CONNECTING THE DOTS

Methods and tools to reduce disaster risks and enhance heritage management

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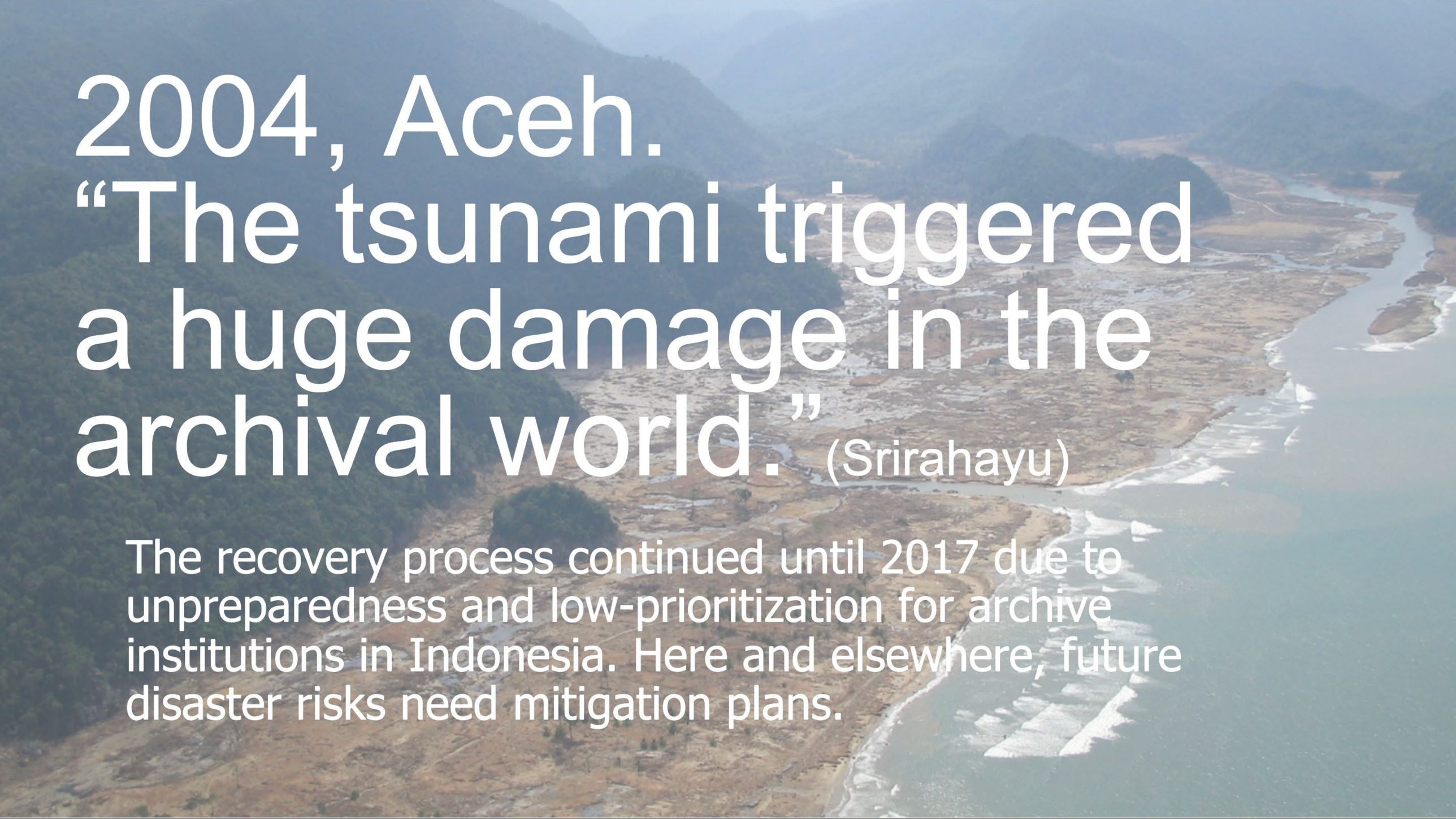


2004, Aceh.
“The tsunami triggered a huge damage in the archival world.” (Srirahayu)

The recovery process continued until 2017 due to unpreparedness and low-prioritization for archive institutions in Indonesia. Here and elsewhere, future disaster risks need mitigation plans.

Disaster Risk Reduction (DRR) begins with

understanding disaster risks / your situation

Risk communication is integral to disaster risk reduction.

Failing to communicate about risk effectively can lead people to underestimate or ignore some risks and overestimate others.

(UNDRR)

Disasters are sometimes considered external shocks, but disaster risk results from the complex interaction between different factors.

Risk Factors

Hazards	Vulnerability	Exposure
What is the probability of experiencing a certain intensity of hazard (e.g. earthquake, floods etc) at a specific location? This is usually determined by a historical or user-defined scenario, probabilistic hazard assessment, or other method.	**How likely is it that damage occurs to the assets exposed to the forces generated by the hazard?** Fragility and vulnerability functions estimate the damage ratio and consequent loss respectively, and/or the social cost, generated by a hazard, according to a specified exposure.	**How much property and infrastructure would be exposed to a hazard?** This can include socioeconomic factors: (a) Community context (b) Individual Context

Resilience Factors

Support	Management	Meaning
What are the existing structures in terms of access to assets, decision-making and the availability of economic opportunities? Good governance is tied to the effectiveness of a support structure, at local or national level.	**Are you equipped to anticipate and manage change?** This would include proactive learning, blended forms of knowldge, connections between institutions and organisations at different scales.	**How do you engage and communicate with your stakeholders, including the communities around you?** Good communication and networking is essential for social cohesion and resilience.

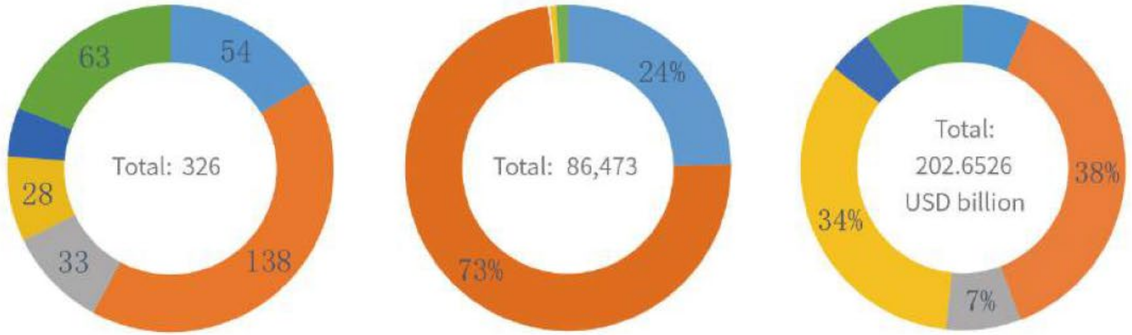
https://www.preventionweb.net/understanding-disaster-risk/component-risk/disaster-risk
https://www.preventionweb.net/understanding-disaster-risk/key-concepts/resilience

The frequency and losses of natural disasters worldwide in 2023

Type of disaster	Frequency (time) / %	Deaths (persons) / %	Population affected %	Economic losses (USD 0.1 bn) / %
Flood	**152 / 46 %**	7763 / 9 %	35%	**203 / 10%**
Storm	**88 / 27%**	14666 / 17%	18.5%	**1008 / 50%**
Earthquake	**27 / 8%**	62451 / 72%	22%	**519 / 25%**
Drought	9 / 3%	247 / 0.29%	23.5%	221 / 11%
Landslide	19 / 6%	604 / 0.7%	0.16%	0 / 0
Wildfire	16 / 5%	263 / 0.3%	0.13%	68.5 / 3.4%
Extreme temperatures	8 / 2.5%	406 / 0.47%	1%	5.5 / 0.27%
Volcanic eruption	4 / 1%	23 / 0.03%	0.05%	0 / 0
Avalanche	3 / 0.9%	50 / 0.06%	0%	0 / 0

* Approximate figures / Source: UNDRR

Frequency and losses



Frequency **Death tolls** **Direct economic losses**

Africa Asia South America North America Europe Oceania

Natural disasters **by region**

2023

326
natural disasters

138
occurences in Asia

73.27%
of the global total

76 billion USD
direct economic losses

unesco

Disaster Risk Management
for Documentary Heritage and Digital Archives

63

per cent of institutions surveyed reported not having a written management plan in case of emergency or disaster

floods

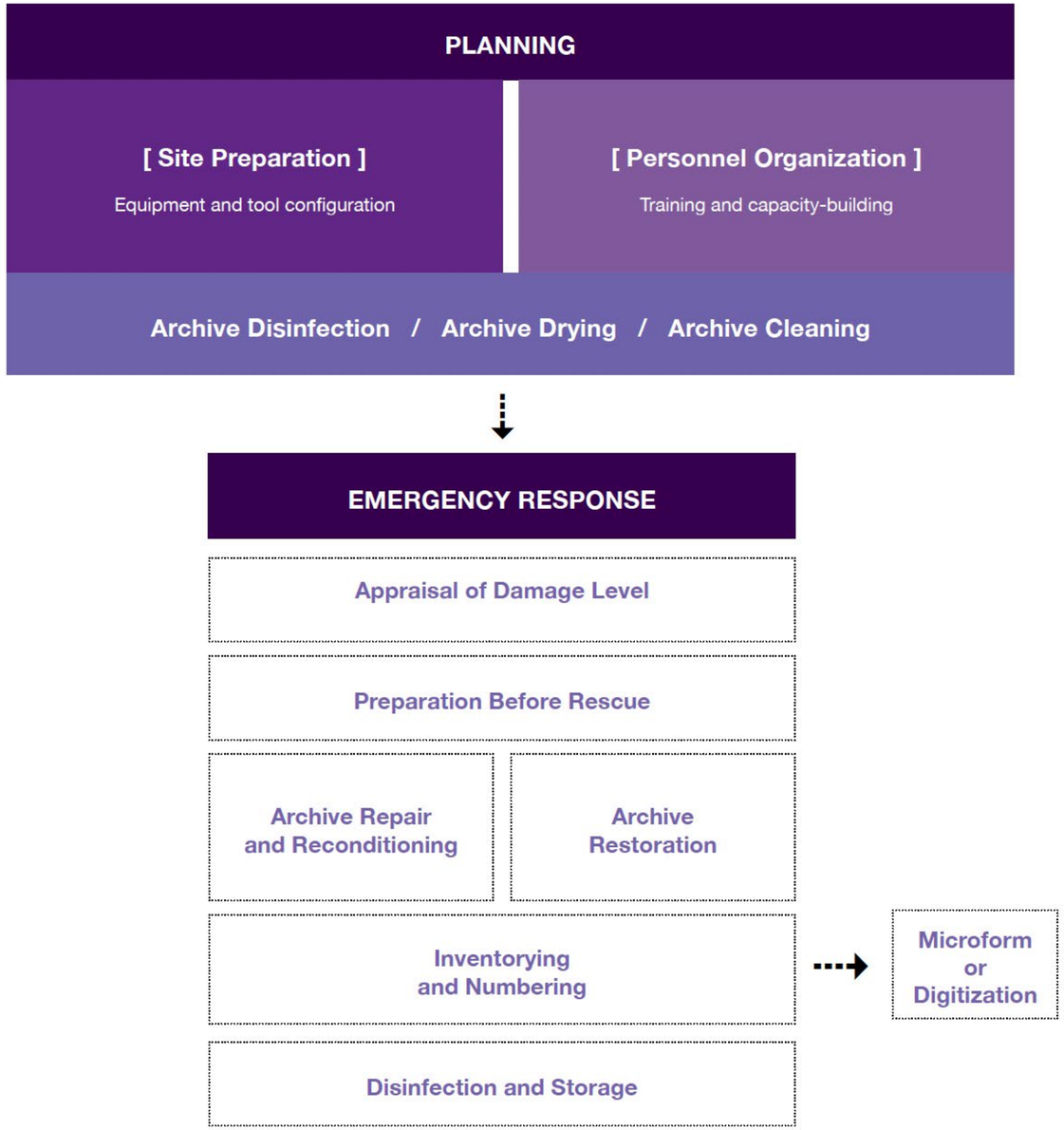
Henan floods
Zhengzhou, China, 2021

Emergency rescue of archival records

2.7 million volumes of archival collections from Zhengzhou university’s archives were damaged or destroyed.

Key issues

- Documents saturated with water
- Wet documents were stuck together
- Mould and mildew damage / biohazard



Source: Meifang Zhang

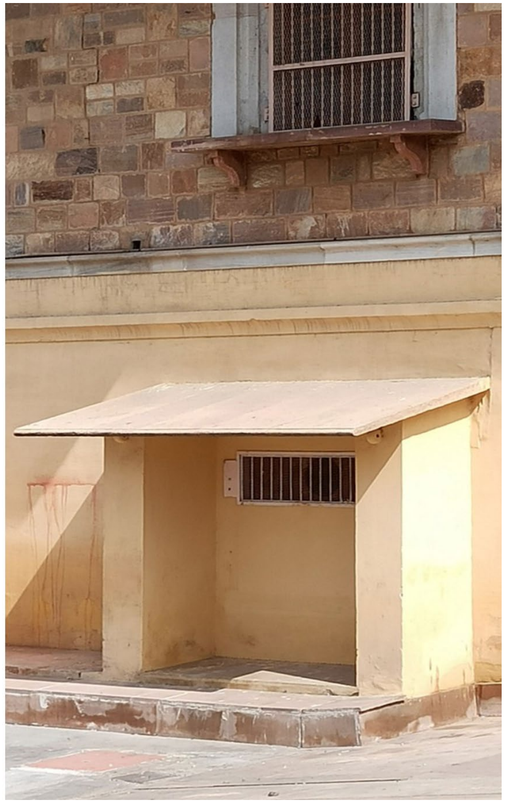
Lessons learnt

- **A disaster plan is necessary** and needs to consider funds, equipment, experts, trained personnel.
- **Timely action is essential** to avoid secondary damage and relocate the items quickly.
- **Protective measures for workers** to prevent staff from contracting diseases lined to microorganisms.
- **Establish a long-term multi-agent rescue mechanism** that is interdisciplinary, inter-regional and internal.

Rajasthan floods, India, 2020

Key issues

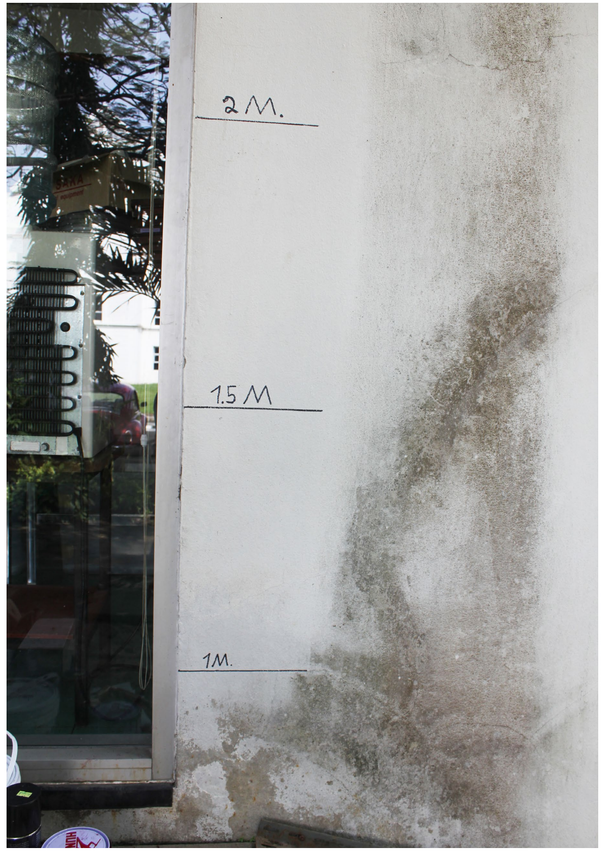
- **Lack of planning** for unforeseen events
- Inadequate **storage facilities**
- **No outlet for flood waters**
- Mould and mildew



Lessons learnt

- Adequate **plans and procedures** are needed for swift response mechanism
- A thorough **risk and vulnerability assessment** will minimize potential damage
- **Communication and collaboration** with meteorological dept, emergency responders can aid in decision-making
- **Documentation, public awareness,** education, **resource allocation** are essential

2011 Thailand Floods



In 2011 the Bangkok metro area received **the highest ever-recorded rainfall** through **5 consecutive storms**. This was combined with **inappropriate land use** and flood mismanagement.

Key issues

- Impossibility to relocate the collection
- Risk of losing power supply to sustain A/C
- Lack of experience in disaster situation

Actions

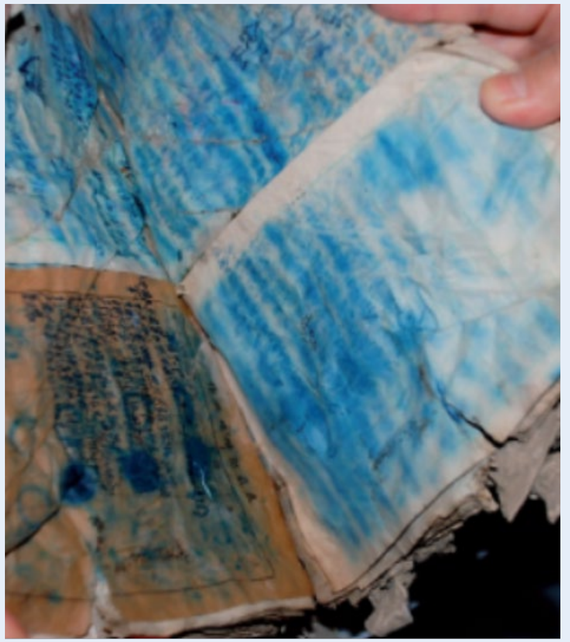
- **Moving items to higher levels**
- **Monitoring water levels** in each building
- **Checking rooms for leaks**
- **Preventing water ingress**
- **Proactive maintenance** to avoid water damage
- **Checking neighboring areas** to gather information and coordinate actions

earthquakes

Sichuan earthquake
Beichuan, China, 2008

Key issues

- **Contamination** by multiple substances
- Serious material damage
- **Secondary damage** after the earthquake due to heavy rain



Lessons learnt

- Maintaining a **stable temperature and humidity level** can prevent further deterioration
- **Case by case approach that is tailored to the type of damage** and condition of the document is crucial

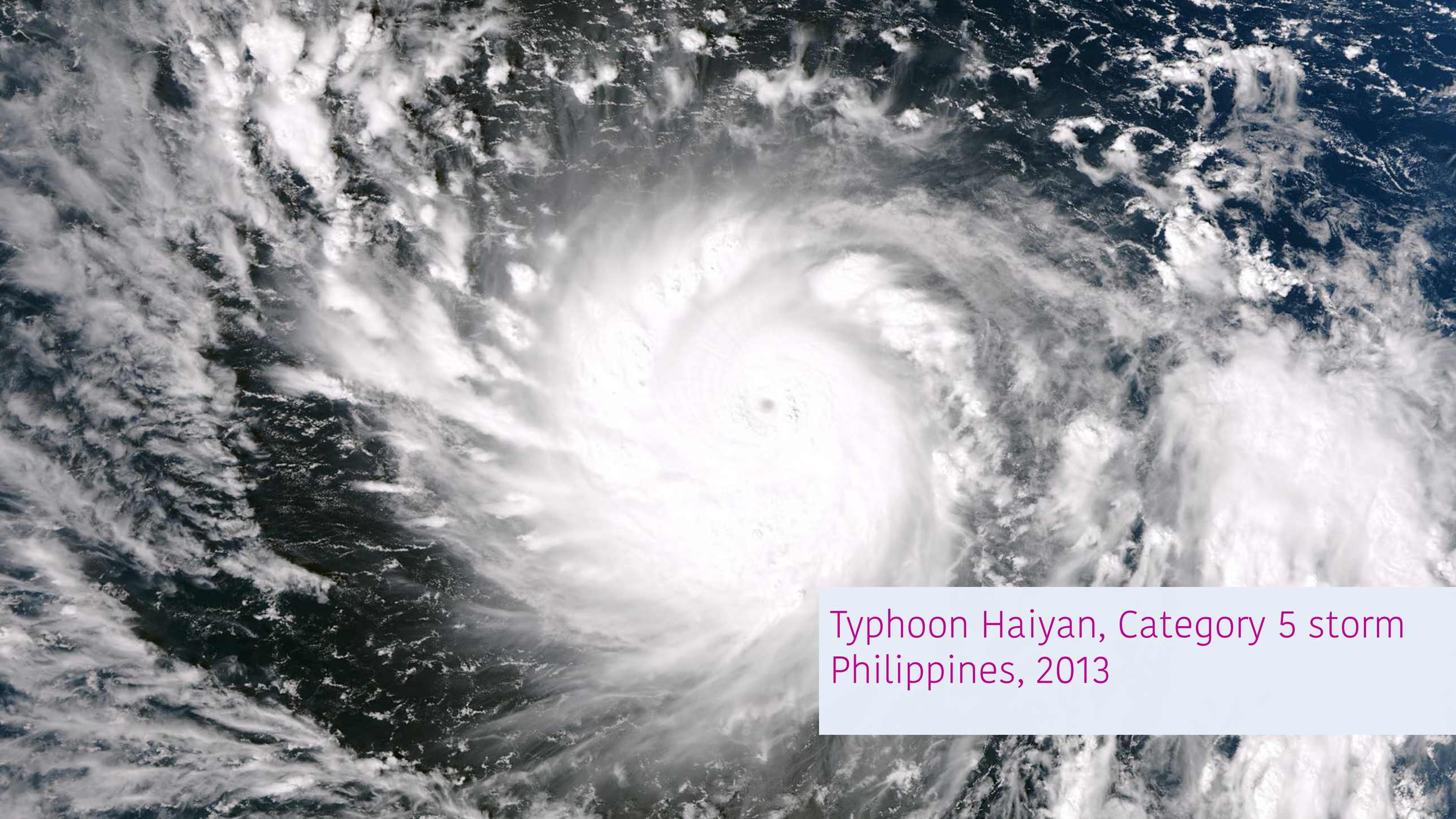
Hanshin-Awaji Earthquake (7.0)
Japan, 1995

The Network of Historical Materials (Siryo-Net) is a volunteer-based organization established in the wake of the Great Hanshin-Awaji earthquake.

It works with **cultural staff, historical research groups and local residents** to protect historical materials from potential disasters.

In 2021, more than **thirty groups** had been established in Japan including some at the prefectural level to organize yearly trainings on prevention and mitigation measures.

storms



Typhoon Haiyan, Category 5 storm
Philippines, 2013

Rescue efforts were hindered by a limited access to the devasted areas, leaving damaged archives for several weeks without recovery efforts.

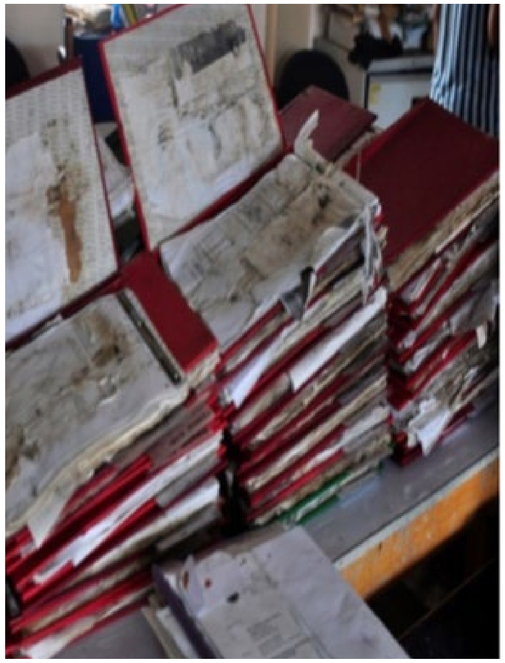
Key issues

Existing issues

- No local disaster response team
- Lack of support
- Inadequate standard operation procedures and protocol
- Lack of awareness on archive and heritage preservation

Issues encountered following the disaster

- Restricted access
- Insufficient funding
- Diverging interests



Lessons learnt

- Need to **raise awareness** on heritage collections
- Build **partnerships** across borders
- Develop **better understanding of local contexts** including the limitations
- Better define **first response procedures and roles**

how to reduce risks
how to be prepared
how to use the toolkit

Module 1

Setting the scene

As memory institutions become increasingly vulnerable to climate risks and impacts, it is important undertake disaster risk management (DRM) planning and take action to mitigate risks. With the rise of digital technology in libraries, archives and museums, it is also important to have seamless management of physical and digital collections. In particular, it is beneficial to adopt a ‘connected approach’ in which related aspects of DRM planning are considered from the very beginning.

1. **Why is disaster risk management so important?**
   Lois M. Evans and Mary Grace Golfo-Barcelona
2. **How to create a disaster plan**
   Sanchai Chotirosseranee and Chalida Uabumrungjit
3. **A connected approach to disaster risk management**
   Heather Brown

Case studies

- Emergency response to flooded archives in Zhengzhou, China
  Meifang Zhang and Chen Yu
- Don’t touch the records: experience of the Society of Filipino Archivists after typhoon Haiyan
  Mary Grace Golfo-Barcelona
- The impact of the Brisbane river flood on the State Library of Queensland
  Heather Brown

Exercises

- Your situation
- Test your level in DRM
- Evaluating the effectiveness of a DRM plan

your situation

(B) Your knowledge and experience of DRM

4. How would you rate your general understanding of DRM and your experience in DRM?

low high

1 2 3 4 5 6 7 8 9 10

5. Have you or other staff members in your organization already received training in DRM?

☐ YES ☐ NO

6. How would you rate your organization's knowledge and experience in salvaging and recovering documents?

low high

1 2 3 4 5 6 7 8 9 10

7. Has your organization and/or community experienced any significant disasters? If yes, how was your institution impacted and how did it respond?

☐ YES ☐ NO

8. Does your organization engage with your local community on DRM and safeguarding heritage?

☐ YES ☐ NO

9. Has your organization already established a disaster plan? Do you consider it operational?

☐ YES ☐ NO

(C) Preparedness and risk assessment

10. Has your organization undertaken a risk assessment?

☐ YES ☐ NO

11. Has your organization undertaken a geographical analysis of your local area?

☐ YES ☐ NO

12. What are the threats to your collection/archive?

13. Are you aware of climate-related threats in your area?

☐ YES ☐ NO

14. What documentary and cultural heritage objects most require protection (due to their significance and value to the community and to your institution)? Are local traditional knowledge and/or indigenous cultures threatened? If yes, how?

15. How would you rate your level of preparedness for a disaster?

low high

1 2 3 4 5 6 7 8 9 10

Module 2

Risk assessment

Collections, buildings and built environment

Risk assessment is a fundamental component of DRM planning. It involves listing the potential risks in and around your institution and identifying appropriate mitigation strategies. It requires compiling information regarding physical infrastructure (i.e. building, storage facilities and equipment) and identifying geographic and health hazards, based on staff and local knowledge.

1. **Risk assessments: buildings, storage climate and other vulnerabilities**
   Heather Brown
2. **Conducting geographic analysis**
   Lois M. Evans
3. **Protecting collections by improving storage and organnization**
   Achal Pandya
4. **Construction methods and disaster preparedness**
   Brandon Oswald
5. **Health hazards in handling documents and collections**
   Sanira Beevi

Case studies

The A word: the discovery of arsenic in collections at the National Archives of Singapore
Sanira Beevi

Safeguarding the Thai Film Archive during the 2011 floods
Chalida Uabumrungjit

Disaster prevention via land management: indigenous cultural burning in Australia
Mick Newnham

The Vanuatu Library and Archives building and cyclone Pam
Brandon Oswald

Exercises

Risk assessment | Template
Geographic analysis
Storage risk assessment | Storage spaces
Building risks | Building assessment

Worksheet 1 | **Storage / Risk assessment**

Worksheet 1 can help to identify and assess risks associated with display and storage spaces. It can be modified or expanded to suit your organization's purposes.

	Storage organization and potential risks	Description	Potential impacts	Mitigation measures	Action plan / Notes	Risk rating (low/medium/ high)
1	**Storage space**	*Evaluate the available storage space and its sufficiency.*	Overcrowding			
			Improper stacking			
			Difficulties in object handling			
2	**Shelving and storage systems**	*Assess the condition and suitability of shelving systems.*	Insufficient shelving capacity			
			Inadequate support for fragile objects			
			Lack of appropriate storage containers			
3	**Climate control and environmental conditions**	*Evaluate the effectiveness of climate control and monitoring.*	Fluctuations in temperature and humidity			
			Light damage and UV exposure			
			Mould growth and deterioration			
4	**Pest management**	*Assess the effectiveness of pest control measures.*	Infestation by insects, rodents, or moulds			
			Damage to objects			
5	**Inventory management**	*Evaluate the efficiency of inventory management practices.*	Loss or misplacement of objects			
			Inaccurate or incomplete records			

Where do you keep your documents?

In which storage conditions?

Appendix B
Collections Risk Assessment Template

Department		RA Leader		Approved by
Location		RA member		Name:
Assessment Date:		RA member		Designation:
Last Review Date:		RA member		Date:
Next Review Date:		RA member		

Risks/ Types of Hazards	Type of Collection/Location	Probability	Impact	Level of Risk	Action Plan: Risk Reduction/ Elimination
Natural physical events *Torrential rain, floods, earthquake, high winds, landslide*	*Sample: All of Basement Repository* *Sample*	*(earthquake) 1*	*3*	*3 (low)*	*Ensure records are housed appropriately and placed securely on shelves.* *Malfunctioned shelves to be addressed.*
		(torrential rain, floods) 3	*4*	*12 (moderate)*	*Records are not to be placed directly on the floor and must be elevated.*
Water *Fresh water supply and wastewater e.g. roof leaks, rising damp, plumbing faults*					
Fires *Fire in adjacent property,*					

Have you identified **hazards** in your area?

What are the **probabilities**?

What is your **action plan**?

Keeping an eye on health hazards

Health hazards in handling documents and collections

Sanira Beevi

Keywords: hazardous substances, occupational health and safety, disaster, personal protection

Introduction

Heritage institutions have a mandate to manage and preserve their collections and their country's records of historical importance for the long-term. People who are responsible for managing libraries and archives, including librarians, curators, archivists and conservators, have a professional duty to ensure that items within their collections are maintained in appropriate conditions. In carrying out their duties, conservation professionals must also protect themselves against potential health and safety impacts.

This module will cover:

- Signs of deterioration of items and collections
- Personal health and safety measures
- Measures for protecting items and collections
- The dos and don'ts of handling items and collections

Key issues

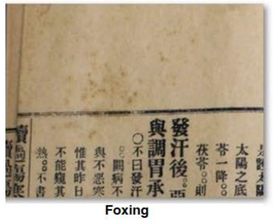
- Occupational health and safety are not always priority considerations when managing collections
- Threats to the health and safety for collection staff might not be immediately recognizable
- Some agencies, institutions or donors may not be aware of safe procedures for managing and transferring items and collections, or may not have such procedures in place

Signs of deterioration

Common signs of deterioration of collections and archives (especially paper) include the following.

- Foxing: Flecks which range from light yellow to light brown or black. General ageing of paper due to acidity.
- Corrosion stains: Visibly discoloured. Brown to black stains. Discolouration in and on the material, caused by metal objects such as pins, staples, fasteners, paper clips, file clasps, etc.
- Insect frass: Dust-like debris left behind by pests.

- Pest damage: Areas on the material where the surface has been eaten away.
- Tide lines (water damage): Water stains (yellow to light brown patches will be discernible in the material) and tide lines will be visible on the edges of the stain. These are often accompanied by running ink.



Foxing

Corrosion Stain

Insect Frass | Pest Damage | Tide Lines - Water Damage

Less-common signs of deterioration and abnormalities in collections that collection staff should be aware of include the following:

- Dormant mould (characterized by dark spots that smear upon touch)
- Active mould
- Live pests
- Chemical agents
- Soot

Health effects of exposure to mould

An active mould outbreak is due to high levels of moisture and almost always follows a water-related incident or disaster.

Exposure to mould can cause a blocked nose, eye irritation, wheezing and skin irritation. In severe cases, it may cause difficulty in breathing, fever and shortness of breath.

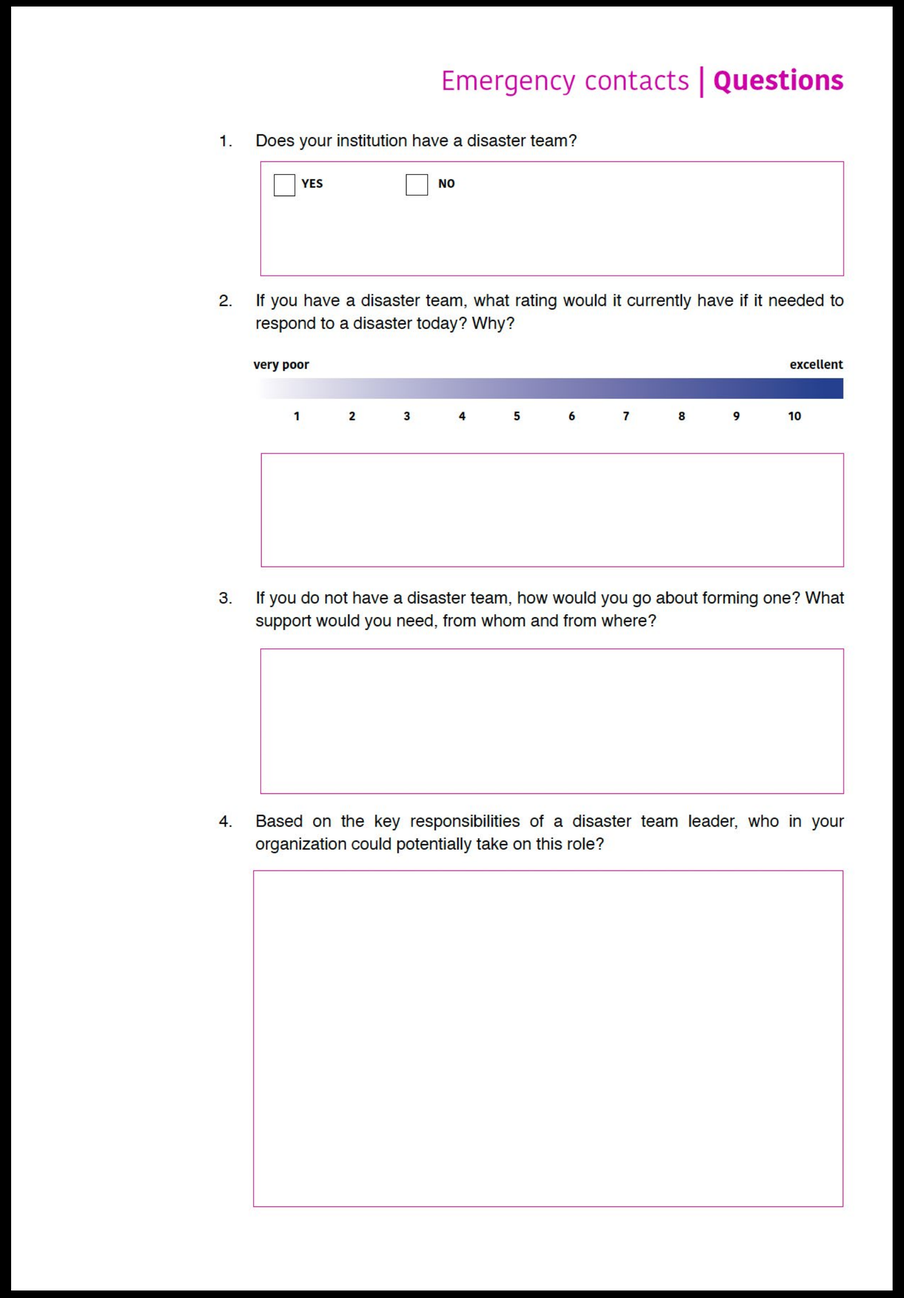
The following people should NOT work near mould:

- Patients taking medicines that suppress the immune system.
- Cancer patients undergoing chemotherapy.
- People who have received an organ transplant.

Module 3

Local context and communication

DRM planning is most effective when it is carried out in close coordination with local communities, emergency response teams and disaster teams. Clear communication between all stakeholders is essential to avoid misunderstandings during disasters. Disaster plans are most effective when they include the knowledge of local Indigenous communities and groups about disaster prevention and recovery, and about traditional conservation methods.



Emergency contacts | **Questions**

1. Does your institution have a disaster team?

☐ YES ☐ NO

2. If you have a disaster team, what rating would it currently have if it needed to respond to a disaster today? Why?

very poor — excellent

1 2 3 4 5 6 7 8 9 10

3. If you do not have a disaster team, how would you go about forming one? What support would you need, from whom and from where?

4. Based on the key responsibilities of a disaster team leader, who in your organization could potentially take on this role?

Do you have an emergency **contact list**?

Have you already taken steps to form a **disaster team**?

Table 1. Example of disaster team roles and responsibilities.

Disaster Team (roles and responsibilities)			
Role Title	**Description**	**Staff members** P: Physical D: Digital	
Disaster Team Leader - physical and digital	Leads and guides the whole operation of response and recovery. There may be separate roles for a Physical and Digital Team Leader. May report to another leader e.g. Crisis Management Team Leader.	P	D
Salvage staff - physical and digital	Undertake salvage (e.g. recovery of water-damaged physical collection items) or access and reinstall backup copies of digital collections.	P	D
Record keeper(s) - physical and digital	Record keepers document damage to physical and digital collections including by taking photographs. They record major decisions as well as movement of collections.	P	D
Finance officer	Authorizes purchase of supplies and equipment.	Covering P & D	
Broadcast / mass media coordinator	May require two separate roles depending on scale of disaster and staff skill sets. Liaises with the broadcast / mass media.	Covering P & D	
Social media coordinator	Keeps the social media up-to-date.	Covering P & D	
Logistics staff	Equipment and supplies. Transport and accommodation. Food and beverages. Additional human resources - staff and volunteers	Covering P & D	
Health and well-being staff	Ensure that disaster responders remain physically safe and mentally positive, through encouragement and acknowledgement. Monitor risks of hazards such as manual handling, dirt and mould. Ensure test breaks are taken. Arrange for health and safety issues to be addressed during debriefing.	Covering P & D	

Source: ALIA, 2019.

Have you assigned clear **roles and responsibilities** in your disaster team?

Module 4

Collection management

Creating a DRM plan requires coordination, expertise, skills and resource management, as well as effective collection management. This involves establishing and regularly updating the accession register, identifying vital collections and significant items, creating a priority salvage list, ensuring adequate storage space and organization, and establishing access protocols and clear digitization procedures.

Collection Assessment - Primary Criteria	
Criteria	**Questions**
Historical significance	• Is your record or collection associated with an important historical figure, event or place? If so, why is it important? • Does it tell us something about a historical period or movement? • Does it help us to understand the history of a particular time, place, person or event?
Artistic or aesthetic significance	• Is the record or collection a good example of a particular artistic style or movement? • Is it representative of the work of a particular artist? • Is it original or innovative? • Does it represent a significant person, place or event?
Scientific or research significance	• Does the record or collection have research potential? If so, how? • Do you know of any researchers who may be interested in studying the record or collection? • Do you think there may be future research interest in the record or collection?
Social or spiritual significance	• Does the record or collection hold particular significance to a community or group of people? If so, how is it important? • Does the record or collection have meaning though the beliefs, customs, traditions or practices it holds for a particular group or groups of people or community? If so, how have you consulted with the community or group of people and recorded this meaning?

Table 1. Primary criteria in collection assessment. Source: PARBICA, 2007.

Collection Assessment - Comparative Criteria	
Criteria	**Questions**
Provenance	• Is the provenance of the record or collection well-documented and sound? • Do you know who created or used the item or collection? • Is there strong evidence of the chain of ownership?
Rarity or representativeness	• Is the record or collection unique, rare or endangered? • Does it have unusual qualities or uses that make it different from similar records? • Is the record or collection particularly well documented?
Condition or completeness	• Is the record or collection in good physical condition? • Is it complete? • Is it in its original condition?
Interpretive capacity	• How is the record or collection relevant to your organization's purpose, collecting policies and programmes? • Does it fit thematically with other record or collections, or have a special place in your holdings? • Does the record or collection assist in interpreting place, history or context?

Table 2. Comparative criteria in collection assessment. Source: PARBICA, 2007.

Have you assessed the most **significant items** in your collection?

Which ones would you salvage first?

Salvage priority list				
Priority	**Physical format**	**Digital format**	**Location - physical**	**Location - digital**
Local history collection	Books, paper	Photographs - digital	Ground floor local history room	Stored on server in basement
	Maps	Maps - digital		
	Photographs - analogue	Archived web pages		
	Microforms	Film/video - digital		
	AV (films, videos, analogue sound recordings)	Sound - digital		
	Memorabilia			
Rare books collection	Books, journals, paper-based items		Ground floor local history room	
In-house indexes, local databases and finding aids		Digital		Stored on server in basement
Library catalogue		Digital		Stored on server in basement

Table 4. Salvage priority list, sample. Source: ALIA, 2019.

How to list your **priority items**

(physical and digital)

Preparing a disaster kit and emergency equipment

Heather Brown

Keywords: emergency equipment, disaster supplies, disaster plan, disaster kit

Introduction

This module discusses the importance of having a disaster kit and emergency equipment ready in case of a disaster. Having one or more disaster kits and equipment helps the disaster team to respond quickly and can help to minimize the impact of a disaster on collections. Knowing that a basic stock of supplies and equipment are available will also reduce stress for the disaster team. These kits are particularly useful for small disasters, such as leaks.

Key elements

Each organization should prepare a disaster kit, and tailor it to its needs. Discussions with colleagues and conducting a risk assessment will help the disaster team decide what should go into the kit, how many kits are needed and where they should be located (ALIA, 2019b, p. 22).

Many disasters involve water. For example, leaking pipes and roofs; floods; and when fires are put out with sprinklers or a fire hose. If collection items are damp or wet, there will be a high risk of mould developing. The salvage team should focus on removing water from the area, drying the wet items, making sure the air is moving and reducing humidity. This means disaster kits should include supplies such as mops, sponges, blotters and sheets of plastic.

Basic disaster equipment include water pumps, portable tables, crates, trolleys and fans. Other equipment that can assist with disaster rescue and recovery efforts include tools that monitor the levels of relative humidity (e.g. a hygrometer); a dehumidifier to help to reduce humidity; a wet/dry vacuum cleaner or water pump to remove water; fans to keep the air moving and to help to dry spaces quickly and speed up the drying of wet items; and a freezer in which some types of wet items can be stored temporarily to prevent mould from growing.

Have you prepared a **disaster kit**?

What do you need as **emergency equipment**?

Module 5

Digitization and climate action

Digitization brings new opportunities for memory institutions as it increases access to collections and their use by the general public while also providing copies of items that may be impacted by a disaster. The process of digitizing collections comes with an array of challenges, however, including technological obsolescence, e-waste and cyber threats. The process of digitizing physical collections and the management of ‘born digital’ files require strict protocols to ensure the files’ sustainability and accessibility over the long term.

Table 1: Digitization equipment uses, advantages and disadvantages

Equipment	Uses	Advantages	Disadvantages
Camera phone	To document sites and inventory holdings (basic)	Mobility; easy-to-use; affordable	Easy-to-lose device; difficult to avoid image distortion for documents, items and large scenes
Specialized camera	To document sites and inventory holdings (advanced)	Mobility; high-quality images with little distortion	Expensive; requires a more advanced skill set; risk of theft
Printer-copier	To make low-quality copies of office-sized documents	Easy-to-use; may be readily available due to other office needs	Limited size; difficult to calibrate; often poor quality images
Flat-bed scanner	To make high-quality copies of office sized documents	Relatively easy-to-use; somewhat affordable	Limited size; requires more advanced technical skills
Drum scanner	To make high quality copies of maps, plans, and other large documents	Suited for large-format materials; exceptional quality of images (resolution, color balance)	Expensive; requires very advanced technical skills
Specialty scanner	To make high-quality copies of books, microfilm, or other specialty formats	Suited for specialized materials; exceptional quality of images (resolution, color balance)	Very expensive; requires very advanced technical skills

Digital equipment, uses, advantages, disadvantages

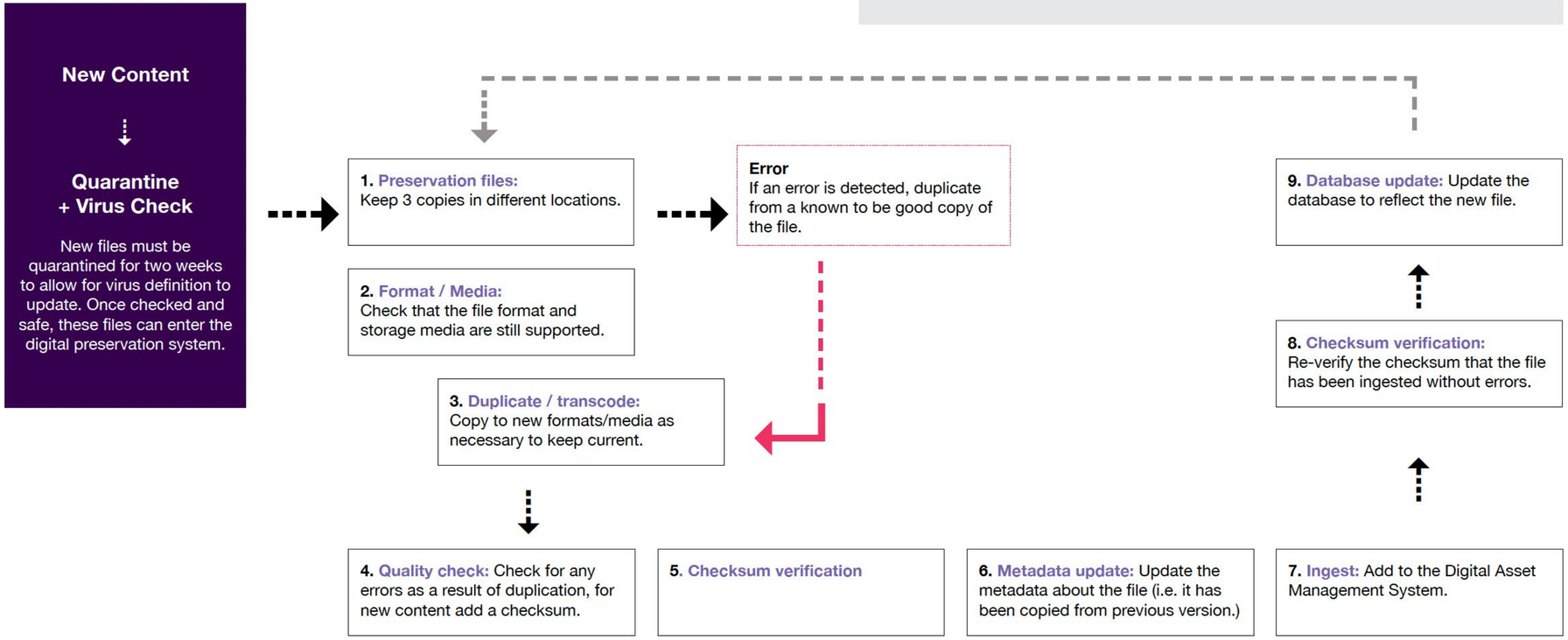
Digital preservation cycle

Checksum
A digit representing the sum of the correct digits in a piece of stored or transmitted digital data, against which later comparisons can be made to detect errors.

Metadata
A set of data that describes and gives information about other data such as a document or article.

Transcoding
A digital to digital conversion of one type of encoded data to another (video or audio).

Data ingestion
The process of importing large assorted data files from multiple sources into a database, cloud-based storage, data warehouse, where it can be accessed.



Source: Mick Newnham

ARTICLES / JULY 14, 2025

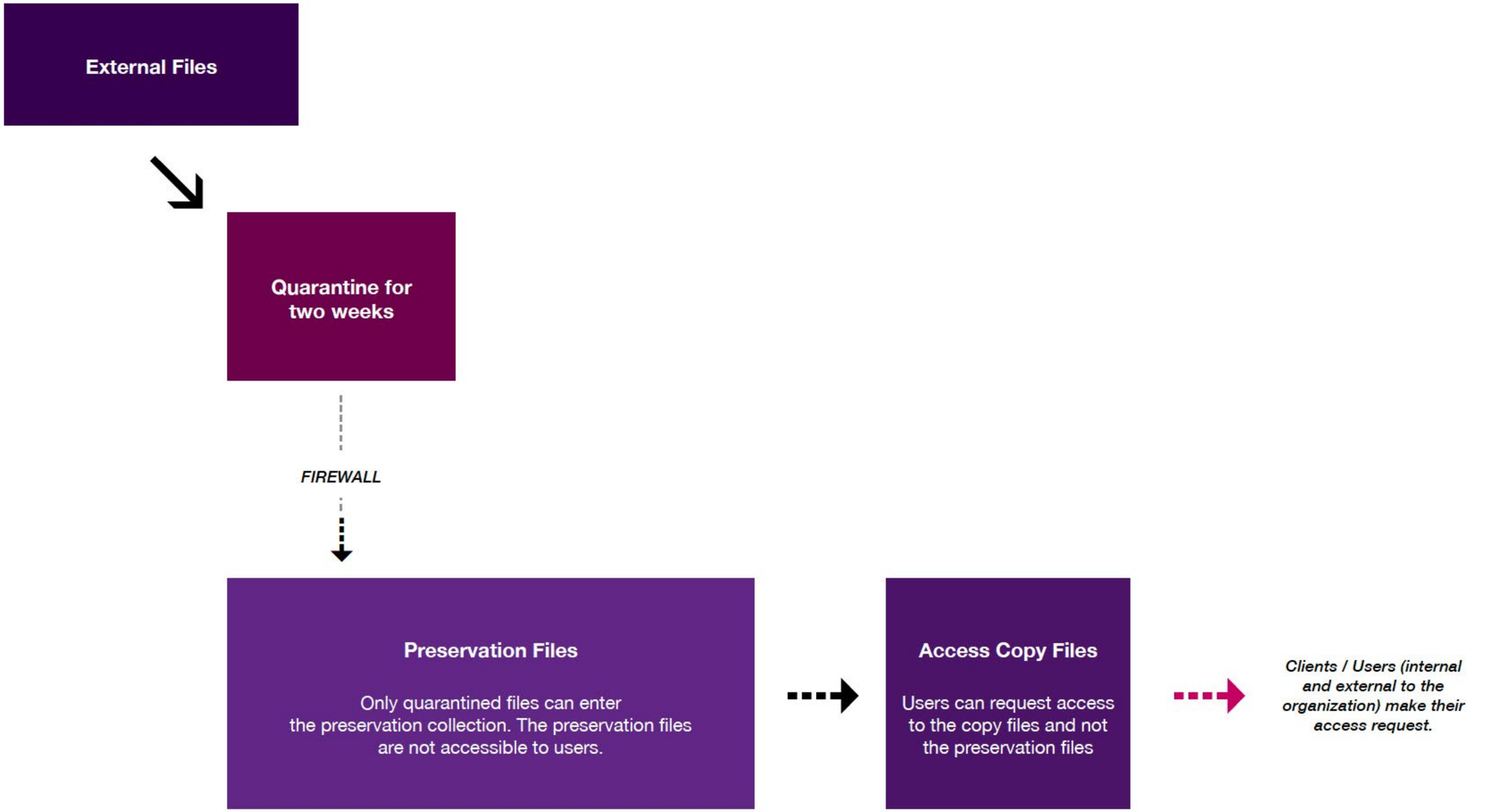
Data centre fires: a physical threat in a digital world

EDITORIAL | 07 February 2024

Cyberattacks on knowledge institutions are increasing: what can be done?

For months, ransomware attacks have debilitated research at the British Library in London and Berlin's natural history museum. They show how vulnerable scientific and educational institutions are to this kind of crime.

Figure 3: Protecting digital collections from external attack



Source: Mick Newnham

Module 6

Response and recovery

Response and recovery are the most challenging stages in DRM as they call for technical expertise and adequate material and financial resources. Prioritizing actions and focusing on significant items will help to minimize damage and loss. The recording of the disaster story is also an important part of the response and recovery process, ensuring valuable lessons learned are compiled and then used to inform revisions of the disaster plan.

1. **Responding to disasters and salvaging collections**
   Heather Brown

2. **Keeping disaster plans up to date**
   Heather Brown

Case studies

Salvage and treatment of archives following the Beichuan Earthquake, China
Meifang Zhang

The impact of the 2020 flood on Albert Hall Museum, Jaipur, India
Achal Pandya

Recovery after bushfires: photographs in a fireproof safe, Canberra, Australia
Mick Newnham

Family-owned heritage in post-disaster recovery Kotagede, Yogyakarta, Indonesia
Widiatmoko Adi Putranto

Lifecyle of disaster plans for Artlab Australia
Heather Brown

Exercises

Response and salvage

Keeping DRM plan up to date

Table 2: Scale of Disaster Impacting on Responses in Physical and Digital Collections

	SCALE	Event type	Collections affected	Interruption to library operations	Staff / Services / Involvement / Resolution	External involvement	Example
LEVEL 1	INCIDENT	Event is a minor unforeseen situation calling for immediate action.	**Physical:** Incidental damage only to a few items.	Nil	Disaster Recovery Team Leader (Physical collection) Minimal number of staff required less than 4 hrs to rectify.	No	Water spill
			Digital: Interruption to non-critical service or critical services for short time. (<2 hrs)	Minimal, usually affecting a small area or use of a service.	Disaster Team Leader (Digital collection) Staff specialists with skillset to fix the issue.	Possible Suppliers	Small power issue, e.g. cable pulled. Service failure that may require a restart, e.g. email virus scanner stops.
LEVEL 2	SMALL DISASTER	Event limited to a situation affecting an isolated area of the collections or digital services for a short period.	**Physical:** Up to 100 items.	Minimal, isolation of affected area. Collection may be in isolation for less than 1 day.	Disaster Team Leader (Physical collection) Requires response/ recovery by 1-3 physical disaster team members. Up to 1 week to remediate collection items affected.	Yes Department, e.g. government dept., university.	Small mould outbreak.
			Digital: Interruption to non-critical services or critical services for short time requiring an interim solution. Failure of non-critical hardware that only affects a small number of users.	Minimal services affected. Or Limited number of people affected.	All digital surrogate types A & B are stored on server in basement.	Possible Suppliers	Server failure. Server environmental conditions outside specified parameters necessitating shutting down services to protect servers. Switch fails - may require return to manufacturers. Data services affected.

Source: ALIA 2019

Disaster scales

Disaster scales

	SCALE	Event type	Collections affected	Interruption to library operations	Staff / Services / Involvement / Resolution	External involvement	Example
LEVEL 4	MAJOR / LARGE SCALE or WIDE-AREA DISASTER	Wide-area disaster involving the entire institution and/or across multiple locations. There is a sudden loss of power to server room with unknown restoration time.	**Physical:** Major portion of collections in repositories damaged / impacted.	Situation lasts over 48 hours. Collections requiring extensive salvage and may not be accessible for more than 40 working days.	Disaster Team Leader (Physical collection) Facilities Manager Requires response / recovery by more than 10 Disaster Team members (physical).	Yes Crisis Management Team Director/CEO & Minister. Department, e.g. government dept., university.	Extensive building damage and infrastructure damage, e.g. from cyclone.
			Digital: Major loss of digital data	Major data loss. Loss of critical ICT infrastructure.	Disaster Team Leader (Digital collection) Facilities Manager Digital Disaster Team with specialist skillsets to fix the issue.	Yes Crisis Management Team Director/CEO & Minister Department, e.g. government dept., university. Suppliers	Extensive building damage and infrastructure damage, e.g. from cyclone. Extensive damage to infrastructure or loss of server room, e.g. catastrophic failure of hardware.

Table 1: A guide to prioritizing rescue and salvage actions in water-related disasters.

Format	Priority level
High priority format to salvage	
Coated paper (e.g. shiny plates in books)	very high - within 6 hours
CDs and CD-ROMs	high - within 48 hours
Daguerrotypes, glass plate negatives	high - within 48 hours
Leather	high - within 48 hours
Metals	high - within 48 hours
Organic materials (e.g. fur, basketry, feathers)	high - within 48 hours
Paintings	high - within 48 hours
Paper	high - within 48 hours
Parchment, vellum	high - within 48 hours
Records	high - within 48 hours
Medium priority format to salvage	
Audio and video tapes	medium - within 72 hours
Computer hard drives (backups or specialist)	medium - within 72 hours
Microfilm	medium - within 72 hours
Photograhic negatives, transparencies	medium - within 72 hours
Photographic prints	medium - within 72 hours
Low priority format to salvage	
Wood	medium to low - within 72-96 hours
Stone, ceramic, glass	low - within 96 hours

Priority rescue and salvage in water-related disasters

Table 3: What is safe to freeze and what is not.

Generally safe to freeze	Do NOT freeze
Books	CDs, CD-ROMs, computer hard drives
Coated papers	Ceramic items
Feathers	Ethnographic items with mud, ochre, etc. (e.g. masks)
Organic fibres (e.g. baskets)	Camera film or motion picture film
Paper-based objects or games	Glass
Paper files and records	Ivory
Maps - paper and fabric based	Metals
Textiles - including those with blending inks but not those with metal components	Musical instruments
Traditional cloth made of bark	Scientific equipment
Soft toys	Objects under tension (e.g. stretched canvases, drums)
	Paintings
	Parchment and vellum
	Photographic objects; daguerrotypes, glass plate negatives and lantern slides
	Records (vinyl, shellac and acetate)
	Wood

Source: Heritage Collections Council, 2000, Appendix 4

To freeze or not to freeze when salvaging

Table 1. Identifying the locations of physical and digital collections.

Backups, surrogates and master copies					
Priority	**Location of original**	**Surrogate type A - master or highest quality copy**	**Surrogate type B - lower quality copy**	**Location of surrogates**	**Location of backups**
Local history photographs	Ground floor, local history room	Digitized uncompressed	Digitized compressed (access copy)	All digital surrogate types A & B are stored on server in basement	All digital surrogate types A & B are backed up in cloud storage commercial provider X
Local history newspapers	Ground floor, local history room	Master microfilm	Duplicate master stored onsite	Basement on site	Masters stored at off-site cold store
Oral history interviews	Server basement	Digitized uncompressed	Digitized compressed (access copy)	All digital surrogate types A & B are stored on server in basement	All digital surrogate types A & B are backed up in cloud storage commercial provider X
In-house indexes, local databases and finding aids	Server basement	Not applicable NA	NA	NA	Cloud storage commercial provider X
Library catalogue	Server basement	NA	NA	All digital surrogate types A & B are stored on server in basement	Cloud storage commercial provider Y

Source: ALIA, 2019.

Listing
the locations
of your
collections

from originals to copies

thank you

contact | salisasaki@gmail.com