This document is divided into the following sections:

Main duties of the Department

1. To conserve objects – undertaking treatment and appropriate restoration of the Collection.

2. To take physical care of the Collection – including how they are stored, exhibited, moved, packed and transported. These responsibilities to cover methods and materials used, and to be both advisory and active.

3. To maintain the appropriate museum environment– including specifying, monitoring, and where necessary implementing the environmental conditions in which objects are stored, displayed, transported and used. This includes light, relative humidity, temperature and control of pests.

4. To test new materials to be used in treatments, mounts or case fabrication for suitability in safety towards the collection. This service is seen as an important commitment to keep up with best practise.

5. To provide a scientific service which enhances the effectiveness and prestige of the museum.

6. To make use of scientific analytical methods in support of conservation, curatorial research, and as a means of better understanding the technological development of arms and armour.

7. To provide advice and assistance on conservation, scientific and technological issues to both staff within the museum and the public.

8. To fully record the process and outcome of work carried out within the Department and ensure that this information is appropriately archived for the benefit of those who will look after the Collection in future years.

9. To research and publish or otherwise disseminate work both of academic excellence and for popular interest relating to conservation and science and technology as they relate to the Collection.

10. To maintain the facilities with which we work.

11. To observe and uphold safe working practices.

Storage/Display

The museum will undertake preventive conservation measures to ensure long-term preservation of the collection

1. The Conservation Department is responsible for advising and implementing the appropriate environmental conditions in any storage or display space.

2. The term 'Environmental conditions' refers to relative humidity, temperature, light levels, pollution both gaseous and particulate, vibration and pest control.

3. The collection will be stored and exhibited in conditions, which meet current nationally, and internationally accepted best practise and which minimise the factors, which cause, or accelerate deterioration. See Appendix A.

4. The stability of the collection will be monitored. The cause of any change in stability will be investigated and the environmental conditions modified accordingly.

5. Conservation staff will carry out regular monitoring of environmental conditions.

6. An integrated system will provide monitoring of RH and temperature. Sensors for light intensity will be necessary in selected areas. This information will be downloaded and assessed weekly.

7. The Conservation Department will keep a historical record of conditions within the museum.

8. Air conditioning, which is to provide the conditions within the gallery, must have a proper maintenance contract and backup facilities.

9. Storage and display systems and materials including case construction will be chosen to provide appropriate protection and where necessary tested by the Conservation Department to ensure they fulfil this role.

10. Non-collection material will, so far as possible be stored separately from the collection.

11. Storage and display will be restricted to rooms or buildings which meet the security requirements, are structurally sound, and where possible where suitable environmental conditions can be maintained for the objects in question.

12. Objects selected for display will undergo a conservation assessment undertaken by the Conservation Department in order to establish strength, appearance and individual needs. Treatment will be undertaken where necessary.

13. All sensitive objects should be enclosed within cases, drawers or boxes.

14. Objects should only be illuminated when necessary for display or study.

15. Cleanliness must be maintained within the building to reduce problems from dust

and pests.

16. Any new building scheme or gallery/store extension in the museum should include the provision for environmental control and monitoring.

17. Objects must be protected from any undue vibration or shock. (Ideally the maximum velocity of vibration should be no more than 4mm/sec within the museum building).

18. Objects borrowed by the museum should only be accepted when the Museum is able to provide the conditions specified by the lender.

19. A requirement of any loan of objects by the museum must be that such objects are provided with the same level of care as is practised within the museum.

Showcase Design

Showcases are an important barrier to the conditions within the galleries. These guidelines do not cover security aspects.

1. All materials used in the manufacture of both cases and case fittings should be inert. All materials must be tested either by the RA Conservation Dept or by another National Museum such as the British Museum. The test process takes at least one month to complete.

2. Case fittings must be securely fixed to the case. Methods of fixing objects to the case fittings should prevent the object suffering excessive vibration or wear. It should not be possible for an object to fall and suffer damage.

3. Showcases must provide adequate access for the placement of objects. Opening of the case must not place the object at risk.

4. Showcases should be as airtight as possible.

5. Showcases should not house an internal light source or conventional lights that may give off heat. In this case the source and/or lights should be housed in a separate compartment to the objects to reduce heat gain and enable access for maintenance without putting the objects as risk.

6. All case lighting must be easily controllable in order that lux levels can be adjusted accordingly.

7. Conservation standards and principles must be considered in all aspects of display, loan and storage planning.

Pest Control

1. It is the responsibility of all staff to be alert and aware of the threat to objects posed by insects and pests. This should include RAI staff who are dealing with foodstuffs within the museum building.

2. Conservation will provide appropriate training and support to staff on matters of insect and pest control.

3. It is the responsibility of all staff accepting any objects into the museum, for whatever purpose, to place them firstly in the quarantine store and inform conservation.

4. The Conservation Department will inspect objects for insect/pest infestation and if necessary carry out an appropriate treatment before objects are admitted into the presence of the established collection.

5. Regular active monitoring programmes will provide information on activity levels and locations of insects/pests.

6. Remedial action will be taken as and when the activity level poses a significant threat to object or collections

7. The methods used to control and monitor will be assessed regularly.

8. Materials and fabrics used in the museum for decorative purposes should be chosen with care so as not to act as food sources for insects and pests.

Transit

1. While objects are in transit the appropriate ambient conditions should be maintained. The object should not be exposed to sudden changes of environment.

2. Air ride suspension should reduce exposing the objects to undue vibration and shock.

3. All materials used in close proximity to the object for packing should be inert. All materials must be tested either by the RA Conservation Dept or by another National Museum such as the British Museum. The test process takes at least one month to complete.

4. Packing materials and packing techniques should be robust enough to prevent undue vibration of or shock to the object during transit.

5. Packing materials should provide a buffer to the objects from changes in the environment.

Interventive Conservation

1. The Conservation Department is responsible for the technical investigation of deterioration and the appropriate conservation treatment of any object. The Head of Conservation has the final say in whether to proceed.

2. Conservation of objects will take place with reference to the published standards and guidelines in line with the principles of the United Kingdom Institute for Conservation (UKIC).

3. Conservation treatments will only be carried out by staff from the Conservation Department or by trainee conservators under supervision.

4. Curatorial staff may dismantle objects for research purposes but may not carry out any conservation treatments including protective wax or oil coatings. Not only do such treatments require recording by conservation staff but also the application of such treatments should be applied by appropriate staff, (see above point), in order to preserve world-class conservation standards.

5. Enablers trained by the Conservation Department may carry out the basic cleaning covered by such training.

6. The Conservation Department will safeguard as far as possible the material integrity and significance of each object.

7. All conservation treatments carried out on objects will be justified and documented as part of the object documentation record. See Appendix B.

8. The Museum will not carry out conservation work on any object where there is reasonable cause to believe that the current holder is not legitimately entitled to retain the object or that the object has been stolen, illegally excavated, illegally exported or illegally imported.

9. The Head of Conservation is responsible for ensuring that the Department of Conservation maintains the necessary world-class skills and expertise. The Head of Conservation is also responsible for the selection and appointment of specialist external contractors in cases where the necessary expertise is not available in-house.

10. The Conservation Department will let contracts relating to collections care only to suitably qualified contractors. In respect to outside conservators they will ideally be accredited.

11. The Conservation Department will explore innovative methods of conservation and collections care in order to remain a centre of excellence and a leader in the field. Where appropriate these investigations will be published.

Handling

Poor handling can damage objects and it is imperative that the risks to objects from handling are either eliminated or reduced to the lowest possible level. All materials are affected by the salts, which are deposited on them from handling with bare hands. There is at all times a layer of moisture and salts on the surface of the skin, which will be transferred to an object on handling. This moisture and salts will cause damage eg corrosion and etching of metals, embrittlement of textiles. This applies to ALL materials – metals, organics, inorganics. The only way to prevent this is to wear gloves at all times of handling.

1. Any department that is involved in the handling of the collection is responsible for seeking the advice of the Conservation Department and of ensuring that all staff are trained in the handling of objects to museum standards.

2. Objects are to be handled only by people who have been trained to do so.

3. Objects should never be placed so close together that they knock against one another.

4. Gloves must be worn at all times when handling the museum collection objects and loan objects unless of course an owner specifically requests not to do so.

5. Synthetic gloves are the best but clean cotton or fabric gloves can also be used. Do not allow cotton/fabric gloves to become dirty or so full of sweat and salts that they become a hazard to the object. Avoid gloves with plastic grips as these have been found to leave marks on the objects.

6. When handling other people's objects that may not use gloves themselves, follow best practise and wear gloves. It is important to explain the problems that can occur and the reasons for wearing gloves at all times.

7. Before moving an object, consider the likely problems that may occur - where is the object being taken, is there sufficient room, are there any problems of access etc. Trolleys, trays and/or other supports should be employed whenever possible.

8. Objects should be held carefully in order to support the object to prevent damage. Support loose pieces.

9. Take care when moving with an object. Be spatially aware so as not to knock stands, shelves etc.

10. When placing an object down make sure no damage can be caused to the object from either the way it has been positioned or from it's surroundings. Cushioning maybe required.

11. If necessary advice/help should be sought from the Conservation department especially for complex and delicate objects.

Enquiries

1. The Conservation Department will provide advice to general public and also to professional colleagues and institutions. Such advice should only be provided by, or confirmed by, Conservation Department staff.

2. Conservation advice for public enquiries should be limited to preventive measures.

3. The extent of conservation advice for professionals should consider whether the treatment will be carried out by a competent person and in an ethical manner.

4. The Conservation Department will ensure that the person providing the advice has suitable expertise.

5. The Conservation Department may refer the enquirer to external consultants such as the Conservation Register where appropriate. In the case of referral to an individual consultant, the adviser must have enough knowledge of the outside consultant's capabilities and be confident their work will be off a high standard. Ideally the names of two or more consultants should be offered.

6. The Conservation Department will at no time take responsibility, financial or otherwise, for the outcome of conservation activities carried out as a result of an enquiry or referral.

7. The Conservation Department will not undertake conservation treatments for the public unless in extraordinary circumstances and at the discretion of the Museum Director.

8. The Conservation Department will undertake educational activities for the general public on collections care and conservation.

APPENDIX A - Environmental Conditions

The Conservation Department recommends the following environmental conditions for a mixed collection. More specific parameters will be given in individual cases of merit.

Temperature: 18-25 ºC

Relative Humidity: 50 ±5% with no more than a 5% change in one day[1]

Ultra-violet radiation: Less than 75 W/lm (microwatts per lumen)

Illuminance: Light levels should be in the region of 50-250 lux (depending on sensitivity of the object). Highly sensitive material should have a maximum annual exposure of 200,000 lux hours [2]

Filtration
Particulate: Filters to give 85% efficiency at 5 m

Gases: All pollutant gases should be removed unless being released by the object itself.

[1]Fluctuations of RH, which are particularly damaging to many objects, can be reduced by enclosing objects within showcases.

[2]When an object is known to be highly light sensitive it should not be put on display without due consideration. Ideally light sensitive objects should be grouped in areas of the building where there is little natural light and with a view to regular rotation.

APPENDIX B - Procedure for Object Conservation

The following procedure must be followed when any object in the museum is treated, conserved or restored.

Photography

Before any work is carried out (and after any treatment is completed) the object must be photographed digitally with its object number and a colour scale in view.
The image must be stored in the following location:
Folder S_conservation on nt_admin2 (S:)
Folder Images
Folder Class number of the object
Folder Year Month in which image was taken (eg 2003 Feb)
Each image is then given a file name as:
Object number_xB Photographs **before** conservation (eg XII.12_1B)
Object number_xD Photographs **during** conservation (eg X.23_1D
Object number_xA Photographs **after** conservation (eg XXVIA.2_3A)
In each case x is a consecutive number from 1

Condition report

A condition report of the object must be completed on the STAR record of the object in the database NEWCONS

Treatment record

A treatment record of the object must be completed on the STAR record of the object in the database NEWCONS

Final Photography

Before leaving conservation the object must be photographed again as per the procedure above.

Summary

For each object treated there must be:
1 image(s) before work started
2 a condition report
3 treatment report
4 image(s) after treatment is completed