



University of Cambridge

Museum of Archaeology and Anthropology

Care and Conservation Plan 2014 - 2019

Creation Date: February 2014

Review Date: May 2017



Contents	Page
1. Introduction	3
2. Collections condition overview based on assessment	3
3. Remedial conservation	3
4. Environmental monitoring	4
5. Environmental control	4
6. The Museum's buildings	4
7. Housekeeping	5
8. Handling	6
9. Emergency Preparedness	6
10. Action Plan	7
Appendices	
Appendix I Environmental Targets	10
Appendix II Substances Hazardous to Health	11
Appendix III Risk Assessment	12

1. Introduction

This Collections Care and Conservation Plan will enable the Museum of Archaeology & Anthropology (MAA) to minimise the risk of harm to the collections from people and the environment. It should be read in conjunction with the Collections Care and Conservation Policy and the Forward Plan, which set out the institutional strategic approach to Collections Care. This document is a more practical guide to procedures and MAA's planned programme to improve care of collections over time.

2. Collections condition overview based on assessment

MAA's collections contain a broad range of organic and inorganic natural and man-made materials with varying needs in terms of collections care and conservation. To ensure that an awareness of the condition of the collection and its needs is maintained, material will be subject to regular assessment.

Our assessment procedures initially assesses groups of similar material, but regular inspection, use of the collections and new research will continue to build awareness of the needs of individual items and groups of materials.

Assessment takes into account the following risks to our collections:

- The nature and vulnerability of different materials, methods of construction and the condition of individual items
- Potential risks from other items and materials in the collection
- Potential risks posed by the buildings in which the collections are stored
- Action by people working in the Museum, or handling collections for display, research or conservation, which could result in:
 - Accidental or malicious damage
 - Theft or loss
- Risks posed by Museum visitors, including those using museum buildings during activities and events
- Emergencies, as identified in the emergency plan, and the risks posed by the response of the emergency services to such an event
- Environmental factors, including temperature, relative humidity, light, airborne pollution and pests

3. Remedial conservation

In order to provide all items in the collection with appropriate care, and that priorities for remedial conservation are identified, the following procedures will be followed:

- 3.1 Items currently in the collection are visually inspected and their care needs assessed. The results are recorded in their catalogue entry and a list of all sensitive or vulnerable items is maintained, together with a prioritised list of any items requiring remedial conservation. New acquisitions will be assessed on arrival at MAA.
- 3.2 The museum collection includes sensitive and vulnerable material and where a need for remedial and preventive conservation work is identified, work will be undertaken under the supervision of a trained conservator. Any conservator that is contracted to carry out work for the museum will normally be included on the Conservation Register, in accordance with MAA's Care and Conservation Policy.

4. Environmental monitoring

Environmental targets for each area of the collections are recorded in Appendix I. The Museum's ongoing environmental monitoring programme demonstrates that the collections are kept in conditions that do not always meet the targets set in Appendix I.

- 4.1 MAA's Collections Care and Conservation Working Group will regularly review records of relative humidity and temperature and will notify the museum's Curatorial Group when these fall outside the recommended range in order that appropriate action can be taken.
- 4.2 All environmental recordings are collected, evaluated and retained in the environmental monitoring and control file.
- 4.3 Monitoring equipment is stored and calibrated in accordance with the manufacturer's recommendations, which are also kept in the environmental monitoring and control file.

5. Environmental control

The collections are kept in a manner that protects them from unsuitable environments:

- 5.1 All collections are kept within a building, except when the robustness of an item justifies external storage or display.
- 5.2 Heating and humidity controls are in place, and these achieve the conditions identified in Appendix I for the majority of the time.
- 5.3 The museum is taking steps to reduce ambient light levels in the galleries and at the offsite store, in order to bring these within the targets identified in Appendix I.
- 5.4 A programme of improvement to storage conditions is currently under way to ensure that collections are stored away from sources of heat and light.
- 5.5 Archival quality materials and products are used where possible in storage and display areas to ensure that collections are not damaged by chemical pollution. The collection is extremely large and some older, non-archival materials are still in place, but a programme of repacking is in place.
- 5.6 The bulk of vulnerable items are protected from dust by being housed in appropriate rooms, cases and packaging, but a programme of covering uncovered material is in place.
- 5.7 Items are generally stored and displayed so that they cannot cause physical or chemical damage to other items in the collection. However the scale of the collections and the need to move material away from leaking roofs in the Offsite Store has led to storage in aisles in some areas.
- 5.8 Windows and doors are kept closed except when in use to provide protection from gaseous and particulate airborne pollutants.

6. The Museum's buildings

The collections of MAA are held at the Museum in Downing Street, Cambridge and in a former aircraft factory, on the outskirts of the city (Offsite Store). The buildings are maintained by the University of Cambridge Office of Estate Management. These buildings are the collections' primary protection against the external environment and damage or theft by others and both meet the requirements for an effective defence, except where noted below:

- 6.1 Both buildings are generally fit for purpose, providing significant protection from the elements and of appropriate strength and quality of construction.

- 6.2 All floors are capable of safely supporting the loads placed on them. Changes in use, particularly in stores areas, will be made after an assessment of loading limits.
- 6.3 Both buildings are regularly inspected by Estate Management and potential major threats such as leaky roofs, poor wiring, internal pipe work, blocked gutters and ill-fitting windows are identified and, in the case of the main building, addressed. Inspections by MAA's Collections Care and Conservation working group take place once a month on a three monthly rotating programme, between the offsite store, the onsite stores and the public display areas, when minor weaknesses are identified.

Major problems at the Offsite Store, such as leaking roofs, currently cannot be fully resolved by repair works and the University is currently attempting to identify a location for a new permanent offsite store.
- 6.4 Plant and equipment are inspected periodically, in accordance with manufacturers' recommendations. In particular, portable appliances, fire extinguishers, burglar and smoke alarm, and circuit testing are all carried out at agreed times either by appropriately qualified staff, volunteers or contractors.
- 6.5 The Museum is staffed and inspected by Museum staff every day of the week throughout the year, and arrangements for inspections are made during closed periods. The Offsite Store is visited and inspected at least once a week and is protected by environmental and security monitoring systems.

7. Housekeeping

MAA's galleries, stores and collections are carefully cleaned to reduce the risk of infestation or damage from mould or abrasive or acidic particles.

- 7.1 All display and storage areas and furniture are cleaned and inspected regularly.
- 7.2 Cleaning methods, products and tools have been selected to reduce the risk of physical and chemical damage to collections.
- 7.3 All incoming material is examined for signs of infestation, dampness or mould. Where this is obvious items will either be isolated immediately, or removed from the building. Advice will be sought promptly and appropriate action taken as a matter of urgency.
- 7.4 All newly acquired material is kept in the processing room, away from main storage areas, and is routinely frozen, or where this is not possible sealed in polythene for a year, to see if an infestation occurs.
- 7.5 Any existing items in the collection that show signs of pest infestation will be isolated from the rest of the collection until treated. Advice will be sought promptly and appropriate action taken as a matter of urgency.
- 7.6 Display and storage areas are monitored for the presence of insects and rodents, and traps are changed on the same three monthly rolling timetable outlined above. Trapped insects are identified through a programme of Integrated Pest Management.
- 7.7 Both the collections and the cleaning materials used include substances that are potentially hazardous to health. All staff and volunteers working with these collections will receive appropriate health and safety training in accordance with the Control of Substances Hazardous to Health Regulations, 2002.

8. Handling

All handling of collections, whether for display, research or conservation will be carefully planned to minimise the risk of physical or chemical damage.

- 8.1 All staff, students, researchers and volunteers will be made aware of their responsibilities regarding the care of the Museum's collections during their induction training.
- 8.2 Staff, students and volunteers who are expected to work with the collections will first undergo appropriate training in handling, packaging and safe storage of museum artefacts.
- 8.3 Under no circumstances will heavy or cumbersome items within the museum collection be moved (even short distances) unless: those moving the object have undertaken manual handling training; and a risk assessment for the move has been carried out using the HSE template for risk assessment available at <http://www.hse.gov.uk/risk/index.htm> .
- 8.4 Museum staff will ensure that public access to the collections is supervised at all times.

9. Emergency Preparedness

All staff, students and volunteers will be made aware of the content of the museum's emergency plan during their induction training, including instructions for salvage and actions in the event of an emergency.

- 9.1 All incidents, however small, that threaten the buildings or the collections will be reported to the Museum Committee and recorded and documented within the risk assessment register of the Emergency Plan in order to inform future development of the Plan.
- 9.2 The University of Cambridge Museums have a collections care support network (4C) which can provide additional conservators to assist in salvaging museum objects. Furthermore, as part of the University of Cambridge, MAA has a priority user contract with the recovery firm Harwell, who can provide first aid and conservation for damaged material.

11. Action plan

Actions	Person responsible	priority	Timescale and start date	Resources
Based on the outcome of reviewing Benchmarks in Collections Care in November 2013.				
Buildings				
Locate and develop new store to replace Short's	Nicholas Thomas, MAA Director	High	Ongoing, for completion by 2018	Staff time Capital funding Grant aid
Establish regular programme of inspections	CCC Working Group	High	Monthly, December 2013	Staff time, Environmental monitoring equipment
Testing and maintenance of plant and equipment	MB	High	Ongoing	Staff time
Collections Care				
Continue condition assessment programme	Collections Manager and UCM Conservator	High	Ongoing	Staff time
Formalise programme of remedial conservation, based on condition assessments	Collections Manager and UCM Conservator	Moderate	Annually, December 2014	Staff time
Raise all collections 6" off floors where possible	Collections Managers	Moderate	Ongoing, December 2014	Staff time
Review packaging materials alongside condition assessments and replace non-archival material, when found	Collections Managers	Moderate	Ongoing	Staff time Packaging materials
Move forward with collections rationalisation to create more space within existing storage areas	Collections Managers	High	Ongoing	Staff time
Establish register of sensitive and vulnerable items identified through condition assessment	UCM Conservator	Moderate	Ongoing	Staff time
Establish regular programme of collections care training and assess needs through staff and volunteer reviews	Collections Managers & UCM 4C group	Moderate	Annually, December 2014	Staff time, Training Budget
Review new acquisitions and consider moratorium on collecting if acquisition threatens storage of existing collections	Curators	High	Annually	Staff time

Actions	Person responsible	priority	Timescale and start date	Resources
Collections Care (cont)				
Review approach to research access and ensure users are given written instructions	Collections Managers	Moderate	Ongoing, December 2014	Staff time
Introduce regular programme of inspection for items on display	CCC Working Group	Moderate	Monthly, February 2014	Staff time
Review control of food used in Shorts Store	CCC Working Group	Moderate	Ongoing, March 2014	Staff time
Environmental monitoring and control				
Work to reduce unnecessary exposure to light in exhibition and storage areas.	CCC Working Group	High	Monthly, December 2013	Staff time, Environmental monitoring equipment
Maintain environmental monitoring programme and review environmental control needs	CCC Working Group	High	Monthly, December 2013	Staff time Environmental monitoring equipment
Formalise collaborative UCM calibration programme for environmental monitoring equipment	4C Group	Moderate	Annually, December 2014	Staff time Budget
Review risks to collections from gaseous and particulate pollution, and vibration, and revise risk assessment	CCC Working Group	Moderate	Quinquennial, December 2014	Staff time Consultancy fee
Housekeeping				
Formalise cleaning procedures for all storage areas	Collections Managers	Moderate	Ongoing, December 2014	Staff time
Maintain housekeeping measures	Collections Managers	High	Ongoing	Staff time

Actions	Person responsible	priority	Timescale and start date	Resources
Emergency preparedness				
Review Risk Assessment and Emergency Plan	All	High	February 2014	Staff time
Update Emergency Plan to work with UCM wide initiative on emergency response	All	Moderate	March 2014	Staff time
Consider value of a list of high priority objects and documents for salvage in an emergency	Curators, Collections Managers	Moderate	December 2014	Staff time
Formalise place of emergency response in induction training	Nicholas Thomas, MAA Director, WB, MB	High	Ongoing, May 2014	Staff time
Introduce regular testing and review of Emergency Plan	Nicholas Thomas, MAA Director, WB, MB	High	Annually, May 2014	Staff time

Appendix I

Environmental Targets

The museum collections include a wide range of materials including: textiles, ceramic, wood, metal, glass, paper, photographs, leather and bone. Many of the objects are comprised of composite materials, which present collections staff with complex and conflicting environmental needs.

Relative Humidity

Relative humidity levels above 65% (RH) at 20 °C are likely to encourage mould growth and corrosion to develop, while low levels of humidity will encourage organic materials to dry and crack. Rapid changes in humidity will accelerate changes and cause damage to complex objects made of inorganic and organic material.

We aspire to keep collections on display and in storage within the range 40 – 65 % RH with a maximum variation of less than 10% RH over a period of 24 hours. Wider parameters may be acceptable for less sensitive materials such as stone and ceramic, while especially vulnerable materials and those with special requirements, such as photographic products, may need more controlled conditions.

Temperature

Due to the acceleration of chemical change at high temperatures, the temperature in the Exhibition area will therefore be kept at a stable temperature in the range 16 - 24 °C, with maximum variation no more than 4°C over a period of 24 hours. Wider parameters may be acceptable for less sensitive materials such as stone and ceramic, while especially vulnerable materials and those with special requirements, such as photographic products, may need more controlled conditions.

Light

The collections on display and in store include materials that are highly sensitive to light and where these are on display, light levels should be kept low (50 Lux) when the Museum is open to the public and lights will be switched off when not required. Other sensitive items are kept in areas with no more than 200 lux.

We are working to minimise the number of sensitive items that are kept in direct or indirect sunlight and to filter or remove all sources of UV light.

Pollutants

The collections include materials such as wood, rubber and plastic. These are likely to off gas pollutants that are damaging to adjacent materials. Such items should be identified and if possible stored separately from other vulnerable objects. .

The size and the antiquity of the collections mean that rehousing and repackaging can only take place over an extended period of time. However vulnerable areas of the collections have been identified and prioritised for storage upgrade, for example the Textile Store I at the external store. Subject to funding this will become a storage improvement project (with conservation grade materials), with the intention of rolling out to other areas of the collections in the future.

Appendix II

Substances Hazardous to Health

The Museum's collections include a number of items that could be hazardous to health in an emergency, or if not handled with care. All are appropriately stored and labelled guidance will be given to all new employees and volunteers who may be called upon to work with these artefacts.

The following substances that are potentially hazardous to health can be found in the collections:

- Objects made of lead.
- Weapons with sharp edges
- Poison applied to arrows which may still be active
- Heavy objects that could cause harm if moved carelessly
- Feathers and metal may have been treated with arsenic
- Past pesticidal treatments
- Ongoing use of constrain
- Degrading photographic materials
- Degrading historic plastics

Appendix III

Risk Assessment

This process is intended to help a museum to assess the degree to which its collections are at risk of harm from people and the environment and to suggest an appropriate level of response.

Severity scale (the impact on the object of the potential damage)

1. Accelerated deterioration where external factors significantly influence the expected deterioration rate of the item.
2. Minor physical damage, requiring remedial conservation/ preservation action to prevent further deterioration
3. Major physical damage, requiring active conservation treatment to enable access
4. Catastrophic destruction

Risk level

The colour code is based on the level of risk, combined with an assessment of probability rated from 1 (less than 5%) to 6 (more than 80%).

Probability of risk occurring	Severity 1	Severity 2	Severity 3	Severity 4
Less than 5%	1	2	3	4
Less than 10%	2	4	6	8
Less than 20%	3	6	9	12
Less than 40%	4	8	12	16
Less than 80%	5	10	15	20
Over 80 %	6	12	18	24

Suggested level of response

Critical	Collection management measures should eliminate such risk; collection preservation is otherwise not sustainable
Severe	Impact and likelihood are high; specific procedures/measures should be in place to eliminate or control such risks
Significant	Detailed procedures/ plans are required to address areas of concern
Moderate	Additional procedures/ plans are likely to be required to address areas of concern
Low	Risks are either rare or of low impact; regular procedures should cover any necessary actions
Negligible	Risks tend to be in occurrence and low impact; regular procedures are sufficient to cover any necessary actions

Risk Assessment, Museum main building, conducted by Simon Davies, 30 September and 30 October 2013

Cause of damage	Current likelihood	Current severity	Risk	Control measure	Likelihood with control	Severity with control	Mitigated Risk
Inherent instability	2	4	4	Review packing alongside condition assessments and improve if required	1	2	2
Damage by other items	4	2	8	Use collections rationalisation to create more space within existing stores	1	2	2
Accidental or deliberate damage	5	2	10	Use collections rationalisation to create more space within existing stores	1	2	2
Theft or loss	1	4	4				
Neglect	1	2	2				
Operation	1	2	2				
Hospitality	0	0	0				
Use by other bodies	0	0	0				
Fire	1	4	4				
Water	4	3	12	Locate new store or upgrade Offsite store	1	3	3
Temperature	1	2	2				
Light/UV	6	2	12	Review existing storage and ensure no light sensitive items stored in daylight	1	1	1
Humidity	2	3	6	Revise monitoring programme in Store to provide accurate data.	1	2	2
Pollutants	1	3	3				
Pests	1	3	3				
Technology	3	1	3				

Risk Assessment, Offsite Store conducted by Simon Davies, 30 October 2013

Cause of damage	Current likelihood	Current severity	Risk	Control measure	Likelihood with control	Severity with control	Mitigated Risk
Inherent instability	2	4	4	Review packing alongside condition assessments and improve if required	1	2	2
Damage by other items	4	2	8	Use collections rationalisation to create more space within existing stores	1	2	2
Accidental or deliberate damage	5	2	10	Use collections rationalisation to create more space within existing stores	2 (due to open displays)	2	4
Theft or loss	1	4	4				
Neglect	1	2	2				
Operation	1	3	3				
Hospitality	1	2	2				
Use by other bodies	0	0	0				
Fire	1	4	4				
Water	2	3	6	Monitor recent works to roof	1	3	3
Temperature	1	2	2				
Light/UV	6	3	15	Ensure no sensitive items kept in daylight areas, remove all UV emitting lighting and investigate blinds to remove useless light.	2	2	4
Humidity	3	3	9				
Pollutants	?	2	?	Review items to assess previous treatments	1	1	1
Pests	2	3	6	Review control of food in building	1	2	2
Technology	1	1	1				