



Conservation Risk Assessment and Recommendation Report : Assessment of the Proposed Use of Natural Materials in the *Amanzi-eAfrika* Exhibition

Prepared by: Conservation Unit

Project: *Amanzi-eAfrika* Exhibition

Department: Collections Management and Conservation

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Attention : Amy Sephton, Chief Curator: Exhibitions Design and Production

1. Purpose

The purpose of this report is to assess the conservation implications associated with the proposed incorporation of natural materials into the *Amanzi-eAfrika* Exhibition and to provide recommendations for their safe selection, preparation, treatment, installation and long-term management. The exhibition concept proposes the use of natural materials to recreate wetland and estuarine environments. These materials may include rocks, timber, branches, tree stumps, reeds, grasses and other botanical elements. While these materials contribute significantly to the interpretive and aesthetic objectives of the exhibition, they also introduce potential biological, chemical and physical risks to museum collections and the gallery environment. This assessment has been prepared in accordance with internationally accepted preventive conservation principles promoted by:

- International Council of Museums (ICOM)
- International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM)
- American Institute for Conservation (AIC)
- Canadian Conservation Institute (CCI)
- Institute of Conservation (ICON)
- South African Museums Association (SAMA)

2. Scope

This assessment considers:

- Suitability of natural materials for long-term exhibition display.
- Potential pest and biological risks.
- Conservation risks to neighbouring collections.
- Appropriate treatment options.
- Preventive conservation measures.
- Long-term monitoring requirements.

3. Proposed Natural Materials

The following materials are proposed for use within the exhibition:

- Natural rock and stone

- Tree stumps
- Timber sections
- Dead branches
- Driftwood
- Bark
- Dried reeds
- Dried grasses
- Botanical material associated with wetland environments

Note : Artificial replicas are recommended to be used where natural materials present unacceptable conservation risks.

4. Conservation Risk Assessment

4.1 Biological Risks

Organic materials are capable of introducing a variety of biological contaminants into museum environments, including:

- Wood-boring beetles
- Powderpost beetles
- Bark beetles
- Termites
- Moths
- Silverfish
- Cockroaches
- Mould spores
- Fungal organisms
- Microorganisms
- Plant pathogens

These organisms may subsequently migrate into museum collections, storage areas and exhibition spaces. The use of untreated organic material therefore represents a **High Risk**.

4.2 Chemical Risks

Natural materials may also contain:

- Organic acids
- Plant resins
- Tannins
- Sap residues
- Soluble salts
- Residual moisture
- Environmental contaminants
- Agricultural chemicals

These materials may off-gas volatile organic compounds (VOCs), stain adjacent materials or contribute to corrosion of sensitive collection objects.

Risk Rating: **Medium**

4.3 Physical Risks

Potential physical risks include:

- Dust generation
- Flaking bark
- Falling plant material
- Fibre shedding
- Surface abrasion
- Structural instability
- Splintering

These risks increase housekeeping requirements and may affect neighbouring collection objects.

Risk Rating: **Medium**

4.4 Environmental Risks

Organic materials respond readily to fluctuations in temperature and relative humidity by expanding, contracting or absorbing moisture.

Possible consequences include:

- Mould growth
- Distortion
- Cracking
- Biological deterioration
- Increased pest activity

Risk Rating: **Medium to High**

5. Material Assessment

Material	Suitability	Conservation Risk	Recommendation
Stone and rock	Excellent	Very Low	Suitable following cleaning and drying.
Gravel and river stones	Excellent	Very Low	Wash and dry thoroughly before installation.
Driftwood	Good	Medium	Desalinate if marine-derived, dry completely, inspect and treat.
Hardwood branches	Good	Medium	Only if completely dry and insect-free. Remove loose bark where possible.
Tree stumps	Acceptable with treatment	High	Heat treat or kiln dry prior to use.
Timber logs	Acceptable with treatment	High	Thorough inspection and treatment required.
Bark	Poor	High	Not recommended unless permanently stabilized.

Material	Suitability	Conservation Risk	Recommendation
Dried reeds	Limited	High	May become brittle and attract insects; replace periodically if used.
Dried grasses	Limited	High	Similar risks to reeds; use sparingly.
Soil	Unsuitable	Very High	Not recommended.
Moss	Unsuitable	Very High	Artificial substitute recommended.
Living plants	Unsuitable	Very High	Not recommended within collection galleries.

6. Treatment Recommendations

Prior to entering any museum collection or exhibition space, all natural materials should undergo a documented conservation preparation programme.

Recommended treatments include:

Cleaning

- Remove all loose soil and debris.
- Wash mineral materials using clean water where appropriate.
- Allow complete drying before further treatment.

Drying

Organic materials should be thoroughly dried to an appropriate moisture content prior to treatment. Natural air drying may be appropriate for some materials, although kiln drying or controlled heat treatment is preferred for timber.

Fumigation

Where appropriate, materials may undergo fumigation within the museum fumigation chamber. However, current preventive conservation guidance from CCI, AIC and ICCROM recognises that fumigation should not be considered the primary method of pest eradication. Heat treatment or kiln drying generally provides greater long-term effectiveness against wood-boring insects and their larvae. Following treatment all materials should undergo quarantine and inspection before installation.

Surface Stabilisation

Where appropriate, timber surfaces may be consolidated or sealed following treatment.

Possible coatings include:

- Conservation-grade acrylic coatings
- Conservation-grade polyurethane coatings where appropriate
- Microcrystalline wax for selected surfaces

The objectives are to:

- reduce dust generation.
- stabilize friable surfaces.
- improve cleanability.

Surface coatings should **not** be regarded as a substitute for pest eradication and will not prevent infestation if insects or eggs remain within the timber.

7. Integrated Pest Management (IPM)

Consistent with ICOM, ICCROM, CCI, AIC and ICON guidance, an Integrated Pest Management programme should accompany the installation.

This programme should include:

- quarantine of incoming natural materials.
- detailed visual inspection prior to installation.
- insect trapping throughout the exhibition.
- routine environmental monitoring.
- scheduled housekeeping.
- monthly conservation inspections.
- immediate removal of any infested material.

Chemical intervention should be regarded as a last resort.

8. Environmental Requirements

Natural materials should only be introduced into galleries operating within established museum environmental parameters.

Recommended conditions include:

- Temperature: **18–22°C**
- Relative Humidity: **45–55% RH** with minimal fluctuation
- Good air circulation
- Protection from direct sunlight
- UV-controlled lighting
- Stable environmental monitoring throughout the exhibition period

9. Installation Recommendations

During installation the following precautions should be observed:

- All materials should be documented and approved by Conservation prior to installation.
- Materials should not be placed in direct contact with collection objects.
- Hidden support structures should isolate natural materials from sensitive artefacts.
- Heavy materials should be structurally secured.
- Organic materials should remain accessible for inspection.
- Installation should permit routine cleaning without disturbing exhibition components.

10. Monitoring During Exhibition

The Conservation Unit should undertake regular inspections throughout the exhibition.

Monitoring should include:

- evidence of insect activity.
- mould development.
- cracking or movement of timber.
- shedding of fibres or bark.
- dust accumulation.
- environmental data review.
- condition checks of neighbouring collection objects.

Inspection frequency:

- Monthly under normal conditions.
- Immediately following any environmental incident.
- Prior to deinstallation.

11. Overall Conservation Assessment

The proposed use of natural materials is considered **acceptable**, provided that all materials undergo appropriate conservation assessment, treatment and preparation before entering the gallery.

The greatest risks are associated with untreated organic materials, particularly timber, bark, reeds and grasses, which may harbour insect pests or fungal contaminants. These risks can be substantially reduced through careful material selection, drying, heat treatment, quarantine, inspection and implementation of an Integrated Pest Management programme.

Natural stone and mineral materials present minimal conservation risk once cleaned and dried and are therefore the preferred natural materials for long-term exhibition use.

Where aesthetically acceptable, artificial substitutes should continue to be used for materials presenting high biological risk, particularly moss, soil, fresh vegetation and living plants.

12. Recommendations

It is recommended that Museum Management approve the use of natural materials for the *Amanzi-eAfrika* Exhibition subject to the following conditions:

1. All natural materials shall be reviewed and approved by the Conservation Unit before acquisition.
2. All organic materials shall undergo documented treatment, drying and quarantine prior to installation.
3. Heat treatment or kiln drying shall be preferred over fumigation for timber where practicable.
4. Surface sealants may be applied to stabilize treated materials but shall not be considered a substitute for pest eradication.
5. An Integrated Pest Management programme shall be maintained for the duration of the exhibition.
6. Environmental conditions shall comply with established museum preventive conservation standards.
7. Conservation staff shall conduct routine monitoring throughout the exhibition.
8. Any material showing evidence of deterioration, mould or pest activity shall be removed immediately for assessment.

Conclusion

Provided the recommendations contained within this report are implemented, the incorporation of selected natural materials into the *Amanzi-eAfrika* exhibition is considered compatible with accepted museum preventive conservation practice. The proposed approach aligns with the principles advocated by ICOM, ICCROM, AIC, CCI, ICON and SAMA, emphasizing risk mitigation through preventive conservation, Integrated Pest Management, environmental control and ongoing monitoring rather than reliance on chemical treatment alone.