration in relation to light;

- Light-sensitive; these should be illuminated to 50 lux , or a cumulative light dosage of 200,000 lux hours, (≈ 50lux for 10 hours/day 365 days /year). These collections will require rotation.
- Light-durable; an upper limit of 250 lux illumination

Light stable; requiring no specific light restrictions.

Loaning institutions may request alternative lighting regimes
With curatorial agreement, the acceptable light dosage may be increased for light sensitive objects. This will occur, for example when objects are to be displayed for the first time in several decades, or when the collections are expected to return to long term storage after a display closes.

The design approach should consider the following -:

- Exposure for all collections should be minimised by turning off lights when the museum or a gallery is closed.
- Interactive systems (e.g. proximity switches) that minimise light exposure should be employed for light sensitive collections.
- No ultra-violet light should fall on the collections.
- All sources of heat (e.g. projectors, lamps), associated with lighting should be placed outside display cases.
- The daily and seasonal movement of the sun across the gallery in day lit galleries, must be considered during design. Sensitive collections should be placed in areas of the gallery which do not receive direct sunlight.
-Uneven illumination across the surface of a light sensitive object must be avoided to prevent differential fading.

Checklist to be used in association with the Environmental Guidelines for Object Display in FuturePlan

1. Temperature and Relative Humidity

Will the gallery contain objects that are known to be inherently unstable?	Yes/No
Will the gallery contain objects that will be damaged by extremes or fluctuations in temperature and relative humidity?	Yes/No
Will the gallery contain objects on loan to the V&A which require specified environmental conditions?	Yes/No

If the answer is Yes to any of the above, environmental control is required.

2. Open Display

Are any objects to which you answered Yes above to be placed on open display?	Yes/No
Will any inherently fragile objects be placed on open display?	Yes/No
Will any objects with fragile original or early decorative surfaces be placed on open display?	Yes/No

If the answer is Yes to any of the above, environmental control of the gallery space (including dust) is required.

3. Light

Will the gallery contain objects that are light sensitive?	Yes/No
Will the gallery contain objects that are light durable?	Yes/No
Will the gallery be illuminated with natural light?	Yes/No

If the answer is Yes to any of the above, light modelling of the galleries space is required to minimise damage to the collections. Object rotation must be part of the design.

Appendix 1: Environmental Guidelines for Objects on Display FuturePlan

1. Temperature and Relative Humidity

Inherently unstable collections	Collections Sensitive to high humidity (>70%)[1]	Collections Sensitive to low humidity (< 35%)[2]	Collections Sensitive to Fluctuations (>10% rh change in one day. Longer term (seasonal) drift is acceptable)
• Corroding metals • Plastics • Unstable glass • Photographs • Photographic negatives • Waxes **>22°C**	• Organic materials • Mould growth; Fur, feathers, hair paper • Swelling; jointed furniture • Metals	• Organic material (shrinkage and cracking) • Photographs	• Parchment • Stretched canvases • Collections containing soluble salts • Organic materials particularly where there is a large surface area to volume ration. • Jointed furniture. • Composite objects where expansion and contraction rates of each material differ. • Multi-layered decorative surfaces. • Collections conserved with organic materials

2. Open Display/Dust

Inherently fragile material	Fragile /original Decorative surfaces
• Textiles particularly costume, silk carpets. • Original and early upholstered furniture. • Animal derivatives; fur, feathers and hide. • Waxes	• Painted Furniture • Sculpture • Painted textiles • Manuscripts • Decorated leather • Friable media on paper e.g. charcoal, pastel.

3. Light

Light Sensitive material (particularly relating to colorants that fade)	Light–durable material (often related to long term degradation of substrates e.g. paper)	Light Stable
• Watercolours • Pastels • Japanese prints • Portrait miniatures • Indian miniatures • Coloured prints • Old Master drawings • Leather bound books • Textiles including upholstery • Discoloured Paper • Surface pigmented waxes • Plastics	• Black and white etchings and engravings • Drawings in graphite (pencil) • black chalk and charcoal • Easel Paintings • Painted furniture • Painted sculpture • Coloured Waxes • Plastics	• Stone • Ceramic • Glass • Metal

[1] Ocean sensor alarm point

[2] Ocean sensor alarm point