Disaster Management Planning for Archaeological Archives

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Kenneth Aitchison

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The Author
Kenneth Aitchison is Head of Professional Development at the Institute of Field Archaeologists. He is a member of the Archaeological Archives Forum.

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Cover image:
Recovery work following the August 2002 flooding of the library at the Institute of Archaeology in Prague
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Executive Summary

Planning for disasters is essential for all organisations holding archaeological archives.

This applies equally to commercial organisations holding archival material on a temporary basis as it does to the final repositories of those archives.

Disaster management planning can be straightforward, using both in-house skills and knowledge combined with shared information and advice from other stakeholders to establish a disaster management plan.

A disaster management plan must:

- set out Prevention techniques to minimise risk
- set out Preparedness procedures for the eventuality of disaster
- establish an emergency manual for Reaction in the event of a disaster
- outline considerations for a Recovery plan following the disaster

This paper sets out in the required detail the considerations that need to be addressed in preparing and implementing a disaster management plan for archaeological archives.

It establishes a format for management structures and procedures, sets out team and individual responsibilities and provides checklists of procedures and materials to be considered without stipulating a ‘one size fits all’ approach to the issue. The requirements of the plan can be tailored to suit the size and scale of the organisation and the archives that it holds while ensuring that appropriate procedures are in place.

Preface

Part of any organisation's contingency planning should be the development of a disaster plan. In order for organisations to be disaster-ready they need to be prepared.

> 'Disasters do happen and by nature they are unexpected. Disaster plans help you to react in the event of a disaster and to cope with the aftermath' (Fernie & Gilman 2000, B.47).

The English Heritage 2002 report and plan of action for archaeological archives recognised that the subject of disaster management planning '… is essentially very low in the consciousness of most archaeologists. However it is a vital business need and of prime importance to the security of the nation's archaeological archives' (Perrin 2002, 5.1.12).

> 'Archaeological archives are the key product of any archaeological investigation, and should share equal importance with the publication or dissemination stage. The term 'archives', as employed by archaeologists, can be misleading as what is actually referred to is a hybrid mix of archives and collections … the term archive is used to describe all parts of the archaeological record, including the finds and digital records as well as the written, drawn and photographic documentation' (Perrin 2002, 3).

> 'These archives are often fragile and always irreplaceable. Disasters may seem a remote possibility, but it has to be remembered that while there are various hazards in all environments, often they just seem to be minor irritations, for example a dripping tap, a poorly closing door or an awkwardly placed cabinet, but sometimes they can escalate into disasters' (Fernie & Gilman 2000, B.47).

This advisory document sets out an introduction to disaster management planning and how archaeologists can prepare to reduce the potential impact of disasters on irreplaceable archaeological archives. It is intended for use by both the archaeological repositories that are the final resting house of the archives and those organisations holding archives temporarily, such as organisations undertaking fieldwork, as it is recognised that those archives that are being held temporarily between the stages of primary data recovery and ultimate deposition in a designated repository are particularly vulnerable.

In many cases archaeological archives, whilst being worked on, may not be stored in ideal circumstances and it is a good idea to get basic duplicate information stored elsewhere off site at the earliest opportunity. This might include site records such as context lists, site survey data, lists of plans and sections, finds and samples lists *etc* as well as key contractual information about site organisation.

Only by careful planning, team work and training can an incident be prevented from turning into a disaster. It is the team work required to build a plan and rehearse it that will help reduce the impact of a disaster.

A disaster management plan must:

- set out Prevention techniques to minimise risk
- set out Preparedness procedures for the eventuality of disaster
- establish an emergency manual for Reaction in the event of a disaster
- outline considerations for a Recovery plan following the disaster

This document is structured around those four pillars, and also includes a template for preparation of a disaster management plan for archaeological archives.

> The benefit of going through the disaster management planning process is that it gives you a chance to focus on what is really important, that is, the safety of the people who work in or visit the [organisation] and the protection of valued information and services. Why put these at risk for the sake of a little time spent on preparation and good housekeeping? (Fernie & Gilman 2000, B.47)

However, it is important that this document is not used in isolation but that the practices and procedures are incorporated into an overall Corporate Plan or Organisational Strategy or Business Continuity Plan. There is no point in an archives manager within an archaeological unit having a disaster plan in place if there is not organisational support. A disaster could easily affect the pay system, stationery supplies, personnel files, public access facilities as well as the archives, and included in the plan must be a strategy as to how the organisation is going to 'get back on its feet'.

Material in this document has been influenced by, synthesised from and drawn directly from a number of pre-existing documents, all of which are listed in the bibliography.

Particularly important is BSI 2000, *Recommendations for the storage and exhibition of archival documents (*BS5454 2000). This is the standard that archive premises should be aiming to achieve for storage. It includes useful sections on potential risks, standards for fire prevention and other areas.

Introduction – the Disaster Management Plan

Emergency planning is now a compulsory requirement for museums seeking MLA registration, and it can be seen as professional good practice across the sector. Many commercial clients, consultants and other stakeholders in an archaeological organisation's work will expect appropriate Emergency Plans and Business Contingency Plans to be in place. It is worth recognising that there is no standard terminology in the naming of these plans, and that a number of terms exist – an Emergency Preparedness Plan (as used in local government) can be both a Disaster Plan or a Disaster Preparedness Plan. Recovery is often called Business Continuity, which is the term most Civil Resilience teams use.

At a national and regional scale, Civil Resilience (formerly the local authority civil defence network) is organised by the Office of the Deputy Prime Minister and the Home Office, and the *Civil Contingencies Bill* is anticipated to become law in early 2005. Regional resilience fora have been established for each of the nine English government office regions which link government and regional policy on emergencies (flooding, fires, civil disobedience, counter-terrorism *etc*) with businesses and communities. At a more local scale each local authority has an emergency planning officer who, under the forthcoming legislation, will be expected to give advice on Business Continuity Planning.

For an organisation, the creation of a specific written Disaster Management Plan must form the basis for the preparation phase of disaster management planning. The archive's plan must be compatible with other relevant plans elsewhere in the organisation.

The plan should be divided into four sections: prevention, preparedness, reaction and recovery. It must be clear, succinct, flexible and easy to understand whilst including all the information necessary to allow speedy reaction in a disaster situation.

A designated person must be made responsible for its accuracy and currency and a clear timetable for updating the plan must be agreed upon.

The plan should be kept in a loose-leaf binder to allow for easy updating, and any major revisions should result in it being reprinted in its entirety, to avoid confusion. Pages should be numbered and dated. Any updates to the procedures manuals should be signed and dated.

Jargon should be avoided so that the plan may be easily understood by other professionals, such as fire officers. Flow charts may be used where they will aid understanding of the procedures to be followed. It may help to use appendices for charts, plans *etc* to keep the plan succinct.

The plan should ideally include floor plans showing the location of fire fighting equipment, emergency exits, fire refuges, emergency stores, utility mains switches, stop cocks and gas taps *etc*. Other plans might contain information such as location of sensitive items such as chemicals, priority items for evacuation *etc*. Key plans should be laminated to enable them to be used in wet circumstances.

Ideally, a fire officer should be invited to visit the premises and discuss salvage priorities and to furnish the organisation with appropriate plans which should preferably be laminated.

The plan should also contain contact lists and the numbers should be regularly reviewed and updated as necessary (suppliers, key personnel, key contacts such as the local authority's archaeological service, local archaeological society contacts, local and regional museum contacts, key councillors or politicians, national heritage agency contacts and other key stakeholders). Remember to respect *Data Protection Act* requirements and obtain permission to put names on a list.

As an element of disaster management planning, roles for key staff will be identified. These staff, who will form the Disaster Reaction Team and the Disaster Reaction Manager, should have two copies of the plan, one at work and one at home. Senior management and site managers may also need copies. Each site should certainly have access to the plan, although some sections (such as the location of valuable items or home phone numbers) may be kept out of general circulation. Staff must be reminded not to leave a copy of the plan in an insecure location (such as a car) in case it is stolen. All holders and locations of the Disaster Management Plan should be listed.

There can be a need to work with others both at a macro scale, for example if located in a business park or in part of a building, to co-ordinate emergency planning and Business Continuity Planning and at a micro scale, for example by assembling teams mapping out tasks such as collating suppliers details.

Please note that smaller organisations should not be discouraged by the plethora of people that this document recommends be appointed – in some cases people can hold more than one responsibility.

A model template for a Disaster Management Plan is presented as Appendix I.

Prevention

Prevention is better than cure, and is a vital step in disaster management. Although some disasters are beyond our control, we can take steps in advance to reduce the seriousness of their effects. The prevention of disasters involves risk assessment or identification of threat leading to risk reduction or mitigation, where risks identified should be removed or reduced. Whatever action is taken, an element of risk will remain.

Liason

It is important to liaise with those who are or will be involved. Undertake wide discussion at the stage of preparing the risk assessment with the individuals in the workplace who are best placed to identify risks and so will have most responsibility for minimising them.

The initial risk assessment should ideally be done by a team working together. This team should be multi-disciplinary and could include someone from finance, human resources, facilities, conservation *etc.* This has the dual function of gathering together expertise from all areas and making sure that nothing is missed while also developing team working.

If possible, the risk assessment should be undertaken by physical area *eg* material archive, documentary archive, photographic storage area. The individual person responsible for each area, along with the designated risk assessment leader, should carry out each risk assessment.

Further advice can also be sought from the staff of other archaeological archives or similar organisations which might be able to share ideas and experiences. Commercial sources of advice, such as insurers, loss adjusters and building surveyors may be able to offer valuable information, while the local police and emergency services will certainly be able to provide important advice and expertise.

Local government emergency planners should also be involved, particularly as many local authorities may have contracts with commercial retrieval companies and so many archives may be included within such contracts unknowingly.

Risk Assessment

Risk assessment involves five stages

- identify risks
- evaluate risks
- control of risks occurrence and effects
- liaise with those who are or will be involved
- feedback and review

Risk Identification

In identifying the risks, three key vulnerabilities must be held in mind. This will allow risk evaluation (assessment) and control (reduction).

Environment / Location

Is the building vulnerable?

- is it in a flood plain and floods regularly?
- is it in an historic building which is vulnerable to fire?
- is it in an area which is prone to earthquakes or subsidence?

- are there arson attacks or vandalism?
- is it a likely terrorist or likely to be target by other violent organisations? For example does the archive house other collections *eg* military archives / fox hunting *etc*

Is the building water tight and weather proof?

- are the gutters and drains regularly inspected and maintained?
- are there security alarms?
- are the windows weather tight? If in an historic building then consent may be required before repair can take place
- how old is the electrical wiring? Is it vulnerable to attack by animals?
- are there any leaking taps or pipes or water using machines near collections?
- where are the water tanks – do they leak?

Archival Medium

The second vulnerability relates to the medium, or more often media, of the archive. Different media have different vulnerabilities, and it is always relevant to consider the material aspects of the archive separately as well as in the whole.

Storage Type

The nature of the archive's storage is its third vulnerability. As much material as possible should be boxed. An archival box provides a considerable degree of protection in a flood situation. Shelving needs to be as robust as feasible to reduce the risk of collapse in a disaster. It has been found that rolling stacks provide extra protection from water damage and these should left closed at night, but in a fire they buckle and bend and can cause access problems thereafter. Rolling stacks (if badly designed) can also prevent good air circulation, thereby causing the growth of mould *etc*. Canopies also offer additional protection. Some non-book material may be stored in metal cabinets. Storage for museum objects may need to be custom-made. Maps, plans, posters and prints should be stored flat or, if too large, rolled and fitted with a protective cover. Separate photographs and negatives and store in acid free envelopes. Avoid covers or envelopes made from plastics other than Mylar or Melinex. Archive material which often consists of loose papers should be boxed and the boxes marked in water-resistant inks. Archive boxes should be acid free. Avoid tapes and glues, which come unstuck, and metal paper clips which rust in wet conditions. Brass paper clips are preferred.

Risk Areas

Potential areas of risk include, in no particular order

- location
- buildings
- environment
- holdings
- storage
- staff routines
- transportation

Risk Factors

Risk factors, again in no particular order, include

- security
- fire
- flood
- building works and maintenance

- vandalism
- electronic sabotage
- terrorist attack
- earthquake / subsidence
- hurricane / extreme weather conditions

Risk Evaluation

In terms of evaluating the risk, the key factors to be considered are

the **likelihood** of a disaster occurring; and

the **effect** of archive loss ranging from light to total.

In terms of the likelihood of the disaster occurring, each potential disaster can be rated numerically, as below, or simply categorised as being of low, medium or high probability.

1 Almost impossible
2 Very unlikely
3 Unlikely
4 Occasionally
5 Even chance
6 Likely
7 More likely
8 Very likely
9 Almost certain
10 Certain

Similarly, the severity of the consequences can be assessed numerically as below or simply categorised into low, medium or high severity.

1 No damage
2 Very slight (repairs unlikely to be required)
3 Slight (non-urgent repairs likely)
4 Slight (minor repairs likely and necessary)
5 Significant A (requiring several repairs or replacements, absence resulting in disruption or closure up to one day)
6 Significant B (requiring major repairs or replacements resulting in disruption or closure for two days to two weeks)
7 Major A (requiring major repairs resulting in disruption or closure for two weeks to one month)
8 Major B (resulting in major repairs or replacements, resulting in disruption or closure for more than one month)
9 Major C (resulting in a single major total loss)
10 Catastrophic damage (resulting in multiple total major losses)

Risk Control

The control or reduction of risks then falls into one of four categories

Avoiding the Risk

Often, making changes and taking simple precautions reduces the danger of disaster occurring and can minimise its effect.

Transferring the Risk

Frequently, there may be someone better equipped to manage the risk (*eg* security staff, ICT staff) and so it will be appropriate to agree with them that they are the appropriate individuals to handle that particular risk. It is imperative that this is followed up to ensure that the transferred risk has actually been mitigated or abated.

While transferring the risk may be the appropriate course of action, the disaster planner should be seeking to involve others and to engage them in the process – not simply shedding the risk to someone else, which could be seen as an abrogation of duty of care.

Controlling the Risk

Risks can be controlled by installing early-warning systems or safeguards. Recognising that a risk exists means that there can be scope for reducing or controlling that risk – as the most straightforward example, where fire is recognised as a risk, installing smoke alarms and sprinklers will reduce the potential impact of that risk. This philosophy can be expanded out to many other controllable risks.

Accepting the Risk

If the likelihood and / or potential impact of a risk is low, then in many cases the most effective approach is to accept that risk. Investment of time and resources in addressing an extremely remote possibility that will have relatively little impact is counterproductive.

Preparation

Preparation is the process of risk reduction once the risks have been identified through risk assessment. It is essential that preventive measures be identified which will lessen the likelihood of a disaster occurring.

Risk reduction measures should be identified and implemented in terms of their application to storage areas, storage equipment and ICT.

Beyond the preparation of risk reduction measures in all of the areas above, preparation should also be made for procedures in terms of personnel, training, disaster notification, salvage prioritisation, the maintenance of equipment, insurance issues and the potential need for temporary accommodation.

Storage Areas

In terms of the archive storage areas, risk reduction measures should have been identified for aspects of building maintenance, safety, and security.

Fire Prevention

Fire is normally the greatest risk facing an archive.

There **must** be a rigid no-smoking policy adopted throughout the archive.

The building must be checked for fire safety, ensuring that fire resistant structures are identified; with concrete floors that there are no air passages between floors; that concealed spaces (*eg* false ceilings) are identified and that there are mechanisms for fire detection in concealed spaces; that all smoke detectors are working; and that stairways and pipe shafts are enclosed. Reduce fire hazards by replacing old and worn out equipment or furniture with those made from fire resistant materials as part of an ongoing replacement programme.

Have wiring checked regularly. Work and storage areas should have the appropriate fire extinguishers. Fit smoke alarms and sprinkler or water mist systems. Sprinklers may damage part of a collection but may prevent the destruction of the whole; advances in recovery techniques mean restoration of wet material is accomplished more easily than fire damaged material and a fire brought under control quickly by a few sprinklers is likely to result in less wet material than a fire which has to be tackled by the fire brigade. Especially valuable and rare material may be protected by fireproof doors in an area without windows. Gas-based fire suppression systems are also available and are ideal for archives, but are very expensive. It should be noted that these systems work by suppressing oxygen in order to starve the fire and as such, immediate evacuation of any area where they are fitted is absolutely essential.

Maintenance of Equipment;

Equipment maintenance is essential both to ensure that equipment failure does not cause a disaster and to assure reliability of equipment in a disaster situation. Ensure that equipment stored to deal with a disaster is included in maintenance routines. Those responsible should sign to state that the relevant checks and maintenance routines have been carried out.

Weather Soundness

The building must be checked to ensure there are no cracks or seepage visible in walls; all is in compliance with codes (fire *etc*); the roof covering is sound with flashing intact; all window sealant is sound and the doors sound and working.

Cleaning

External cleaning includes ensuring that all drains, gutters, downspouts drain freely away from the building and that there is good drainage around doors.

Internally, cleaning supplies and other flammables must be stored safely, rubbish removed nightly, food, drink, smoking prohibition enforced, pest management strategies in place and effective and stores and shelves cleaned regularly and thoroughly.

Building Works

A regime of planned and documented building maintenance will go a long way towards minimising the risk of floods, fire, theft, vandalism and invasion by pests. Routines should include regular temperature and humidity checks in areas designated as vulnerable to damp. Extra precautions should be taken during building work, such as the adoption of a code for hot working to prevent fires after hours and regular inspections to ensure that rules such as no smoking are rigorously enforced. Those responsible should sign to state that the relevant checks and maintenance routines have been carried out.

Security Procedures

In addition to fire alarms, security alarm systems must be installed, ideally linked to the local police station.

Security measures should be reviewed and if necessary tightened to reduce potential damage from break-ins, vandalism, bomb attacks or arson.

Take advice from the police about ways of controlling crime and making the area around your building safer, for example by appropriate lighting or by pruning large shrubs or trees around buildings so they do not provide hiding places. The removal of trees must be only undertaken with expert advice as in some cases, in conservation areas or trees with Tree Preservation Orders, this may be illegal.

Replace existing glazing with toughened glass and increase security patrols where resources permit. Visitors should be encouraged not to leave their belongings unattended. Staff should be encouraged to observe visitors and note any unusual behaviour.

Terrorism

A specific assessment of risk is needed for this threat, taking into account other uses of the building. For example, if another part of the building is used for the storage of military archives or could potentially be seen as a venue for animal experimentation, the risk is considerably increased.

If the threat of terrorist attack is considered a genuine risk, then contact the police who will direct you to the appropriate authorities to help plan.

Expert advice should be sought before drawing up procedures to deal with a bomb or white powder alert, but the general principles are

- maintain appropriate security
- be alert to any unusual package or vehicle
- establish and maintain emergency procedures

Storage Equipment

Within the archive storage area, the actual storage equipment is the second principal category where risk reduction measures should be implemented.

Hazardous or Combustible Chemicals or Supplies

Keep storage of inflammable liquids to a minimum (remembering that some photographic processing chemicals are highly inflammable). Store them separately and safely in secure containers in appropriate environmental conditions,

preferably away from other buildings. Ensure that containers are returned to safe storage immediately after use and ensure safe disposal of empty containers.

Shelving Safety

All shelving (mobile and static) must be checked to ensure that the shelves are well braced; the shelves free of rust / rolling freely; there are no water sources above collections; the shelving is 150 mm above the floor (as required by BS 5454); and exits are unobstructed

Fireproof and/or Waterproof Storage

Consideration should be given to the use of fireproof and / or waterproof storage for particular archival material in order to reduce risk.

ICT Security

Given that there are so many variables consultation with the organisation's ICT professionals is recommended before drawing up procedures. Depending on organisational policy, consideration may be given to devising a separate ICT disaster plan.

Security Backup Procedures

All software and data should be backed up regularly on industry standard digital tape or other approved media (decisions on frequency should be taken after considering the nature of the data and the demands on the systems involved). Off-site storage for back ups is essential. This must be secure and preferably not vulnerable to fire, flood *etc*. It is advisable to use media from a variety of sources to minimise risk from manufacturing faults. Archived data should be checked periodically for readability and if necessary migrated to new media. The integrity of data files should be checked periodically. Particularly crucial data may be stored using more than one type of software to reduce risks from malfunction or virus attack.

Running anti-virus software is the best defence against virus attack, but clean emergency start up discs for each computer should also be available to reboot machines after virus attacks.

Network security is a complex and technical subject and professional advice should be sought on implementing virus protection, installing access controls, securing menus and installing back up power supplies. Depending on the nature of the data involved it may be necessary to consider the use of encryption and firewalls.

All backup routines, storage locations and security procedures should be documented. Any updates to the procedures manuals should be signed and dated. All holders and locations of manuals should be listed in the Disaster Management Plan.

Personnel

It is critical that all staff know the appropriate responses and their roles in a disaster situation. This will involve induction and refresher training for all, with specific roles for staff who take on the responsibilities of being Disaster Reaction Manager and Disaster Reaction Team members.

Disaster Reaction Manager

A member of staff must be appointed to act as Disaster Reaction Manager, with responsibility for coordinating immediate disaster reaction and recovery, and managing disaster response teams. The Disaster Reaction Manager should be appointed on the basis of personal qualities, expertise and experience, rather than seniority. They must be a good team leader, be able to remain calm under pressure and have the confidence of other staff. They must be given the authority to

make their own decisions, including spending decisions for disaster preparation, prevention, reaction and recovery. Unless there is 24-hour security, the Disaster Reaction Manager must be a designated keyholder.

Disaster Reaction Team

Disaster Reaction Team members should be selected and organised according to their ability to work in teams; to work under instruction, but to be able to show initiative and flexibility; any specialist education or training they may have received (for example in conservation or health and safety); their ability to remain calm under pressure; their physical capabilities. Unless there is 24-hour security, any Disaster Reaction Team members must be authorised keyholders. Professional conservators should ideally be used as part of the Disaster Reaction Team.

In the event of a larger scale disaster, separate teams may be needed for protecting undamaged material, setting up temporary storage and drying areas, sorting damaged items according to type of material, damage and proposed conservation treatment, cleaning, drying, packing and removing items for storage or treatment.

Press Officer

Depending on what else is considered 'newsworthy' on the day, even a relatively minor disaster may attract media attention. Appoint a senior member of staff to act as Press Officer in the event of any media interest following a disaster, and ensure that any media enquiries are directed to that person. They should also take responsibility for informing clients and stakeholders such as the national heritage agencies, MLA *etc*.

Disaster Notification

The establishment of clear procedures for the notification of a disaster that are fully understood by all staff is crucial in the preparation for dealing with disaster.

Alarm Raising and Notification

Notices outlining procedures for raising the alarm should be displayed in prominent positions throughout the building. Also keep brief and easy to follow instructions for raising the alarm and lists of personnel to be contacted in the event of a disaster next to all telephones, and ensure that security staff and any staff working outside 'normal' working hours (such as cleaners) have copies of lists and instructions. Disasters often occur outside normal working hours and these staff may easily be the first to discover an incident.

Call out Lists

List names in the order in which they should be contacted with, for example, the Disaster Reaction Manager first. Include office telephone numbers, job titles and the departments or sections in which each Disaster Reaction Team member works. For Disaster Reaction Team members to be contacted outside normal working hours include home and / or mobile telephone numbers, addresses and whether or not they have their own transport. Keep these lists up to date, reviewing them quarterly and remembering to update lists held outside the organisation (such as by the local police force).

Ensure that this list is appropriately sized – there can be a danger of calling in too many people to help with a disaster, which can cause more harm than good.

Communication Pathways

Ensure that Disaster Reaction Team members keep copies of lists at home so that they can telephone other members as necessary. These lists should include notes on holidays and sick leave cover. Names might be arranged to reflect the telephone 'tree' (or cascade) system planned for use in an out of hours incident, or the hierarchy of command that would be followed in arranging recovery teams. An alternative is simply to list staff according to the distance of home addresses from the site so that one can gauge who should be phoned first if rapid assistance is needed, or, conversely, who will need the greatest warning if a team is to assemble at an agreed time.

Emergency Services Liaison

Names, telephone numbers and addresses of keyholders should be given to the local police force, while ensuring that this does not conflict with any organisational security policy regarding direct contact with the emergency services. These details may also be needed by others who might have cause to call out keyholders such as external security companies.

Training

A training programme must be developed, based around the contents of the Disaster Management Plan. This will encompass several levels of involvement in the disaster planning process. All staff should receive training, similar to that undertaken for Health and Safety procedures, covering reporting potential problems, raising the alarm, key personnel and the circumstances under which evacuation procedures would be implemented. It should be borne in mind that the archive's management may not be in control of the whole building when drawing up evacuation procedures. Once initial training has been completed, the training programme should become part of induction training for new staff. Regular training should also take place on the procedures for the restoration of ICT services in an emergency.

It is important that participation in the training programme and participation in teams is enjoyable, rather than a chore as this is a long-term commitment and as such is very vulnerable to changes in staff and fluctuating resources.

It should be noted that disasters which occur out of hours may well be discovered by non-archive staff, such as security or maintenance staff. These people should receive training based on the procedures for initial action on discovering a disaster. They should also be aware in advance of the need for prompt action in the event of all types of disaster, as a few wet books may not seem serious to a non-specialist.

Avoid key information being stored in just one person's head! If major illness or a serious accident causes key staff to be absent for an extended period, others at a similar level should be able to step in. Consideration should be given to training staff on tasks they would not normally undertake. They will also need sufficient time to maintain their new skills.

The importance of regular training cannot be understated, and collaboration with other organisations should also be emphasised. Having a network of local organisations with archive interests is very useful for the whole disaster management planning process – learning who has done what, who has what facilities, where can we call on local expertise if there is a problem *etc*.

Induction Training and Refresher Courses for all Staff

As part of induction courses

- all staff must be aware of procedures for raising the alarm and evacuating the building, including emergency exits, assembly points and who is responsible for ensuring that particular areas are evacuated
- all staff must be trained in the safe and effective use of fire extinguishers, but must be instructed never to tackle any fire at the risk of their own or anyone else's safety
- all staff must know that there is a written disaster management plan, be aware of their own roles and responsibilities in the event of a disaster, and know where emergency equipment and supplies are kept
- all staff must be aware who is responsible for building and equipment safety, and the procedures for reporting and chasing up any problems.

Refresher courses will be needed at regular intervals.

Annual Training of Disaster Reaction Team and Manager

Disaster Reaction Team members will need to receive more detailed training covering the roles of team members and the team's limits, when and where to seek advice and the work involved during a disaster scenario. These sessions should contain a practical hands-on element and a detailed tour of the building.

Training for managers who will have to co-ordinate the reaction and recovery in response to a disaster should include a simulated disaster (table-top exercise), to help them understand the processes involved. This will also help to reveal any weaknesses in the Disaster Management Plan, in advance of any actual implementation. In addition, training must cover the skills necessary for managing staff under great stress, as staff may find it unexpectedly upsetting and or exhausting.

Annual Review of Disaster Management Plan and Procedures Manuals

Wherever possible (*ie* where confidentiality will allow) procedures should be documented and stored in manuals. Manuals should be checked regularly for accuracy and currency, and updated where necessary. Any updates to the procedures manuals should be signed and dated. All holders and locations of manuals should be listed in the Disaster Management Plan.

Equipment

All staff must know that emergency equipment and supplies are available, where they are kept, who is responsible and where any keys are kept.

The Disaster Management Plan

The Disaster Management Plan itself is a crucial piece of equipment which should be held at a sufficient number of strategic points including locations outwith the building or buildings where the archive is held. A copy should also be kept inside each 'emergency box'.

Emergency Boxes of Disaster Reaction Supplies

It is essential to establish a stockpile of materials likely to be of use in a range of emergencies. These materials should be stored together, perhaps in a cupboard or wheelie bin. If a wheelie bin is used this must of course be VERY clearly marked and differentiated from bins for rubbish and recycling materials. Depending on the size of the building, a number of emergency 'boxes' should be established, although some organisations have dispensed with having boxes dispersed around the premises, but instead have a readily accessible store area.

Having appropriate emergency equipment available can contain the disaster and prevent damage to collections, and ensure that the Disaster Reaction Team can begin salvage work at the earliest moment.

Decide what emergency equipment to hold internally, what can be obtained from other departments within the organisation and what can be obtained (quickly) from outside companies. The supplies will need to be checked regularly and any faulty equipment replaced.

Disaster wheelie bins should be light enough and small enough for two people to move easily around the building, including up and down stairs. Do not use locks on the disaster bins, but use plastic tags or sticky labels on lids or doors that will break on opening. Check these regularly to ensure that the boxes or bins have not been opened or tampered with, and contents of all emergency boxes should be checked quarterly, as contents can go 'walkabout' and within a sealed environment mould can develop.

At an absolute minimum, an emergency box should contain a first aid kit, disposable waterproof gloves, cotton gloves, face masks, Wellington boots, hard hats and torches. A more extensive checklist of possible equipment is given in the Disaster Management Plan template that forms Appendix I. In addition, 'flight bags' containing protective clothing and emergency equipment can be kept in car boots of the Disaster Reaction Team.

Regular Review and Checks of Safety Equipment

All safety equipment should be reviewed and checked in line with makers' instructions. The date of safety checks should be recorded both on the equipment itself and in a central log.

Insurance

As part of the preparation phase of disaster planning managers should familiarise themselves with the insurance cover provided by their institution. If possible, talk directly with the insurers (although sometimes direct contacts can be resisted by the finance department) to discover

- the scope of the insurance
- whether the valuation of the archival material and other contents is realistic – as valuable / unique material the material itself may require separate insurance
- whether there is any limit on the value of single items covered
- the level of spending the Disaster Reaction Manager will be able to authorise in the event of an emergency
- any extra insurance needed to cover stock in transit or temporary storage or extra opening hours or emergency accommodation for readers and staff
- any extra insurance needed to cover hired equipment
- any extra insurance needed to cover staff working out of hours and or in a disaster situation.

The organisation's insurers should be contacted as soon as possible after a disaster is discovered. The plan should specify whether this is the responsibility of the Disaster Reaction Manager or whether it should be done through the finance department, in line with organisational policy. In the event of a major disaster the insurance company will appoint a loss adjuster to assess the institution's claim. The loss adjuster will usually offer advice and in some cases, will arrange for labour to help with heavy work unsuitable for Disaster Reaction Team members. If necessary, extra labour may also be obtained via agencies for tasks such as data entry.

Recovery Priorities

In the event of a disaster there will be very little time in which to make decisions. It is therefore essential that priorities for the salvage and recovery of the archival collections are set before the event and recorded in the written Disaster Management Plan.

Material with water soluble ink will need to be salvaged immediately if at all. Newspapers and cuttings also respond poorly to restoration and replacement should be considered where possible. If necessary, restoration should be left until last when staff will have had most experience of dealing with damaged material.

Once the stock worth salvaging has been identified, it should be prioritised, according to its value, uniqueness and function. The fragility of the item may also be considered. Priorities may be set for the archive as a whole and also for individual departments or areas, which may save time in the event of a localised problem. Priorities will have to be implemented flexibly, where access to the disaster area is restricted or where the extent of the damage varies. Remember to consider unique administration files *eg* personnel / financial as well as collection material. If possible mark the prioritised material in some way, but do not rely entirely on colour coding or marking as light levels during a disaster may be very low.

Temporary Accommodation

Make contingency arrangements for temporary accommodation which might be needed following serious building damage. It is important to make regular checks to ensure its continuing availability.

• • • • •

Reaction

Reaction involves raising the alarm, evacuating the building, instigating initial procedures and activities aimed at protecting undamaged materials, salvaging damaged materials and stabilising the environment.

Emergency Reaction Plan

The Emergency Reaction Plan is a key part of the entire Disaster Management Plan. This is a simple, straightforward set of instructions to guide reaction in an emergency situation. It should ideally form a single sheet which should be displayed in several locations around the building. Two examples of Emergency Reaction Plans are given in Appendix II, which could be used as models.

Emergency Services

Maintain close liaison with the emergency services if called. In the event of a fire, the fire officer in charge will decide when it is safe to enter the building. The police may control access to the building if a fire is being treated as suspicious. Remember that the emergency services prefer to deal with one person who has a good knowledge of the building and its contents and facilities.

Internal Teams

Personnel willing to be called on in a disaster situation must be identified and trained. The precise structure of the reaction teams will vary according to the needs and the resources of the organisation.

There must also be appointed a spokesperson or small team to field enquiries from the media, and any concerned relatives or members of the public. Statements should be prepared, and all staff and contractors should be made aware that all enquiries must be directed at the press officer. The press office should be informed, and liaison with them, and the emergency services if still on site, must take place prior to any discussion with the media.

Reaction Procedures

A series of appropriate procedures needs to have been established in the Disaster Management Plan.

On Discovering a Disaster

The alarm should be raised in accordance with instructions to staff written as part of the disaster preparedness activities.

These procedures will vary according to local conditions, but should include procedures for both during and outside opening hours, alerting the archive's chain of command, alerting other organisational departments (*eg* security), how to contact emergency services and the circumstances under which the building should be evacuated. The responsibilities and duties of staff members should be made clear. It should be noted that disasters which occur out of hours may well be discovered by security or maintenance staff who should have access to the procedures on discovering a disaster.

A suggested sequence of actions is:

- raise the alarm
- call the emergency services, as appropriate
- call the Disaster Reaction Manager
- initiate the building evacuation procedure

- begin appropriate steps to control the disaster if possible, though safety of people must take the highest priority.
  - turn off mains water supply
  - switch off electric current
  - turn off gas
  - close doors and windows
  - use hand-held extinguishers
  - use plastic sheeting to prevent further damage
  - take steps if possible to protect unaffected material that may be endangered
  - do not move items affected by water
  - there is no urgency to handle fire or smoke damaged items, unless they are wet or require to be moved
- Hand over to the Disaster Reaction Manager on their arrival

Disaster Reaction Manager

On arrival, the Disaster Reaction Manager will need to establish contact with those in control of the site, whether from within the organisation or from the emergency services. As soon as it is safe, the extent of damage must be assessed and the scale of response decided. If necessary other personnel from the list should be summoned and briefed.

Careful briefing of Disaster Reaction Teams is essential. Staff who have not previously experienced a similar disaster may find it unexpectedly upsetting and/or exhausting. Experience has shown that regular breaks are absolutely essential with a maximum work period of one and a half hours between breaks. Refreshments should be available as close as possible to work areas. The Disaster Reaction Manager will need to be on the look out for signs of shock or emotional problems amongst staff and react to them immediately by giving extra breaks or sending affected staff home. In some cases counselling may be provided by emergency services on the first day but after that it will be up to management to put in place measures to help staff cope with the aftermath of a disaster.

It is essential to establish a Control Point early on to act as clearing house for communications between the various teams who may be widely dispersed; for example suitable facilities for drying material or for the bibliographic team may be on another site. The Control Point staff should also monitor the rotation of Disaster Reaction Teams, their location within the disaster area and the work in progress.

When establishing a control point and a disaster recovery area, security must be carefully considered as items can go missing from the 'recovery area' if bystanders are able to get too close.

Depending on the scale of the disaster the Disaster Recovery Manager will need to implement the contingency plans laid to allow some level of service continuity during the disaster. In the event of a disaster affecting ICT, backups will need to be obtained from their safe storage location and procedures implemented to restore the service.

Even a minor disaster can mean hard and dirty work; make sure no one is allowed to put themselves in danger, and remember that staff need to know that their efforts are recognised and appreciated. Maintaining morale will become even more important however, should the scale of the disaster mean a prolonged recovery period. Following a more serious disaster, remember that staff will often have a deep personal attachment to collected material, and may experience a deep sense of loss. Staff can be affected for a considerable time after and they must have suitable 'debrief time'. It is important to develop a good, supportive team spirit to help staff come to terms with what has happened.

Disaster Reaction Teams

The reaction teams will have two functions – firstly to rescue any items prioritised in the plan or still under threat of damage, and secondly to recover the remaining collections.

On the Disaster Site

The team must be trained in the recovery process, *ie*: where vital records and collections are, how to handle them, where they should be moved; and a leader should be appointed who is able to stop the work if a threat of injury is apparent. One member of the team should log or photograph where records/collections are found. This is partly for insurance

purposes. The team should take regular breaks and change with another team where necessary, as salvage work is both dirty and tiring.

The team leader should take decisions on what can be salvaged or is worth salvaging, and also the type of first response action necessary prior to any long term action.

In the Sorting Area

Set up temporary work areas, for example clearing tables at which to work and space for air drying material. Organise appropriate emergency equipment and supplies.

Conservation expertise will already have been identified and consulted in the writing of the Disaster Management Plan, as part of the disaster preparedness activities. But if in any doubt, the Disaster Reaction Manager must take expert advice on handling and treating damaged materials – but they may have to decide between conflicting expert advice.

Having taken any necessary advice, the Disaster Reaction Manager will instruct staff to identify and separate materials according to their conservation requirements and degree of damage.

Make sure that proper records are kept and photos taken, and that there is a good stack of forms available as photocopiers may not work, especially if a wide area has been affected, as happened with the flood at Lewes which flooded the whole of the lower town in 2001.

In the Processing Area

Remove damaged items from the disaster area for conservation treatment. Keep a record of all items sent for conservation treatment, recording where they are sent, the date they are sent, the treatment required and their original shelf positions. Photocopiable recording forms should be included in the written Disaster Management Plan.

Terrorist Attack or Threat

Terrorist threats must always be taken seriously. Staff should always be on the lookout for any suspicious looking packages. If identified as a risk, a bomb or white powder threat procedure should be established.

Recovery

Recovery can be commenced only when all safety aspects have been taken into consideration following a disaster and (where appropriate) when the incident has been declared safe by the proper authorities *eg* Fire Brigade, electricity, gas and water boards, building control (structural safety), and in the event of any suspicious action the police and forensic services.

Staff safety is paramount.

Recovery Plan

A recovery plan must be drawn up once the risk assessment has been undertaken. The recovery plan will form part of the Disaster Management Plan, and must be held both on and off-site. The plan must be reviewed on a regular basis, and care will be taken to ensure that addresses and telephone numbers are up to date.

Although an attempt must be made to record items, time is better spent on salvaging archive material. Clerical work should be kept to a minimum. Where possible material salvaged should be recorded on a damage list. Each list should contain material of the same type, *eg* loose papers, volumes, files, photographs *etc.*

Although part of the list should deal with the degree of damage, its main purpose is to indicate what is damaged and where it can be located. It is therefore essential that the full reference together with the number are entered clearly and correctly.

Recovery of Damaged Material

In terms of overall guidance, involve conservators as soon as possible, work on high priority archival areas first, and generally freeze items that cannot dry within 48 hours, but consult a conservator – metal, plate glass, some photographs and wooden artefacts may be exceptions to freezing.

Recovery Techniques

Choosing the appropriate recovery techniques will vary, depending on the type of material damaged and the nature of the damage. Conservation advice should always be sought, although staff should not be introducing recovery techniques without the expertise of a conservator as potentially they could otherwise do more harm than good.

Air-Drying

Use a cool, low-humidity area with good air circulation. Place absorbent material (see **Interleaving**) under objects; replace it when wet. If possible, air dry materials on plastic racks (commercial bread trays or rust-proof screens) to increase evaporation. Exposure to light may reduce the threat of mould, but prolonged sunlight can cause fading of some materials.

Interleaving

Use blotting paper, unlinked newsprint, paper towels or waxed or freezer paper to prevent items from sticking together and prevent dye transfer or running.

Freezing

If objects cannot be dried within 48 hours, freeze them until action can be taken. Freezing stabilises material for months; it stops mould growth, ink running, dye transfer and swelling. A sub-zero commercial freezer is best, but a home freezer does work. Refrigerated trucks keep material cool enough to slow mould growth.

On-Site Dehumidification

Super-dry air is pumped into the building and moist air drawn out. A useful technique for damp paper archives *in situ*, and may be used to dry carpeting, walls and modern furnishings. Not appropriate for historic structures of wood or plaster as rapid drying leads to cracking of the wooden panels, joists, doors *etc* (English Heritage 2004).

Rinsing

Rinse dirty or muddy items under a gentle stream of clean running water or gently agitate in containers filled with water. Do not scrub; it drives dirt in deeper. Use a sponge or soft cloth to blot off mud and debris.

Vacuum Drying

Also called 'thermal drying', when items are dried in a vacuum chamber, often at temperatures above 40°C. This technique must be used with caution, as it accelerates ageing to organic materials and may cause damage to film media. It is widely available; although it is slower than vacuum freeze-drying, it is less expensive.

Vacuum Freeze-Drying

Items are dried in a vacuum chamber at below freezing temperatures to minimise swelling and distortion. This generally provides the most satisfactory results and is recommended for historic paper archives and glossy paper material.

Recovery of Damaged Material

Differently damaged material must be treated and recovered appropriately. Again, conservation advice should be sought when appropriate.

Fire-Damaged Material

Never touch papers or soot damaged books with bare hands, as the oil from skin combined with soot will leave fingerprints that are very difficult to remove. Be aware of the pattern of soot damage caused by airflow of the smoke – if papers were not neatly stacked before the fire, do not shuffle them together as you remove them. This will cause particles of soot to become further embedded in the paper and to damage papers that were not previously badly damaged. If the only damage to books or papers is external soot, it may be possible to remove most of it with a chemical sponge. Do not discard these when they become first dirty – the soot will continue to be absorbed until the middle of the sponge is black. To clean a book, hold it tightly closed and use a gentle stroking action in one direction away from the spine towards the fore edges. Continue wiping until no more soot can be removed without damaging the surface area.

To deodorise smoke damaged material, charcoal briquettes or bowls of baking soda can be placed in the area to absorb the odour. If a small number of books are affected, the books and charcoal can be placed in a closed box or other enclosure. Wait two or three days until the smell can no longer be detected.

Water-Damaged Material

Water damage is the most common form of damage to library and archive materials and a side effect of fire-based disasters. However, improved technology and awareness by the fire service has greatly reduced the amount of water damage which follows a fire. It is essential to work quickly as mould growth can be expected on the wet stock within 48 hours. In hot humid weather mould will appear in less than 24 hours.

Most water-damaged material should be frozen, ideally down to -18°C, as soon as possible (certainly within 12 hours), to prevent mould growth and further swelling/distortion. This is best done in a cold store (refrigerated trucks have difficulty freezing down to this temperature). Blast freezing is generally recommended, as this rapid cooling causes smaller ice crystals to form, with potentially least distortion in the material as it freezes. It is possible to take out call-off contracts with specialist suppliers of deep freezes, but remember that food processing/storage companies with blast freezers will not accept material that may have been contaminated with sewage – either hire container/trainer freezers or use ordinary trucks to transport rapidly to a specialist facility.

Frozen Material

If freezing has been used to consolidate material, it subsequently needs to be returned from this frozen condition. Frozen material must be handled very carefully when thawing and drying. To recondition vacuum dried and vacuum freeze-dried material, expose it to the store's environmental conditions for a few days, in the meantime handling very carefully. Then examine dried material carefully for damage and arrange repair or conservation treatment if necessary.

Recovery of different material types

Recovery techniques are presented here by types of archival material; they should be applied in order to stabilise and (if necessary) to dry the material.

Ceramic / Stone / Metal

Ceramic

Identify ceramic type and consult a conservator on drying procedures. If ceramic is broken, cracked or has mineral deposits or old repairs, place in a clean, transparent polythene bag until it can be treated. Seal the bag and monitor for mould.

Stone

If the stone object is smooth-surfaced, blot gently and air dry. If the object is rough surfaced or has an applied finish, do not blot but air dry on a plastic screen or clean towel.

Metal

Use gloves to handle any metal object. If the object has an applied finish, do not clean it. Allow it to air-dry, and keep any flaking surfaces horizontal. Rinse / sponge and blot many other metal objects before allowing them to air-dry.

Organic Materials

Bone, Shell and Ivory

Rinse; drain and blot to remove excess moisture and place on blotters on non-rusting screens. Air-dry slowly.

Leather

Rinse / sponge with clear water to remove any mud, then drain and blot to remove any excess water. Pad with towelling or uninked paper to maintain shape before air drying.

Botanical Material

Open specimen boxes and air-dry slowly. Rinse only if necessary; interleave and air-dry herbarium sheets and use presses if available.

Photographic Material

Remove photographic prints from plastic / paper enclosures or frames, saving all information about the photos. Carefully rinse with cool, clean water as necessary, but do not touch or blot surfaces. Air-dry by hanging with clips on non-image areas or lay flat on absorbent paper. Keep photographs from contact with adjacent surfaces or each other. If there are too many for immediate attention, either: keep photos (except historic photos) in a container of clean water for no more than 48 hours and then air-dry, or; freeze the photos, and if possible interleave each photo with freezer or waxed paper but do not freeze glass plate negatives.

Paper

Air-dry flat as individual sheets or small piles up to 5mm high. Interleave sheets and replace the interleaving when it is damp. Do not unfold or separate individual, wet sheets. If there are too many items for air-drying, interleave with freezer or waxed paper, pack papers or files supported and standing up in sturdy containers, packing containers only 90% full, and freeze the material.

Books

If rinsing is necessary, hold the book closed. If the book is partially wet or damp, stand it on its top or bottom edge with the covers opened to a 90° angle and air-dry. If the book is very wet, lay it flat on a clean surface and interleave less than 20% of the book with absorbent material and replace the interleaving when damp. If there are too many books to dry in 48 hours, wrap them in freezer or waxed paper, pack them spine down in sturdy containers and freeze.

Electronic Records

Recovery from an ICT based disaster may be a matter of restoring the system from backups. However, where theft or vandalism or other damage to hardware has occurred, new hardware may need to be ordered and assembled before backups can be used. Ordering of new hardware may be delayed by negotiations with the institution's insurers. Local procedures for service continuity will then have to be implemented for the intervening period.

Monitoring

It is essential to monitor the environment in the disaster area and adjacent accommodation and to take appropriate action.

Recovery Operations

It is necessary to keep a careful record, including a photographic record, of all parts of the recovery operation. Personnel and their work must be monitored, including contractors, throughout the reaction and recovery stages. Particular attention must be paid to keeping up-to-date lists of reference numbers, locations and packing box numbers of holdings that have been moved. This will eventually save a lot of time and effort!

Do not move material back into an affected area before the environment is at a safe level and storage systems are reinstated. Then continue to monitor recovered material that has been returned to the storage area for visual signs of deterioration for 12 months.

Building

Monitor both the structural safety and security of the building, seeking expert advice if necessary.

Environmental Conditions

All material that has been subjected to abnormal environmental conditions, however little affected, may be subject to dimensional change or micro-biological attack.

Ensure that environmental conditions such as temperature and relative humidity are stabilised at suitable levels before returning material to archival storage. Also ensure that shelves are clean, dry and free from mould.

Recovered Material

Items will need to be carefully checked on their return following conservation treatment. This involves checking that any conservation work has been carried out to agreed specifications.

Revision of the Disaster Management Plan

Each time the Disaster Management Plan is implemented, the procedures followed should be analysed and a report written on all actions taken during both the reaction and recovery period, stating when and why they were taken, assessesing the success of the operation and making recommendations for any necessary changes. All updates should be signed and dated by those responsible.

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Bibliography

Directly Utilised

Batchelor, K 1999. **Records Management: a guide to disaster prevention and recovery**. DISC PD 0013:1999. British Standards Institute.

BSI (British Standards Institute) 2000. **Recommendations for the storage and exhibition of archival documents.** BS5454:2000. BSI.

DADCC (Data & Archival Damage Control Centre) 1999. **Disaster Management Training: unpublished course notes prepared for English Heritage**. Data & Archival Damage Control Centre.

English Heritage 2004. **Flooding and Historic Buildings: Technical Advice Note**. English Heritage. online at http://accessibility.english-heritage.org.uk/Filestore/conserving/advice/Flooding%20TAN.pdf

Fernie, K & Gilman, P (eds) 2000. **Informing the Future of the Past: guidelines for SMRs**. English Heritage.

Longworth, C & Wood, B (eds) 2000. **Standards in Action: working with archaeology**. MDA.

M25 Consortium of HE Libraries 2001. **Disaster Control Plan Template** (rev. edn). M25 Consortium of HE Libraries. *online at* http://www.m25lib.ac.uk/M25dcp/ accessed March 8 2004.

Matthews, G & Eden, P 1996. **Disaster Management in British Libraries: project report with guidelines for library managers**. Library and Information Research Report 109. The British Library.

NICCP (National Institute for the Conservation of Cultural Property) 1997. **Emergency Response and Salvage Wheel**. National Institute for the Conservation of Cultural Property.

Perrin, K 2002. **Archaeological Archives: documentation, deposition and access – a way forward**. English Heritage.

Perrin, K *nd* **Centre for Archaeology Disaster Management Plan Pilot Study – Information Management and Collections**. Unpublished English Heritage document

Read, F 1997. **The Museum, Record Office and Historic Properties Emergency Manual**. East Midlands Museums Service & North West Museums Service.

RCAHMS (Royal Commission on the Ancient and Historic Monuments of Scotland). 2002. **Disaster Recovery Plan**. Unpublished RCAHMS document.

Society of Archivists (Scottish Region) 1996. **Disaster Preparedness: guidelines for Archives and Libraries**. Society of Archivists (Scottish Region).

Also consulted

Allwinkle, S. *et al* 1997. **Fire Protection Measures in Scottish Historic Buildings**. Technical Advice Note 11. Historic Scotland.

CCAHA (Conservation Centre for Art and Historic Artifacts) 1998. **Philadelphia Area Emergency Response Resources List**. Conservation Centre for Art and Historic Artifacts.

Dorge, V. & Jones, S. 1999. **Building an Emergency Plan**. The Getty Conservation Institute.

English Heritage 1993. **English Heritage Model Fire Safety Manual**. English Heritage.

FPA (Fire Protection Association). 1987. **Fire Prevention** *203*. Fire Protection Association.

Grove, M (ed.) 1990. **Emergency Preparedness and Response**. National Institute for the Conservation of Cultural Property.

NAC (National Archives of Canada) 1993. **Contingency Plan: disaster control organization**. National Archives of Canada & National Library of Canada.

NFPA (National Fire Protection Association). 1991a. **Recommended Practice for the Protection of Libraries and Library Collections** (1991 edn). NFPA 910. National Fire Protection Association.

NFPA. 1991b. **Recommended Practice for the Protection of Museums and Museum Collections** (1991 edn). NFPA 911. National Fire Protection Association.

NPO (National Preservation Office). leaflets and other publications at http://www.bl.uk/services/npo/publications.html

Appendix I Disaster Management Plan Template

DISASTER MANAGEMENT PLAN

Organisation: ……

Address: ……

……

……

Plan Compiled by: [name, position, responsibility]

Date: [date]

Revised by: [name, position, responsibility]

Date: [date]

etc.

Template adapted from Disaster Control Plan Template, © M25 Consortium of HE Libraries 1998. Revised 2001.

Prevention

Risk Assessment

Insert areas of vulnerability identified during the risk assessment and any remedial action, which has been / can be taken to alleviate the situation. Note the status of that remedial action.

Building / Equipment Maintenance

Insert maintenance routines. Note names, positions held, departments and contact details of those responsible for maintenance routines. Take regular temperature and relative humidity readings to ensure the availability of historic data to compare readings after a disaster. Written records signed and dated by those responsible should be kept in an appendix to the Disaster Management Plan.

Security Measures

Insert security routines. Note names, positions held, departments and contact details of those responsible for security routines. *NB* depending on the availability of the Disaster Management Plan this section may need to have restricted circulation.

Location of Collections

Note any remedial action necessary and its status. Note the special needs of archives and special collections. Once action has been taken, sections of the Disaster Management Plan may need to be updated (*eg* floor plans).

Suitability of Storage

Note any remedial action necessary and its status. Note the special needs of archives and special collections. Once action has been taken, sections of the Disaster Management Plan may need to be updated.

Fire Hazards

Note any remedial action necessary and its status. Note the special needs of archives and special collections. Once action has been taken, sections of the Disaster Management plan may need to be updated.

Procedures Manuals

Insert a list of manuals for key procedures and their locations.

ICT

Insert ICT backup and security procedures. Note names, positions held, departments and contact details of those responsible for ICT backup and security procedures. Note all holders and locations of ICT procedures manuals.

Preparedness

Written Plan

Disaster Management plan to be reviewed on or before: [date]

Member of staff responsible for review and updating is:

Name: .....

Position: .....

Updates should be sent to:

Disaster Reaction Managers (2 copies each).
Members of the Disaster Reaction Teams (2 copies each).
Site Managers.

Note locations of any other copies.

NB Any major revision of this plan should result in it being reprinted in its entirety.

Chain of Command

Disaster Reaction Manager
Name, position held, responsibilities.

Press Officer
Name, position held, department, responsibilities.

Disaster Reaction Teams
Name, position held, responsibilities.
Name, position held, responsibilities.
Etc.

Health and Safety

The archive should be closed and all personnel evacuated under the following circumstances:

- Fire alarm.
- Flood alarm (if appropriate).
- Bomb threat.
- Instructions from Emergency Services.
- Instructions from the Disaster Reaction Manager.
- Power failure.
- *Etc.*

Evacuation Procedures

Insert local evacuation procedures.

Insert emergency procedures for systems shut down (electricity, gas, water, ICT).

Training

Insert local training programme for staff by category *ie*: Disaster Reaction Manager, Disaster Reaction Team Members, all staff, staff from other departments *eg* Security or Estates, induction training for new staff.

Insurance

Company name, phone / fax no, contact.

Insert any restrictions placed or benefits available.

Insert necessary arrangements for extra insurance for stock in transit or temporary storage, extra opening hours or emergency accommodation for users and staff or for staff working under disaster conditions.

Archive Floor Plans

Insert Archive floor plans for:

- Fire exits, fire extinguishers, smoke alarms, sprinkler systems (where present), assembly points.
- Air conditioning systems (where present).
- Electrical, water, sewerage, drainage and gas systems; highlighting fuse boxes, stop cocks and isolation valves.
- Salvage priorities and the location of the emergency equipment bins and first aid boxes.

Salvage Priorities

Insert collection salvage priorities and the names of those responsible for each area.

ICT Priorities

Insert priorities for ICT service restoration.
(See also **Accommodation for Salvage Operations**).

Emergency Equipment

Select appropriate emergency equipment from the list given below and note quantities held. [It may make lists easier to manage and understand if the equipment is categorised by purpose *eg* initial response, cleaning & drying, packing *etc.*]. It will not normally be necessary to stockpile every item on this list. Arrange storage and note the precise location of the boxes or wheelie bins.

- ☐ Absorbent cloth
- ☐ Acid-free wrapping paper
- ☐ Adhesive tape & dispensers
- ☐ Aluminium foil
- ☐ Aprons (disposable)
- ☐ Archive quality boxes (empty)
- ☐ Back supports
- ☐ Barriers
- ☐ Batteries (in a range of voltages)
- ☐ Bin bags
- ☐ Blank paper
- ☐ Blotting paper
- ☐ Boiler suits
- ☐ Brooms
- ☐ Bubble-wrap
- ☐ Bucket
- ☐ Buckets (with mop wringers)
- ☐ Bulbs (torch)
- ☐ Bulldog clips
- ☐ Camera
- ☐ Cassette tape recorder or dictaphone (with batteries & tapes)
- ☐ Chalk
- ☐ Chemical sponges
- ☐ Claw hammer
- ☐ Cling film
- ☐ Clipboards
- ☐ Clothes pegs
- ☐ Cloths
- ☐ Clean copies of damage forms
- ☐ Crates (plastic, folding)
- ☐ Crepe bandages
- ☐ Crowbar

- [ ] Dehumidifiers
- [ ] Detergents
- [ ] Disinfectants
- [ ] Disposable aprons
- [ ] Distilled water
- [ ] Dust masks
- [ ] Dust pans
- [ ] Dusters
- [ ] Electric fans
- [ ] Extension cable
- [ ] Fan heaters
- [ ] Fans
- [ ] First aid kit
- [ ] Folding wallpaper tables
- [ ] Freezer bags
- [ ] Freezer labels
- [ ] Generators
- [ ] Gloves (cotton) (in a range of sizes)
- [ ] Gloves (heavy duty plastic) (in a range of sizes)
- [ ] Gloves (industrial) (in a range of sizes)
- [ ] Gloves (surgical) (in a range of sizes)
- [ ] Goggles
- [ ] Hacksaw (with blades)
- [ ] Hammer
- [ ] Hand held sprays
- [ ] Hard hats
- [ ] Hazard cones
- [ ] Hazard signs
- [ ] Hazard tape
- [ ] Highlighter pens
- [ ] Hygrothermograph
- [ ] J cloths
- [ ] Kitchen paper
- [ ] Knives
- [ ] Labels
- [ ] Labels (waterproof)
- [ ] Ladder
- [ ] Lamps
- [ ] Masking tape
- [ ] Masks
- [ ] Melinex sheets
- [ ] Mobile phones (with battery & charger)
- [ ] Mop
- [ ] Mylar film
- [ ] Mylar sheets
- [ ] Newsprint
- [ ] Notepad
- [ ] Nylon line
- [ ] Paint brushes (small & medium)
- [ ] Pamphlet boxes (empty)
- [ ] Paper clips (plastic)
- [ ] Paper towels
- [ ] Pencil sharpener
- [ ] Pencils (chinagraph)
- [ ] Pencils (HB)
- [ ] Pens (freezer)
- [ ] Pens
- [ ] Pen (permanent marker)
- [ ] Photographic chemicals
- [ ] Pliers
- [ ] Polaroid camera
- [ ] Polaroid film
- [ ] Polythene bags
- [ ] Polythene gloves
- [ ] Polythene sheeting
- [ ] Pumps
- [ ] Respirators (dust & mist)
- [ ] Rubber bands
- [ ] Rubber gloves
- [ ] Safety pins
- [ ] Scalpel and blades
- [ ] Scissors
- [ ] Screwdrivers
- [ ] Shoe covers
- [ ] Shovel
- [ ] Spanners
- [ ] Sponges
- [ ] Squeegees
- [ ] Stanley knife
- [ ] Stapler & staples
- [ ] Stockingette
- [ ] String
- [ ] Sun lamps
- [ ] Swarfega
- [ ] Sylglass
- [ ] Tabards (fluorescent)
- [ ] Tape (brown parcel)
- [ ] Tape (cotton)
- [ ] Tape (linen)
- [ ] Tape (waterproof packing with dispenser)
- [ ] Tape measure
- [ ] Tarpaulin
- [ ] Tie on labels
- [ ] Tools
- [ ] Torches (hand held)
- [ ] Torches (to fit on hard hat)
- [ ] Trimming knife
- [ ] Trolley
- [ ] Twine
- [ ] Vacuum cleaners (wet & dry)
- [ ] Walkie-talkies
- [ ] Washing up liquid
- [ ] Water containers with lids
- [ ] Waterproof clothing
- [ ] WD40
- [ ] Wellington boots (in a range of sizes)

Note on Personal Protective Equipment: All staff should be made very aware of the risk of contamination either from material in flood water, spilt chemicals or from mould which develops very quickly in the aftermath of a flood and they must wear protective clothing to cope.

Also be aware that some people can be allergic to items such as latex gloves and so have alternatives where possible identified in advance.

All items requiring an electrical supply, such as fans, dehumidifiers, extension cables *etc* should NOT be used after an emergency until the electricity supply has been checked by a qualified electrician and certified safe.

Suppliers of Emergency Equipment and Services

Identify suppliers of emergency equipment and services. Set up relationships or contracts as appropriate. List contact details and any authorisation or contract numbers.

- Disaster Recovery Specialists
- General Archival Stationery and Supplies
- Sources of Specialist Advice

  Insert details of your archive system suppliers for hardware and software.

  Insert details of conservators from within your institution.
- Removal Firms
- Specialist Equipment Suppliers

  (pumps wet / dry vacuums, fans *etc*.)
- Freezer Truck Hire
- Drying Facilities
- Photographic Conservation
- Microform Services
- Shelving

Emergency Ordering and Invoicing Procedures

Insert emergency procedures for placing orders and passing invoices.

Insert name and contact details of relevant finance officer.

Accommodation for Salvage Operations

Insert arrangements made for accommodating salvage operations.

Reaction

Procedures for Initial Action on Discovering a Disaster

- alert the Emergency Services as necessary
- dial (9) 999
- give precise details of the location and nature of the emergency and the help required
- during opening hours alert the most senior staff member on duty
- outside opening hours contact the Disaster Reaction Manager
- alert Security or Estates as necessary
- in the event of staff or visitors being 'exposed to serious and imminent danger' [Management of Health & Safety at Work Regulations 1992] evacuate the building, according to local evacuation procedures.

Contact details for key staff

Disaster Reaction Manager
Name, position held, contact details (to include work and home).

Press Officer
Name, position held, department, contact details (to include work and home).

Members of the *Disaster Reaction Team*
Name, position held, department, contact details (to include work and home).
Name, position held, department, contact details (to include work and home).
etc

Contact Details for Internal Departments:

Security	Name, position held, contact details.
Estates	Name, position held, contact details.
ICT	Name, position held, contact details.
Finance	Name, position held, contact details.
Catering	Name, position held, contact details.
Senior Management	Name, position held, contact details.

Initial Assessment of Disaster Situation

On arriving at the Disaster scene the Disaster Reaction Manager should:

1. Check that the procedures for initial action on discovering a disaster have been correctly followed.
2. Make contact with the emergency services if they are on site. Liaise over priority material and attempt to minimise water damage.
3. Make contact with organisational services if they have been called.
4. Set up a Control Point.
5. Gain access to the site as soon as emergency services deem it safe.
6. Assess the damage.
7. Contact and request the presence of Disaster Reaction Team members.
8. Contact other organisational departments as necessary.
9. Contact senior management as necessary.
10. Brief Disaster Reaction Team members as they arrive. Organise members into teams. Ensure regular breaks for rest and refreshment.

11 Break out emergency equipment and supplies as necessary.

12 Contact suppliers of emergency equipment and supplies.

13 As far as possible, stabilise the environment.

14 Remove electrical equipment once the power has been turned off.

15 Begin securing undamaged material as necessary.

16 Implement arrangements for accommodating salvage operations as necessary.

17 Begin salvage operations according to previously identified salvage priorities.

18 Ensure that Disaster Reaction Team Members do not become over-tired or otherwise affected by the work.

19 Have a photographic record made of the disaster site and work in progress. A video may also be made.

Guidelines for Disaster Reaction Team Members

Callout:

Wear several layers of warm old clothing and gloves

Wear Wellingtons or stout shoes

Bring a flask containing a hot drink if possible

Bring a small amount of cash

Don't forget your house keys!

On Arrival:

Do not talk to the press; refer all queries to the Press Officer.

Assemble outside the main entrance or as close to that as permitted by the emergency services.

Do not enter the building until instructed to do so by the Disaster Reaction Manager or your team leader.

Possible working conditions:

No ICT system, therefore manual record keeping

Surface water

No electricity, lighting or heating

Buckled shelves (if there has been a fire)

Material on the floor

Collections out of order

Equipment and furniture out of place

Broken glass

Strong draughts due to broken windows

Lots of heavy work……

Once work begins:

Take a break about once an hour, your team leader will organise this.

If you feel depressed or are having difficulty coping, inform your team leader. They will arrange a rest break or send you home.

YOUR SAFETY IS MORE IMPORTANT THAN ANY ARCHIVAL MATERIALS

Recovery

During the recovery phase the Disaster Reaction Manager should:

Operate procedures to allow access to undamaged stock as soon as possible. Oversee arrangements for alternative ICT facilities or study space as necessary.

Operate procedures to restore ICT from backup as necessary.

Oversee the conservation operation and arrangements for alternative storage facilities as necessary.

Arrange for the disaster area to be cleaned and disinfected as necessary.

Ensure that the restored stock and disaster area are checked regularly for mould for the next twelve months where water damage has occurred. Keep written records.

Collate lists of damaged and destroyed stock, equipment, furniture *etc* and prepare insurance claims.

Order replacement shelving, furniture and equipment as necessary. Consider redesigning an area (*eg* moving telephone points) if the re-fit allows.

Update inventories to reflect losses and new purchases.

Provide regular bulletins on progress for senior management, users and, if still necessary, the Press Officer.

Counselling

Insert local arrangements made to provide counselling for staff in the aftermath of a disaster.

Revision of the Disaster Control Plan

Appendix II Sample Emergency Reaction Plans

1 From Read, F (1997) ***The Museum, Record Office and Historic Properties Emergency Manual***, published by the East Midlands Museums Service and North West Museums Service.

TEN COMMANDMENTS

Don't panic!

Ring the appropriate emergency service, before doing anything else.

Contact others – staff members – as soon as you can, even before you know the full extent of the damage / threat; two heads are always better than one.

Protect yourself – wear appropriate protective / high visibility clothing.

Take no risks – in case of fire, nobody should enter any part of the site unless their presence is known (and approved) by the fire officer in charge.

Attempt no single handed salvage of damaged material. In your shock you may do something unwise, and perhaps irreparable. While you wait for professional assistance, concentrate on:

- establishing sorting areas
- protecting / removing undamaged material that is under immediate threat
- assessing the full extent of the damaged material

Confirm who will deal with press/media enquiries, in line with the pre-arranged plan.

Remove any items lying immersed in water to a dry place (except film negatives / microfilm / microfiches, which should be kept immersed in clean water once wet).

Do not assist any items to dry out (but allow water to drain off) until professional advice has been received. Do not artificially heat / blow salvaged material. Do not attempt to close wet books or to unfold wet documents – leave them as found.

Do not 'clean' or 'wipe' anything.

2 The ***Royal Commission on the Ancient and Historic Monuments of Scotland Disaster Recovery Plan***

Summary of procedures

In the event of an emergency or disaster

TAKE NO RISKS The safety of staff and public take priority throughout any emergency – in case of fire or damage to the building structure, nobody should enter any part of the building. A risk assessment should be completed by the Disaster Recovery Officer before staff enter the building or carry out any salvage operations. Wear protective clothing from the disaster boxes as required.

RAISE THE ALARM (if FIRE) and start RCAHMS evacuation procedures

CONTACT THE DISASTER RECOVERY CO-ORDINATOR as soon as you can, even before the full extent of the damage / threat is known.

ATTEMPT NO SINGLE-HANDED SALVAGE of damaged material.

While you wait for professional assistance concentrate on

- protecting / removing undamaged material that is under threat
- establishing salvage sorting areas
- assessing the full extent of the damaged material

IN THE EVENT OF A WATER RELATED DISASTER REMOVE ANY ITEMS LYING IMMERSED IN WATER to a dry place (except film negatives / microfilm / microfiches, which should be kept immersed – but will be put into clean water by conservator and kept wet)

DO NOT ASSIST ANY ITEMS TO DRY OUT, but allow water to drain away and the object will dry naturally. Do not attempt to close wet books or unfold wet documents – leave them as found.

DO NOT 'CLEAN' OR 'WIPE' ANYTHING without the guidance of a conservator.

REFER TO DISASTER REACTION PLAN for more detailed guidance.

Appendix III National Occupational Standard AJ8: Assess risks and develop a disaster plan.

National Occupational Standards (NOS) in archaeological practice have been developed to establish benchmarks of performance in all areas of archaeological work. They include one NOS Unit, comprising three Elements, that is directly relevant to disaster management planning. The content of the NOS Unit sets out how disaster management planning can be identified as a work role and how competence in this can be demonstrated.

AJ8 Assess risks and develop a disaster plan

Elements

AJ8.1 Conduct a risk assessment
AJ8.2 Develop a disaster plan
AJ8.3 Implement disaster readiness measures

Unit Commentary

Part of any organisation's contingency planning should be the development of disaster plan. In order for organisations to be disaster-ready they need to be prepared. This unit covers conducting a risk assessment, developing a plan to minimise effects of a disaster and implementing a number of steps that ensure that the organisation is ready to react to a disaster.

AJ8.1 Conduct a risk assessment

Performance Required

This will involve:

- Identifying potential disasters, building weaknesses or potential weaknesses
- Identifying the implications of any action to mitigate the disaster, including the threats posed
- Identifying and costing potential solutions
- Identifying actions that could be taken immediately to minimise the effects of potential disasters
- Obtaining specialist advice where necessary
- Analysing and recording the suggested response to potential disasters

Occupational Context

Potential disasters include

- Fire
- Flood
- Explosions

Knowledge Requirements

You need to know about:

- The appropriate service intervals for electrical equipment and building systems
- Where specialist advice could be sought
- The potential disaster that could occur

The limits of personal responsibility in a disaster situation

The level of risk associated with different disaster responses

AJ8.2 Develop a disaster plan

Performance Required

This will involve:

Describing the threats posed to the organisation from potential disasters and the likely response to those disasters

Identifying different models of disaster planning

Consulting with specialists where necessary

Describing how the identified threats can be minimised

Producing a written disaster plan

Outlining potential rescue opportunities in the event of a disaster and the procedures that should be followed

Listing all the resources that may be required along with details of where they are located

Outlining the command structure in the event of a disaster

Identifying secure off-site locations for critical information and resources

Occupational Context

Potential disasters include

Fire

Flood

Explosions

Models of disaster planning

Immediate response

Strategic

Documented / interpreted

Published and disseminated

Protected

Knowledge Requirements

You need to know about:

Understanding of potential disaster

The vulnerability of the organisation to different disasters

How the response to one disaster can create further problems

The implications of disasters occurring out of hours

What constitutes a disaster

Organisational activity in response

The types of information that should be kept securely, off-site

Why the command structure would be different in the event of a disaster

AJ8.3 Implement disaster readiness measures

Performance Required

This will involve:

- Implementing actions that could be taken immediately to minimise the effects of potential disasters
- Obtaining specialist advice where necessary
- Providing a store of resources for use in a disaster
- Communicating disaster plans to those with responsibilities under the plan
- Conducting simulated disasters to test the effectiveness of the disaster plan

Occupational Context

Potential disasters include

- Fire
- Flood
- Explosions

Specialist advice

- From disaster experts
- From experienced professionals
- From risk assessment consultants

Knowledge Requirements

You need to know about:

- The appropriate service intervals for electrical equipment and building systems
- Where specialist advice could be sought
- How all contingencies have been explored
- How the simulations have tested the effectiveness of the plan
- What resources and rescue materials would be required
- Why disaster simulations are important

Archaeology science Cultural archaeology Archaeology resource management. Archaeology Science. â€¢ Diverse, involves chemistry, physics, biology and geology â€¢ Uses science to help us understand the past â€¢ Science uses the past to understand the present (e.g. DNA research). Cultural Archaeology.Â 1. Reduction in space/funding available for archaeological archives 2. Reduction in levels of curatorial expertise 3. Archaeological contractors not always able to deposit completed archives in museums. History and The Role of Museums. Key phases: â€¢ From ancient Greek â€¢ Renaissance - accumulation of objects, art ect.. â€¢ Geomatics Solutions For Disaster Management. Item Preview. > 0.25x 0.5x 0.75x 1.0x 1.25x 1.5x 1.75x 2x.Â Geomatics Solutions for Disaster Management. Addeddate. 2019-02-07 19:20:55. Disaster management planning for archaeological archives. Published September 2004 by the Institute of Field Archaeologists SHES, The University of Reading Whiteknights, PO Box 227 READING RG6 6AB. ISBN 0 948393 90 4. Produced on behalf of the Archaeological Archives Forum Designed by Sue Cawood. Copyright Â© Institute of Field Archaeologists. Acknowledgements. The Author Kenneth Aitchison is Head of Professional Development at the Institute of Field Archaeologists. He is a member of the Archaeological Archives Forum. Disaster management has, 13 Assessment of Archaeological Collecting. however, been addressed by an IFA paper for the AAF: Disaster Management Planning for Archaeological Archives (2004; available on-line at www.archaeologists.net), although being pre-recession it is principally aimed at dealing with such events as fire, flood and theft rather than bankruptcy. The IFA has also produced a Note for Administrators and Liquidators of Archaeological Organisations on its web site which alerts an administrator or liquidator to some very particular considerations in respect of archaeological contractor A disaster which threatens the archives themselves may well also pose a threat to the safety of staff and service users. For this aspect, archives should consult official fire safety guidance or the relevant contacts in their parent institution.Â Preventing or responding to a disaster may have significant resource implications, and some level of involvement at senior management level is vital Disaster planning will be more effective if it links to wider policies and processes within the parent organisation All staff members will need at least basic awareness of what is being done Where archival institutions share premises or sites with their. parent body or other organisations, these should as far as possible be involved in the planning process. Last updated March 2010. Page 2 of 4.