Cumbria Local History Federation: Archives training

Conservation and Preservation

Erika Freyr and Fay Humphreys

- Conservation Unit for Cumbria County Council Archives and Local Studies

Preventive Vs Interventive Conservation: What's the difference?

Preventive *prevents* damage, interventive *intervenes* to stop damage

- For you: Preventive conservation will save you time and money in the long run
- For us: Smaller archives implementing best practice means all our collections will be healthier and safer,

What are the main risks to archives?

Damp

High temperatures

Mould

Light / UV

Atmospheric pollution

Poor handling

Fire

Pests

Damaging packaging / acidic environment

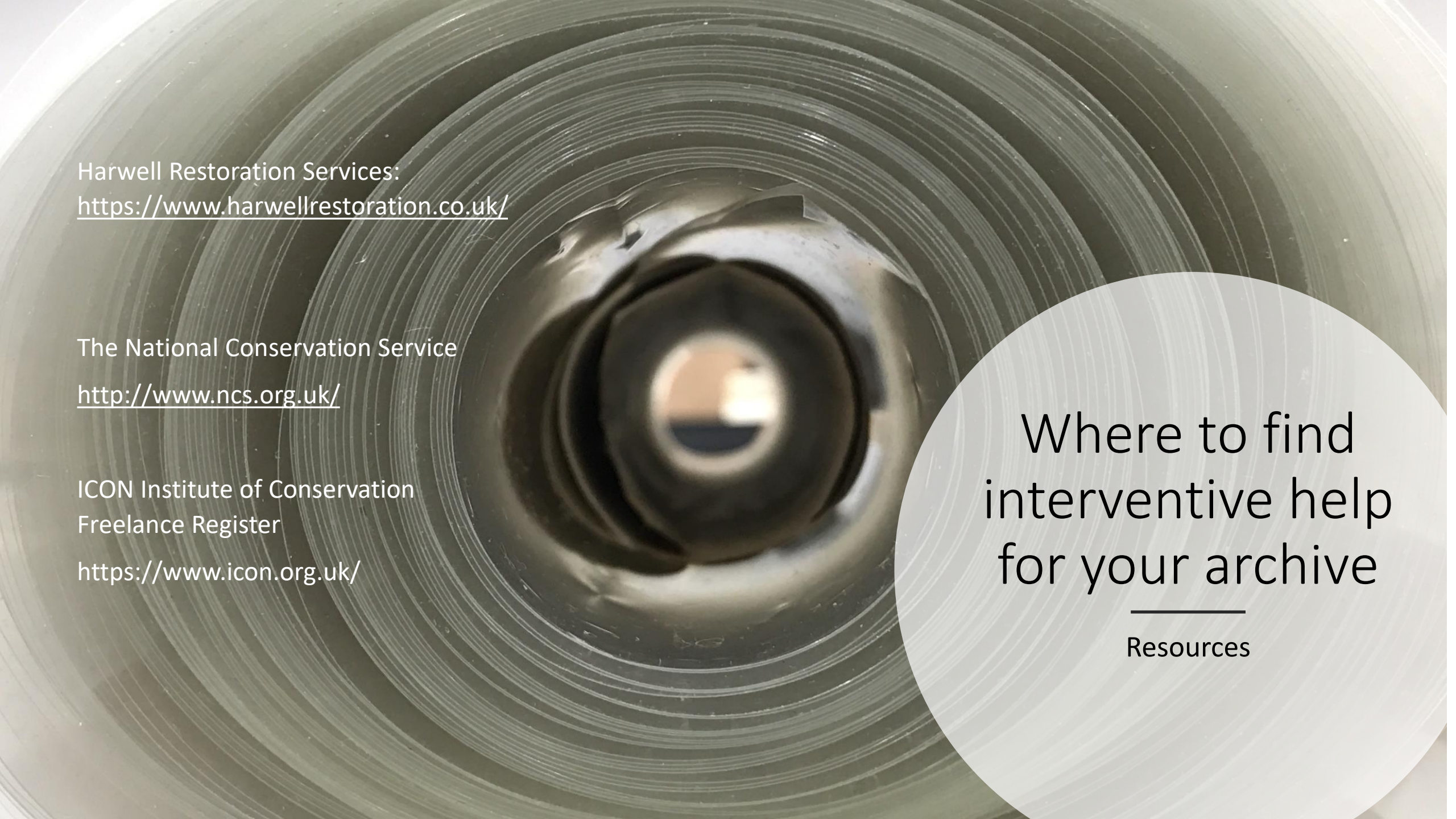
Theft

Chemical instability

Poor storage

Dirt

Vandalism



Where to find interventive help for your archive

Resources

Harwell Restoration Services:
https://www.harwellrestoration.co.uk/

The National Conservation Service

http://www.ncs.org.uk/

ICON Institute of Conservation Freelance Register

https://www.icon.org.uk/


OUTSIDE CARLISLE ILLUSTRATIONS
ADD- BRA
IVE – LON
LON – PEN
PEN – SIL
SIL – UND

Surveys

Why Survey your collection?

A survey will allow you to accurately:

- Write a preservation policy document
- Write a 5 year plan for preservation and conservation
- Assess collections before they come into an archive
- Apply for grant funding
- Plan work schedules
- Re-package collections
- Separate out vulnerable media for specialist storage
- Get accurate quotes for conservation or relocation work

Different Theories and Practices

Statistical vs item-by-item

Standard vs bespoke

Database vs spreadsheet

Paper vs laptop

Tick-box vs free text

Minimal data collection vs Maximum

Guidance on designing a survey

Always use an even number to prioritise items (ie. 1-4) as if you use odd, people will always choose the middle

A fair guide for paper collections is 1-4, with 1 being the most urgent:

1- active degradation (mould, pests, chemical change) or losses

2- risk of losses (tears, friable substrate), very dirty, very creased

3- surface dirt, small edge tears, creases obscuring information

4- no treatment required

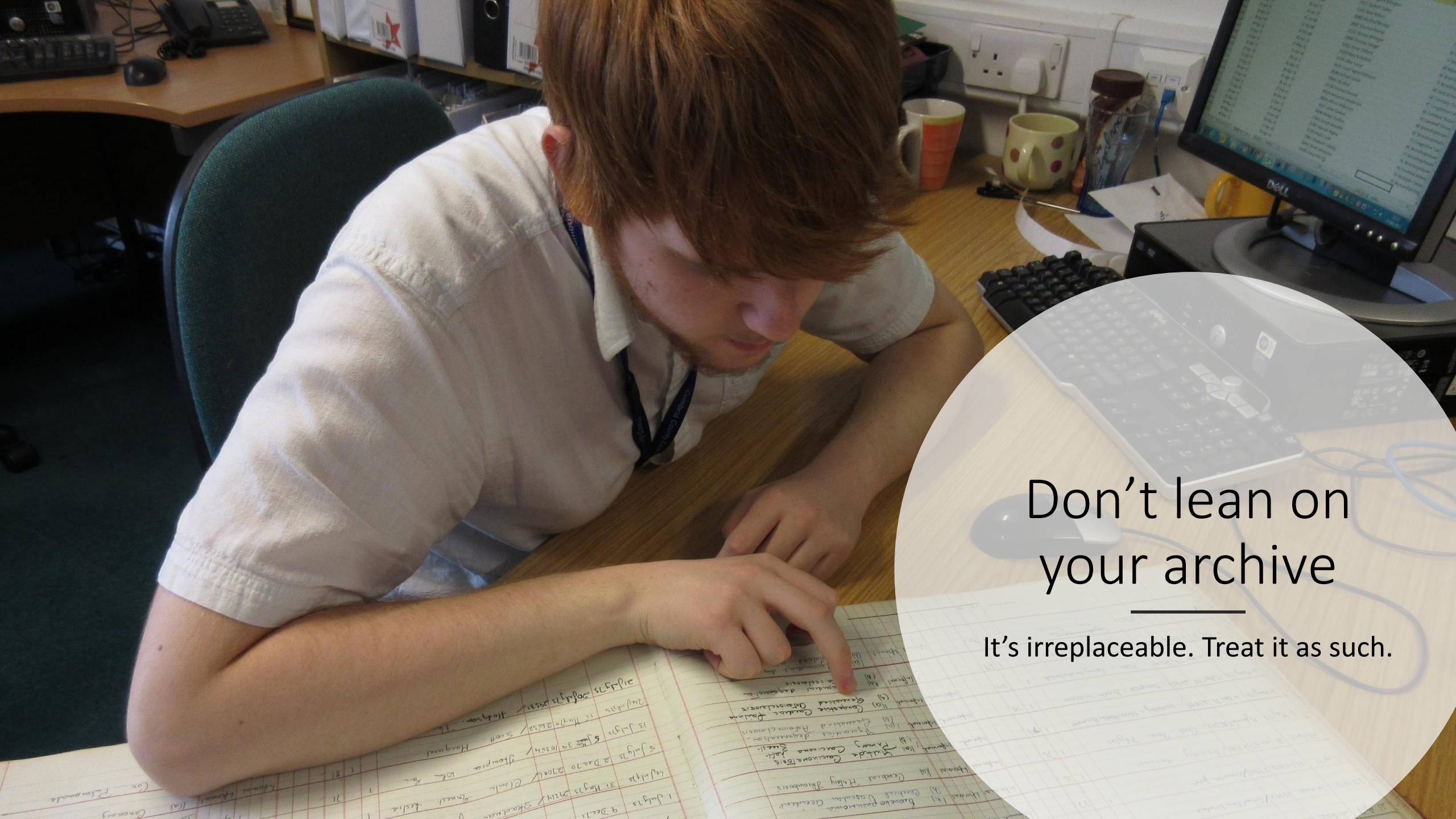
Use a handlist where possible, clean and package as you go, photograph everything, and label everything

Cumbria County Council

Cumbria Local History Federation

Handling Archive Collections

Non-negotiables



Don’t lean on your archive

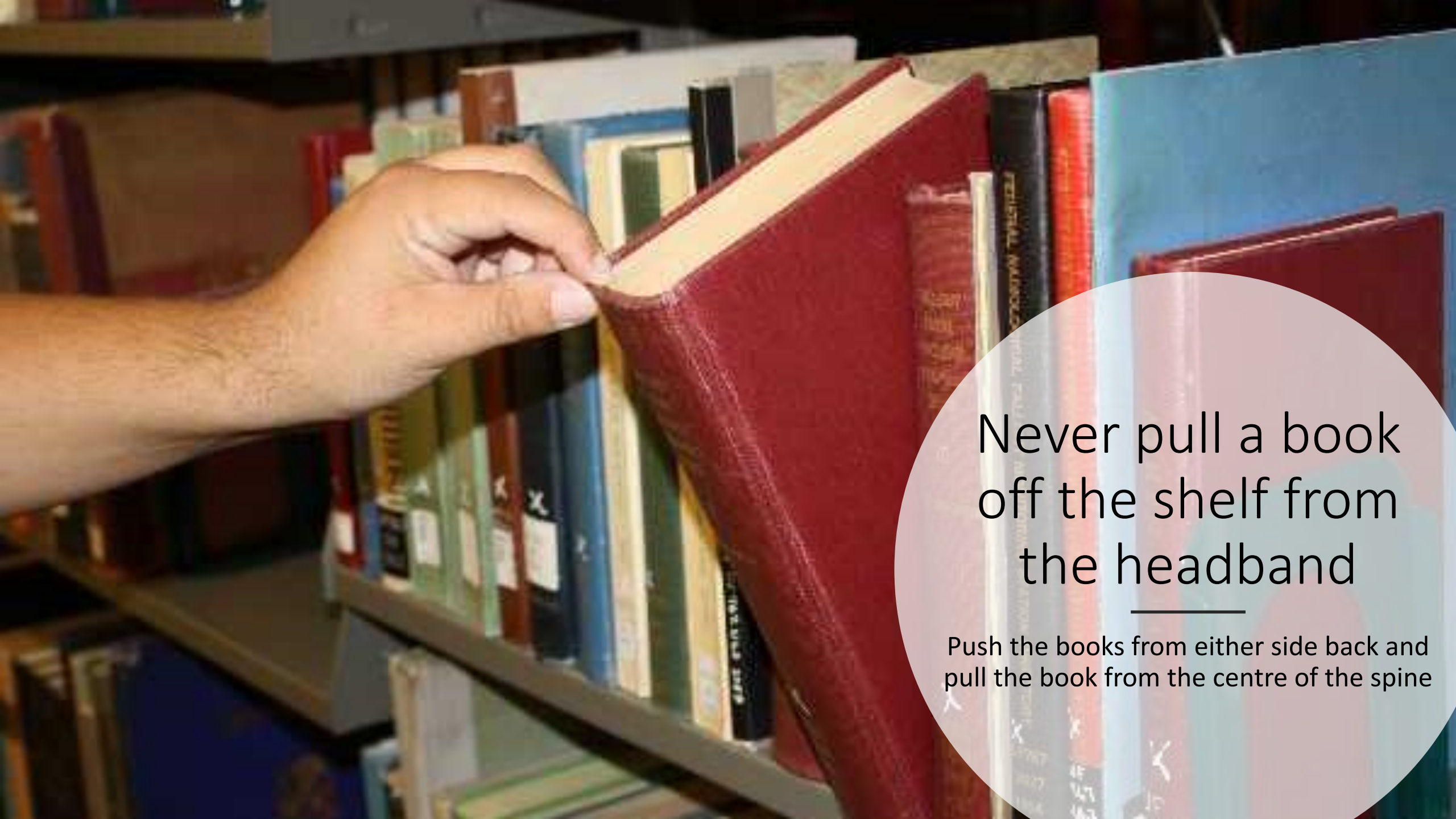
It’s irreplaceable. Treat it as such.

Make sure your object is supported at all times

Never rest a roll on its end

Don’t pull from the base of a stack

- Not only will you damage the box
- You risk dropping the boxes above and damaging the contents
- And it will all fall on your head



Never pull a book off the shelf from the headband

Push the books from either side back and pull the book from the centre of the spine

Store books the right way up

- If you can’t, you stack them. Or if they absolutely must rest on edge like this- place them spine down, supported on either side.
- Invest in bookends
- Adjust shelf heights
- Box books where possible

Support books when opening

Do not open further than the spine can easily accommodate

Wear Gloves when handling photographs

Or metals, glass, or any other mixed media you're not sure about

And…

- Always know your route
- Always plan before you move
- Don’t put anything on the floor
- Don’t pick things up with one hand
- Don’t balance while you open a box, put it down on a safe surface
- Heavy items should be moved by two (or more) people

Use weights to hold curling edges

Support weak areas and torn pieces

Cumbria County Council

Cumbria Local History Federation

Cleaning


Further Abstract
Griffin's Title
West Ashby Purchase
Further Abstract
Griffin's Title
Further Abstract
Griffin's Title

Cleaning

- Dry surface cleaning is one of the most effective interventive methods you can use to prolong the lifespan of your collection.
- It requires minimal training, and is very low impact, but can improve the condition considerably.

- Cleaning of archive collections is done with soft goat hair brushes, smoke sponges, Staedtler erasers, and a conservation vacuums
- Microfibre cloths can be used on book covers and shelves
- Clean the margins and verso of everything
- Avoid cleaning over printed or manuscript surfaces

Mould and hazardous materials

We need to be very aware in mixed collections that we may encounter materials hazardous to health. Common hazards include:

- Mould
- Dust
- Pests
- Asbestos
- Toxic chemicals such as arsenic
- Glass

Packaging

- Physical and chemical protection
- Ideally have two barriers between item and outside world- i.e. a folder within a box
- Old or damaging packaging should be removed and replaced with archival quality material. But some packaging is usually better than nothing
- Plastics degrade. Avoid using plastics other than archival quality melinex.
- Certain items require special packaging
    - Photographs
    - Outsize items
    - Tracings
    - Seals
    - Parchment
    - Modern media
- Harmful fastenings like rusty pins should be removed and replaced with brass paperclips if necessary

Vulnerable materials need specialist solutions

- Seals need to be padded as they can be very brittle
- Parchment and paper respond to acidity differently and should be interleaved if possible
- Photographs have very different environmental parameters and often contain mixed materials. Specialist packaging helps mitigate this
- Modern media responds poorly to heat, and should be kept cool if possible

Some Common Types of Photographic Material Found in Archives

- **Negatives**
- Glass plates 1847-1940
- Cellulose nitrate 1889-1950
- Cellulose acetate 1933-present

- **Prints**
- Cyanotypes (blueprint) 1840-1950
- Albumen 1850-1900
- Silver gelatine paper prints 1873-1960
- Colour prints on resin coated paper 1972-present

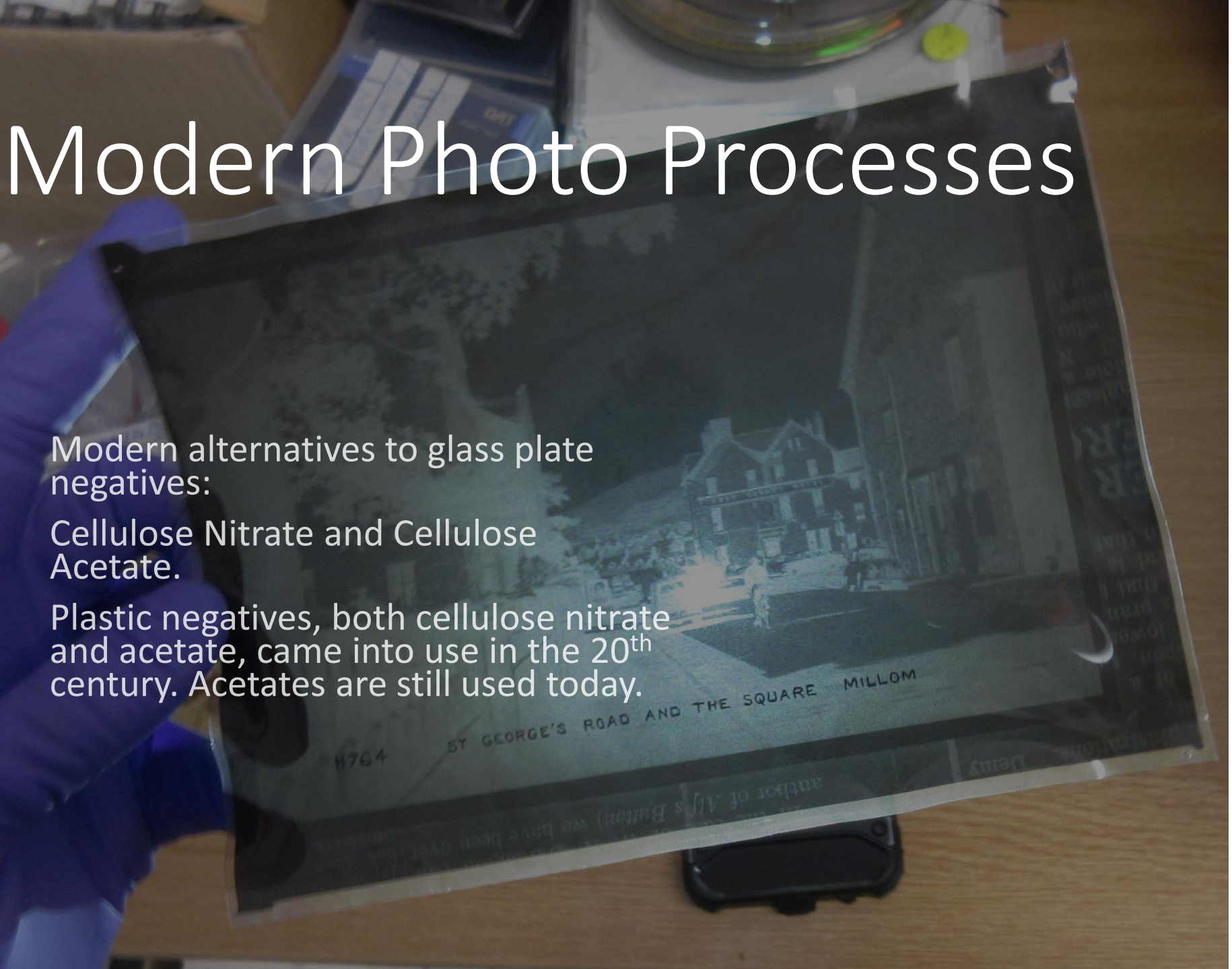
Glass Plate negatives

- Thin sheet of glass with an emulsion layer on one side
- Emulsion commonly consisted of gelatine with a suspension of a silver containing compound
- Available in a wide variety of sizes

Conservation Issues

- Generally chemically stable
- Brittle, thin glass makes physical damage the biggest threat
- Poor handling and storage is the biggest cause of damage
- Humidity fluctuations can cause emulsion layer to peel
- High humidity leads to softening and mould growth on image layer

Modern Photo Processes



Modern alternatives to glass plate negatives:

Cellulose Nitrate and Cellulose Acetate.

Plastic negatives, both cellulose nitrate and acetate, came into use in the 20th century. Acetates are still used today.

- Plastic negatives are more unstable due to their composite materials, and are best stored in low temperatures which will slow their deterioration to a minimum
- If you see any early signs of irreversible deterioration preservation is key
- Nitrates have to be kept in cool storage in a separate strongroom at 6 - 8 degrees centigrade and a relative humidity below 45%, with a gas fire suppression system, due to their flammability
- Acetates should be stored in cold storage, they pose less risk of fire so do not need specialist fire suppression systems

Nitrates

- Nitrate films off-gas nitric oxide and nitrogen dioxide, which is harmful to humans and other items in the collection. For example, gases can cause skin and eye irritations as well as respiratory issues and cause paper to become discoloured and brittle and metal to corrode. It’s also highly flammable and reactive to light and even very low heat.

Acetate

- When acetate base film is stored in a poor environment at high heat and humidity—or exposed to acidic vapours from nearby degrading film—it undergoes chemical reactions within the plastic support to form acetic acid. This acid causes the support to become acidic, brittle, and shrink. In turn, the acid spreads into the gelatin emulsion or into the air creating a harsh, acidic odour. It is a slow form of chemical deterioration known as "Vinegar Syndrome." It places acetate film at risk, and then deterioration may place otherwise stable photographic materials at risk as well.
- These processes, both acetate and nitrate, are irreversible.

5 Minute Break

Cumbria County Council

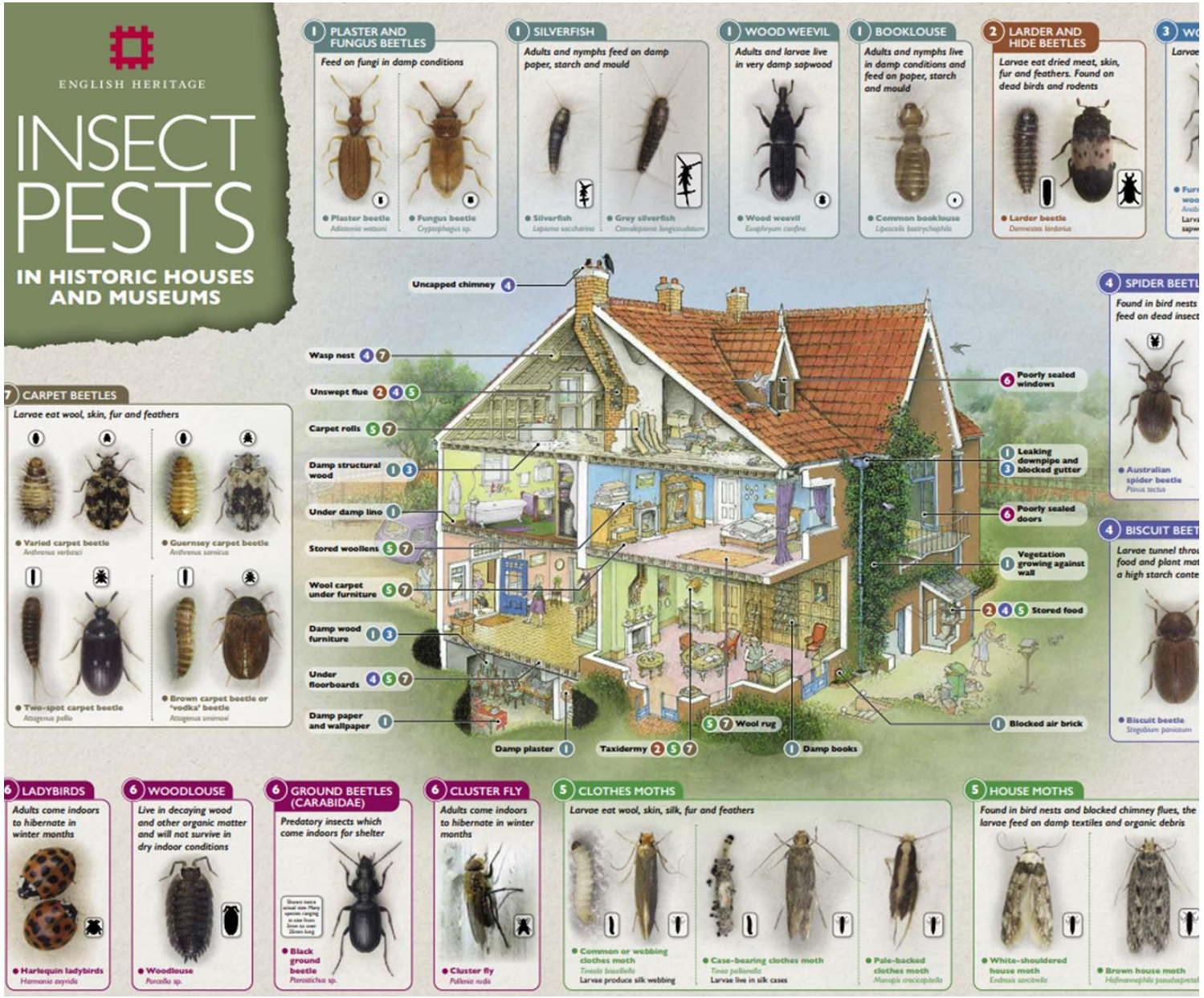
Cumbria Local History Federation

Fantastic Beasties and Where to Find Them

Common archive pests include:

- Silverfish
- Beetles
- Moths
- Rodents

Most archive pests are hard to see, and very hard to control. It's vital to monitor your archive and remember if you see one, you've probably got hundreds- make sure you act fast if you notice pests in your collection

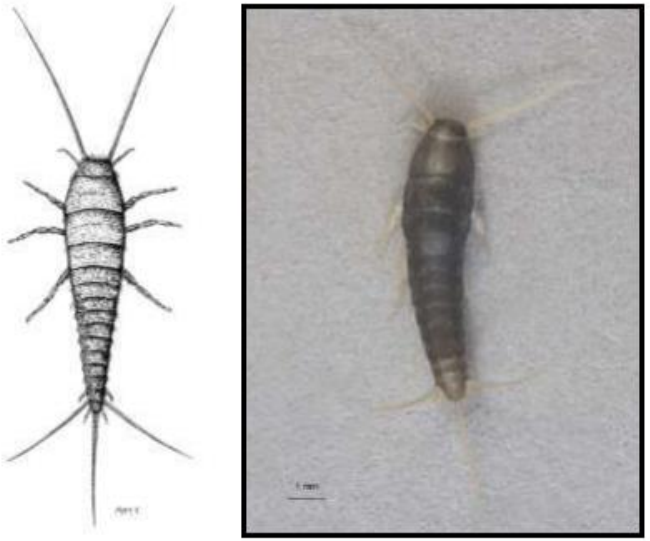


Silverfish

Size: 10 - 15mm

- Found in damp areas
- Eat paper, books, photographs, starch, gelatine, mould and greasy dirt
- Graze on the surface

Adult



Long, tapered, segmented insects covered in silver scales. They have long antennae and three long whip-like bristles at the back end of the body.

Images from English Heritage Pest Fact Sheet

Varied Carpet Beetle

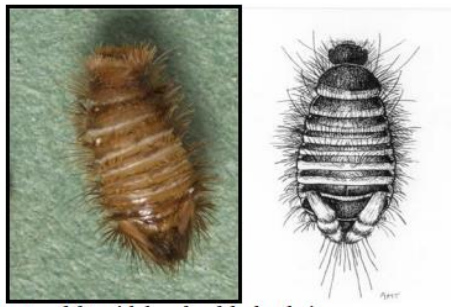
Size: 2 - 3mm

- Found in dark areas where dirt accumulates
- Eat wool, fur, skin, feathers, animal glue in bookbindings
- Graze on surface and make holes

Adult

Small round beetles covered with grey and gold scales.
Prominent head with clubbed antennae.

Larva



Short and fat with bands of darker hairs.
Often called 'woolly bears'

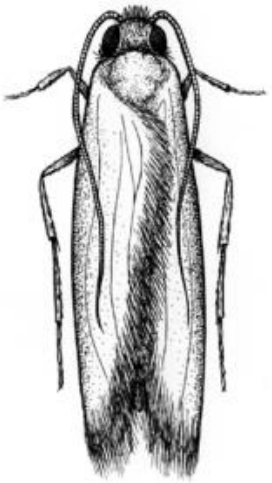
Images from English Heritage Pest Fact Sheet

Webbing Clothes Moth

Size: 8 - 10mm

- Found flying or larvae in dark undisturbed areas
- Eat wool, fur, skin, feathers
- Graze on surface and make holes

Adult



Small moths covered with shiny whitish-gold scales.
Head with a brush of orange hairs and long thin antennae.

Images from English Heritage Pest Fact Sheet

Rodents

- Cause damage by gnawing or shredding material for nests, urine staining
- Look out for signs such as droppings, urine and gnaw marks, particularly in quiet areas
- Speedy resolution with professional help necessary using traps not poison as carcasses are food source for other pests

Images from English Heritage Pest Fact Sheet

Prevention is best!

Important to have:

- Good housekeeping to keep dirt and dust to a minimum
- Good environmental conditions to deter
- Pest-proof areas to close gaps etc.
- Inspect any new material
- Regular checks of undisturbed areas and pest monitoring

Pest Monitoring

- Use sticky blunder traps to catch pests
- Place in edges of rooms, against walls and in corners
- Use a location guide and record sheet to build data
- ID pest using resources and magnifier
- Analyse data to identify issues and indicate what to address, e.g. damp conditions

Housekeeping

Keeping your store rooms clean is the number one factor in reducing damage by dirt and pests.

Maintain a schedule of cleaning.

When you clean, use a conservation vacuum, or put a piece of gauze over the end of your vacuum nozzle. This will ensure you don’t suck up anything that’s become detached.

Make sure you use water and microfibre cloths for cleaning empty shelves. If you need to use any soap, a light hypoallergenic unscented dish soap is best, and use only a couple of drops per litre of water.

Rinse and dry shelves completely before returning any object to the clean shelf

Quarantine New Accessions

Make sure you have some space which is not connected to your store rooms which you can use to isolate new items

Each item should be cleaned with a vacuum and soft brush

Check for evidence of pests or mould, or other hazards

Invest in a freezer to quickly control pests before infestation

Resources

What's Eating Your Collection

https://www.whatseatingyourcollection.com/

British Library Pest Guide

Preservation guides | Conservation | British Library - The British Library (bl.uk)

English Heritage Pest Guidance

https://www.english-heritage.org.uk/learn/conservation/collections-advice-and-guidance/

Pest Partners Project

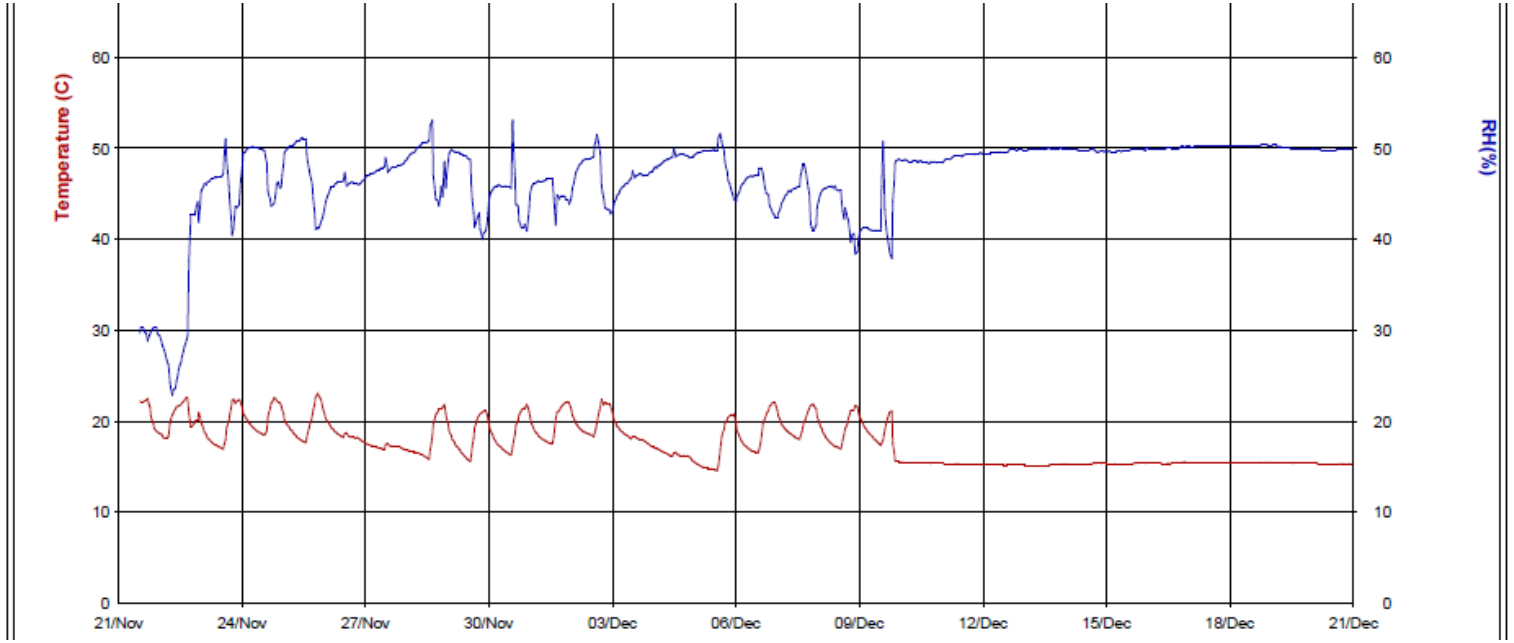
Pest Partners - South West Museum Development (southwestmuseums.org.uk)

Environmental Monitoring

What are we measuring?

- **Temperature**
- **Relative humidity**
  - This is the moisture content of the air expressed as a percentage of the maximum amount of moisture it can hold at a given temperature e.g. 50%
  - Warm air holds more moisture, cold air holds less

- They are interrelated e.g. if the moisture content in the space stays the same, when the temperature falls the RH will rise



How can we record it?

Spot checks

One off reading at that time

Need to record data somewhere

Continuous recording

Multiple readings to build a pattern and identify ongoing issues

Usually creates a graph

Devices must be calibrated so readings are accurate and remember to check the battery life!

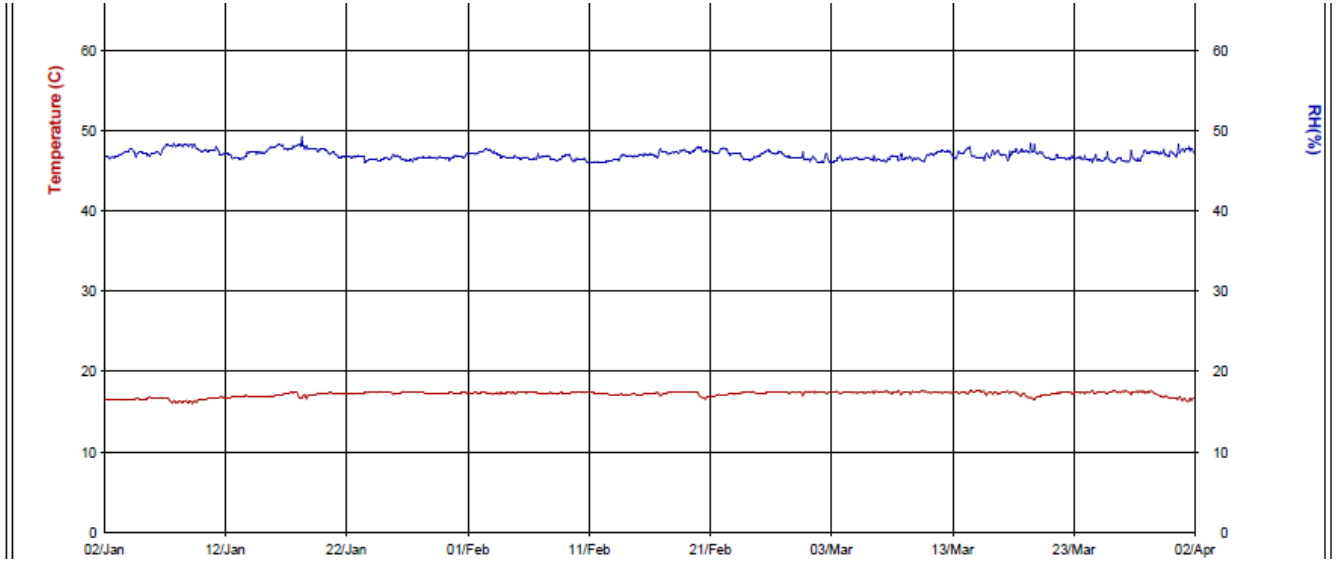
Recommended levels

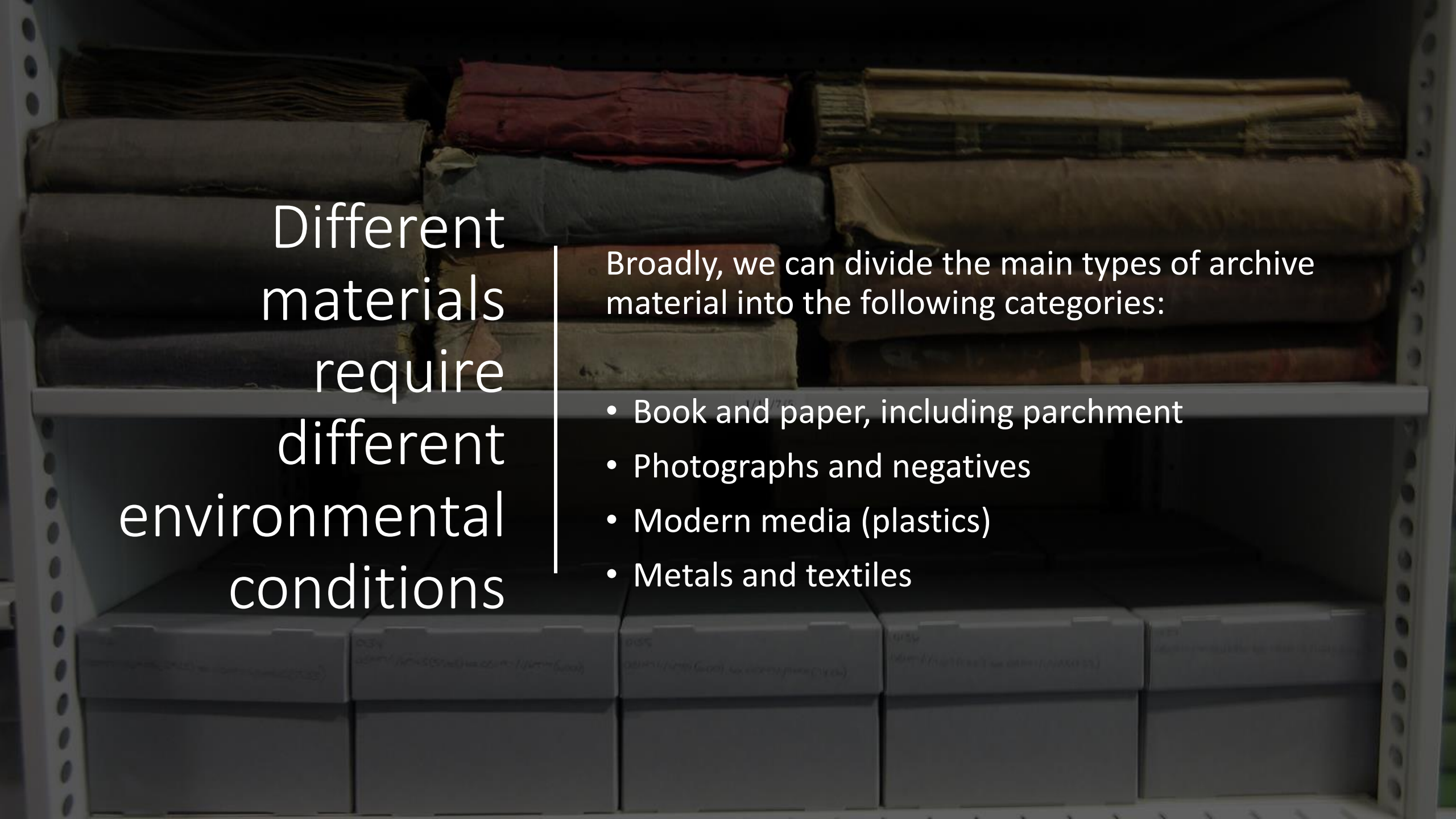
General conditions for mixed collections

- 13-20°C
- 35-60% RH
- Most important to control humidity and focus on maintaining stable conditions

Trying to avoid

- High humidity can cause mould growth
- Too high temperatures that can speed up deterioration
- Fluctuations which can cause repeated contraction and expansion
- Little air flow that encourages mould and allows acidic gases to build up





Different materials require different environmental conditions

Broadly, we can divide the main types of archive material into the following categories:

- Book and paper, including parchment
- Photographs and negatives
- Modern media (plastics)
- Metals and textiles

Book and Paper Collections

- 40-60% RH
- 16-20°C

- Leather and parchment best kept above 45% RH to maintain flexibility and avoid very low temperatures
- Stability is key as they are responsive to moisture changes

- Packaging such as boxes and folders can help provide a buffer

Photographs and Negatives

- Comprised of layers so important to keep in stable conditions
- Ideally cool and cold storage for long term preservation
- Be aware of risk of higher RH at low temperatures if not properly controlled, which may lead to damage and condensation

- B&W photos and glass plate negatives more stable
  - Keep below 18°C, 30-50% RH

- Colour photos and plastic photographic negatives (cellulose acetate and nitrate)
  - Below 10 degrees and ideally at -20°C, 30-50% RH

- Package in boxes and paper or polyester enclosures that have passed the Photographic Activity Test

Modern Media

- Mostly audio visual formats, e.g. tapes and films
- Layered items so stable environment important
- Plastics will irreversibly degrade over time
- Risk of corrosion to metals and be aware of magnetic elements
- Material dependent but cool temperature best
  - 10°C, 40%
- Need to acclimatise if use in different conditions to storage
- Paper or inert plastic packaging

Metals and Textiles

Metals

- Aim to avoid corrosion with low humidity, 40-60% RH
- Can be affected by air pollution

Textiles

- 45-60% RH to avoid mould growth

Package in boxes

Most important to…

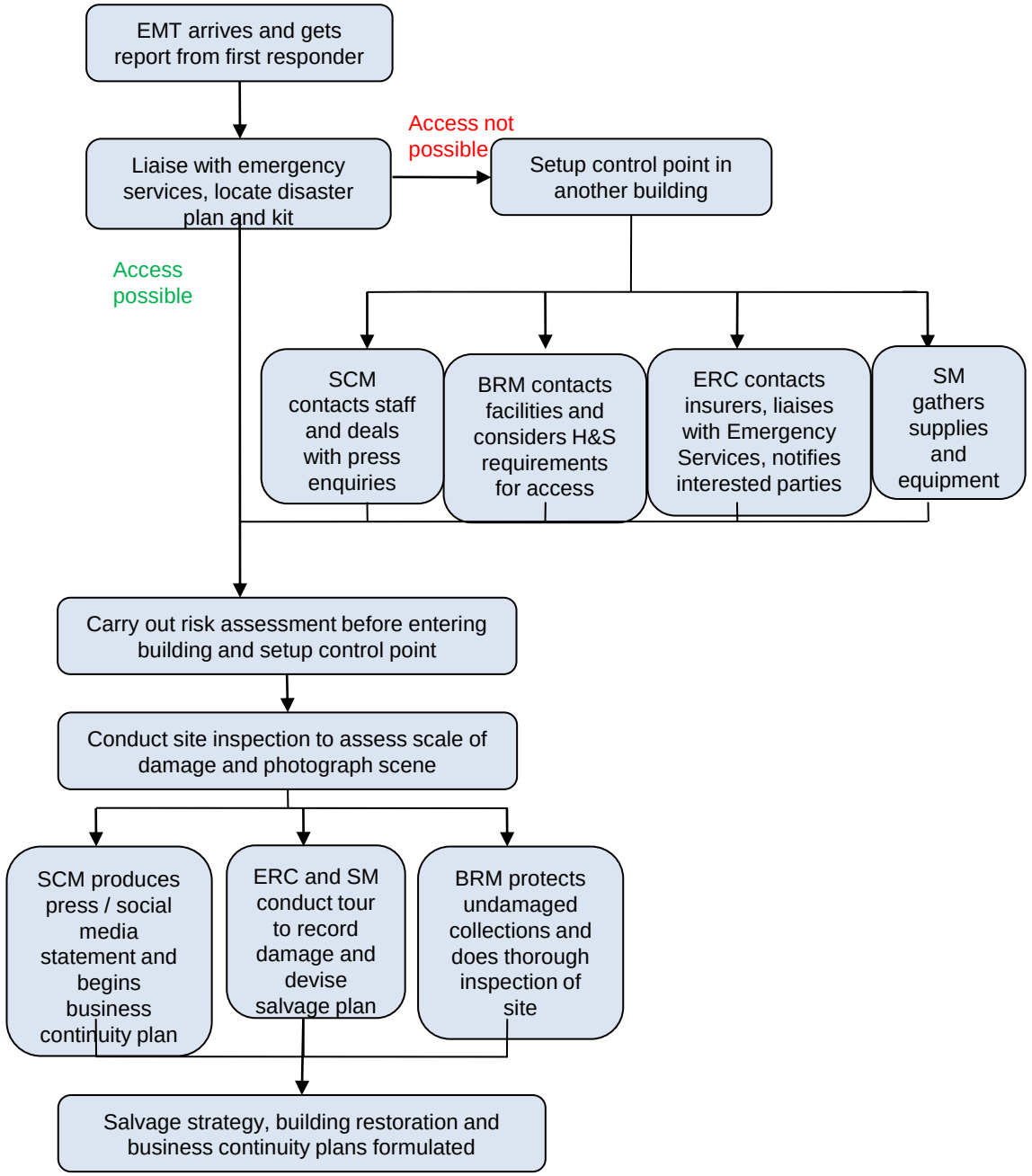
- Keep items in consistently cool, dry, dark places
- Use boxes or packaging that provides a buffer to fluctuations
- Keep items off the floor and with space around to allow for air circulation
- Avoid windows, radiators, external walls, attics, garages and cellars
- Use blinds or apply UV film to windows if present
- Can use dehumidifiers or fans to help but do not leave unattended

Cumbria County Council

Cumbria Local History Federation

Salvage Planning

- What are the benefits of having a plan?
- Fast response, avoid escalation
- Prompt, ‘standard operating procedure’ for pressurised situation
- Resilience for absence of key personnel
- Sound basis for decision-making
- Helps to reduce panic
- Potential hurdles circumvented in advance
- Information at your disposal when communication is difficult
- Avoids sourcing solutions without resources


EMT arrives and gets report from first responder
Liaise with emergency services, locate disaster plan and kit
Access not possible
Setup control point in another building
Access possible
SCM contacts staff and deals with press enquiries
BRM contacts facilities and considers H&S requirements for access
ERC contacts insurers, liaises with Emergency Services, notifies interested parties
SM gathers supplies and equipment
Carry out risk assessment before entering building and setup control point
Conduct site inspection to assess scale of damage and photograph scene
SCM produces press / social media statement and begins business continuity plan
ERC and SM conduct tour to record damage and devise salvage plan
BRM protects undamaged collections and does thorough inspection of site
Salvage strategy, building restoration and business continuity plans formulated

Identify Responsible People

- Form an emergency response team- Building Coordinator, Salvage Manager, Emergency Response Coordinator, and:
- Key holders
- Security
- Off site storage
- Extra hands
- Who do you call?

Suggested template for a salvage plan

- Title page
- Contents page
- Introduction: plan aim, endorsement, issue and review date
- Emergency Management Team – contact info
- Initial procedures – what to do if discovering an incident
    - In normal hours
    - Outside of normal hours
    - (If EMT are delayed and acting under their authority)
- First actions when arriving onsite
    - (Entry / Escalation procedure)
- Task lists / guidelines for key roles
    - Responsibilities
    - Immediate actions
    - Continuing actions as salvage operation continues
    - After the salvage operation
- Appendices

Essential information –

- A Personnel contact lists
- B Priorities lists
- C Floor plans
- D Equipment lists
- E External suppliers and utilities
- F Detailed salvage guidance
- G Risk assessment – health and safety
- H PR – prepared press statement
- I Damage record form
- J Initial assessment form
- K Accommodation
- L Instructions for building utilities
- M Insurance cover details
- N Contacts directory
- O IT / systems recovery
- P Incident Log

Disaster Kits

- Convenience of all-in-one kits vs source your own
- Mobile is best (wheeled crates/wheelie bins)

Improvisation potential

- Acetates for melinex / kitchen roll for blotter / greaseproof paper for silicone paper

Make an inventory on each container

Fire or Flood: Water Damage

Time is of the essence to maximise the success of salvage

- Objectives

Initial recovery- within 72 hours everything wet should be :

  - Dry
  - Drying
  - Stable (freeze)

This helps to avoid secondary damage such as mould growth

Immediate preservation of collection:

- Saves time and money
- Ensures a better outcome

- The objective of salvage is the same, but practicalities differ

1, 10, 100, 1,000, 10,000, 100,000 items? The principle is the same.

Know what you're dealing with

- What do you need for air-drying?
  - Space (security)
  - People (professional, skilled, unskilled)
  - Equipment (tables, blotter, fans)
- What is the tipping point?
  - When do you need external resources
  - Clarity in advance, have a plan, have decision-makers who are familiar with the plan

Avoid the slow realisation on day 3!

Cumbria County Council

Cumbria Local History Federation