DOs and DON'Ts of salvage

Assessment
What format?
How much?
How wet?
How did it get wet?
When did it happen?

Salvage triage choices

Unaffected material
Should be protected from getting damp or wet.

Dry immediately
Preferred option for all wet material. But if circumstances prevent dealing with all material, **prioritise** items at risk of:

- sticking together (e.g. photos, coated papers, drafting cloth);
- data loss (e.g. computer media); some photographs; shellac/acetate records
- bleeding media (such as soluble inks);
- distortion (such as parchment, vellum or leather bindings).

Immediately freeze
If items that require drying immediately are not able to be treated, because of space, quantity, logistics, security etc. Not all items are suitable, such as CDs, DVDs, sound media, colour transparencies and some other types of photographs.

Cold storage (then dry within 48 hours)
Cool storage will help prevent uncontrolled drying and mould developing.

Wet storage (then dry within 48 hours)
Some wet photographic material can be kept in clean water for up to 48 hours before drying.
Floppy disks, sound and video tapes, microfilms may also be kept wet.

Freeze within 48 hours
If it becomes apparent that items awaiting drying will not be treated within 48 hours, freezing should be arranged. Not all items are suitable for freezing.

DOs and DON'Ts of Salvage

BOOKS GENERAL	
DOs	**DON'Ts**
Prioritise leather/vellum, coated papers and wet/partially wet books for treatment; damp books can be kept cool in a dry environment for a short time before drying	Remove covers
Remove items from a shelf (push rather than pull the volumes) to stop pressure from swelling of wet items; use minimal force	Rub surface
Wash off noxious contaminants in a slow stream of water if possible, holding the book gently closed, foredge down to avoid wetting the pages	Press water out
Separate with non-stick paper or secure snugly in polythene bag if freezing (especially if dyes are leaching or spines/boards are off); any distortions on packing will be permanent if books are then vacuum freeze dried	Force book closed if open, or force open if closed
Pack spine down one layer deep or pack open books as found	Place interleaf all the way into the fold or over stuff with interleaving (unless coated paper), it will strain the spine
Remove dust jackets and treat as for 'single paper sheets'	Allow coated papers to begin to dry without separating [freeze or interleave *each page* with non stick paper to dry]
Freeze if too many books to dry in 48hrs	Aim fans directly at materials

SATURATED BOOKS	
DOs	**DON'Ts**
Stand upright on absorbent paper in a moving current of air, open just the covers slightly; put absorbent paper between cover and textblock only (pages are weak at this point). Change absorbent paper frequently and alternate resting on head and tail. Put blotter/Museum Board at the foredge to aid drainage of water	Try to fan very wet pages as they are likely to tear
	Aim fans directly into the textblock

PARTIALLY WET BOOKS	
DOs	**DON'Ts**
Protect wet/damp covers from dry insides with absorbent paper	
Interleave partially wet books with book lying flat on absorbent paper; interleaf about every 20 pages, starting at the back; absorbent paper should extend beyond edge of book to wick water out	
Change absorbent paper once wet and change the interleaf position each time; turn the book over with each change of interleaf	

DAMP BOOKS	
DOs	**DON'Ts**
Protect damp covers from dry insides with absorbent paper	Re shelve books unless completely dry
Air dry damp books upright and fanned until almost dry (this can take several days), put absorbent paper between damp boards and book	Aim fans directly into the textblock
Reshape and press almost dry books with light weight on top and absorbent paper under cover	

PAMHLETS/SMALL BOOKS	
DOs	**DON'Ts**
Interleave wet pamphlets with absorbent paper s until dry enough to fan out or hang	Remove covers
Hang damp pamphlets to air dry over a line	Allow coated papers to begin to dry without separating [freeze or interleave each page to dry]

OVERSIZE BOOKS	
DOs	**DON'Ts**
Use a support during handling and keep horizontal	Pack larger books on top of smaller books
Separate with non-stick paper if freezing and pack flat in crates, no more than 3 high or shrink warp onto boards if too big for crates	
Dry as for 'partially wet books'	

LEATHER AND VELLUM BINDINGS	
DOs	**DON'Ts**
Prioritise immediately; seek advice on drying rare or leather and vellum bindings from a book conservator	Allow unrestrained drying (results in shrinkage and distortion)
Freeze quickly if air drying not possible	Vacuum freeze dry illuminated or gilded bindings
Separate with non-stick paper or secure snugly in polythene bag if freezing – this can reduce distortion	
Pack spine down for freezing one layer deep	
Air dry slowly and monitor closely (this should be done by a conservator)	
Prioritise the textblock (unless the binding is more important)	
Put absorbent paper between covers and textblock to dry and sandwich outside of binding between absorbent paper, lay flat and weight the book to reduce distortion (this should be done by a conservator)	

PRINTS/WATERCOLOURS	
DOs	**DON'Ts**
Separate from mounts if possible	Mix up components
Support larger items with boards, bondina when transporting or packing	Touch surface or blot if soluble media
Handle glass with care, wet glass is slippy, use suitable gloves	Separate fragile sheets
Keep coated papers wet, e.g. posters, until can be frozen or separated and dried	
Spray wash dirt from the surface of items with stable media	

FRAMED ITEMS	
DOs	**DON'Ts**
Transport vertically	Hold frames by the top frame member
Pack image to back; separate with foam/bubble wrap (bubbles facing backboard) and pad crate	Remove items stuck to glass
Dry face down if stuck to glass	Freeze framed items (except if unavoidable e.g. damage in the 1000s)
Unframe if not stuck to glass	
Dry horizontal and face up	

SINGLE PAPER SHEETS	
DOs	**DON'Ts**
Separate if air drying. Leave in a block if freezing and pack flat	Handle without support if wet
Support on polyester sheets to separate, wet paper is very fragile	
Leave paper in containers/folders if freezing; interleave if dyes are leaching	

PARCHMENT AND VELLUM MANUSCRIPTS	
DOs	**DON'Ts**
Support pendant seals	Leave wet – parchment and vellum will disintegrate
Immediately freeze or air dry in a cool, dry environment to stop mould developing	Vacuum dry illuminated or gilded manuscripts
Enlist the help of a conservator	

MAPS AND PLANS	
DOs	**DON'Ts**
Interleave with non-stick if coated paper, e.g. map cloth/linen	Handle without support if wet
Dry flat if possible	Rub or blot media
Support around rolls, with polythene, or on boards	Handle large items on your own, work in pairs

ROLLED FILM (MICROFORM, MOTION PICTURE FILM)	
DOs	**DON'Ts**
If only the film can is wet wipe dry	Try to treat onsite-recovery is for specialists
Ideally keep wet film wet in plastic bins or bags of cold water (c.5 degrees C)	Remove films from their containers (unless they are dry)
Arrange immediate transfer to a specialist lab for processing	

MICROFICHE	
DOs	**DON'Ts**
Preferably freeze and vacuum freeze dry [can be kept wet for 48 hours]	

RECORDS (SHELLAC, ACETATE, VINYL)	
DOs	**DON'Ts**
Prioritise shellac and acetate discs for air drying as they are water sensitive	Freeze discs
Remove wet storage boxes and (carefully) record sleeves	Jolt crates of records during handling – the discs are fragile
Try to keep track of sleeves/labels	Mix different sizes/types together or

separated from discs	overfill crates/boxes as they can get heavy
If labels get detached mark centre of disc with a Chinagraph pencil for ID	Rinse chipped or broken records
Keep discs vertical and hold by their edges	Rinse different types of disc in the same container
Pack upright in boxes/crates lined with Plastazote; use foam to intereave every 25 discs	
Wash off dirt in trays of distilled water (minimise water contact for shellac and acetate discs)	
Gently blot along the grooves with a lint free cloth if necessary	
Air dry upright (e.g. in a plastic covered rack) in a dust free place	
Dry sleeves/labels as for 'single paper sheets'	

MAGNETIC MEDIA: SOUND AND VIDEO RECORDINGS (REEL TO REEL TAPES, VIDEO, AUDIO CASSETTES)	
DOs	**DON'Ts**
Prioritise salvage in this order: unmastered originals, masters, older copies	Waste time recovering if other copies available
Rinse dirty/contaminated tapes in clean water (disassemble casings first)	Freeze
Keep wet in individual plastic bags and store vertically or immerse in cold water c.5 degrees C (if label inks and adhesive stable) and call a specialist recovery firm	Remove from the reel
If only casing is wet air dry on absorbent paper/unprinted newsprint	Wet tapes more than they already are if possible
Dry paper enclosures as for 'single paper sheets'	

CDS AND DVDs	
DOs	**DON'Ts**
Remove wet disks from cases before air drying	Waste time recovering if other copies available
Hold disk by outer edges and pack vertically	Freeze
Rinse dirty disks with clean water [can also be blotted gently with a lint free cloth]	Rub or scratch the disk during handling
Air dry vertically (e.g. in a plastic dish rack)	
Dry paper enclosures as for 'single paper sheets'	

GENERAL	
DOs	**DON'Ts**
Ventilate and dehumidify drying area (get rid of sodden carpets and furniture to reduce ambient humidity)	Use heat to dry items (causes distortion) or heat a drying area (mould may develop)
Create as many flat surfaces as possible and set up wind tunnels; think how space can be used in all its dimensions	Rush into salvage operation - plan and prepare
Use newsprint, paper towels and absorbent paper to absorb water	Spend too much time on individual items- the aim is to salvage the collection as a whole while minimizing damage
Air dry items within 48 hours or freeze if suitable	Handle more than one item at a time
Prioritise drying of damp and partially wet items and unstable materials then move on to smoke and fire damage	Dry wet blotters or keep wet packaging in the drying area, it will generate humidity
Prioritise freezing of: mouldy items, coated papers, water soluble inks, leather and vellum – preferably use a blast freezer to keep ice crystals small and speed up freezing	Rub items dry, pat
Rinse wet, dirty items with clean water	Write on wet paper
Keep items in order	Blot bleeding inks
Segregate by media type/damage and label crates/boxes accordingly	Dry in direct sunlight
Wear close fitting gloves	Leave wet items in plastic bags for long without freezing or drying
Reward and praise staff	Handle mouldy items without specialist PPE (FFP2 mask, goggles, gloves etc.)
	Over pack crates (wet materials can be heavy!), check for weight and crushing of contents
	Handle sewage contaminated material without advice

Drying Methods for Paper-Based Materials

AIR DRYING	
Material is dried in a suitable, secure space. The temperature should be less than 18 degrees C and RH around 50% (no more than 60% to prevent mould). Fans are used for ventilation and dehumidifiers can reduce the RH. Collections can be spread on absorbent materials (e.g. blotter, paper towels, unprinted newsprint) on flat surfaces (floors, tables). Stacked bread crates and lines of twine or fishing line can create extra drying capacity.	
PROS	**CONS**
Suitable for small numbers of damp or partially wet books	Demands lots of space and labour so contingent on availability of suitable space and sufficient staffing
Preferable for photographic materials	Bindings can distort
Can be done in-house so materials remain accessible	Coater paper likely to 'block' if not interleaved or separated
	Soluble media will bleed
	Risk of mould developing
	Unsuitable for large quantities of material

VACUUM FREEZE DRYING (FREEZE DRYING)	
Frozen material is dried in a vacuum chamber at temperatures below 0 degrees C. Heat is introduced and a vacuum pulled. Ice crystals in the material turn into vapour without melting first (sublimation)	
PROS	**CONS**
Stops bleeding of soluble media, 'blocking' of coated paper (if frozen within 6-8 hours) and further distortion of bindings	May not be suitable for rare or valuable bindings
Good for large quantities of wet material	May change the thickness, brightness and mechanical properties of parchment and vellum
Cannot be done on-site and small chamber size makes it time consuming so materials are inaccessible for an extended period	Unsuitable for gilded or illuminated manuscripts or documents with seals
Materials are usually frozen first and transported to the vacuum freeze drier	Reduced risk of distortion
	Mud, dirt and soot rise to the surface and can be cleaned afterwards
	Can be used for smoke odour removal
	Relatively expensive – this may be offset by reduced necessity for rebinding

VACUUM THERMAL DRYING (VACUUM DRYING)	
Wet or frozen material is put in a vacuum chamber at temperatures above 0 degrees C. A vacuum is drawn along with a heat source. This process may be repeated	
PROS	**CONS**
Suitable for records of low intrinsic value	Materials stay wet during this process so causes distortion, media to solubilise and bleed, adhesion of coated paper and photographs etc
More cost effective than air drying	Rebinding will be necessary afterwards
	Relatively expensive

FREEZER DRYING (FREEZE DRYING)	
Damp or partially wet materials are packed in permeable containers and dried in a self defrosting blast freezer for months. Water sublimates into a vapour that is removed in the defrost cycle.	
PROS	**CONS**
Cheap on a per item basis	Only suitable for damp and partially wet materials
	Very slow process (several months)
	Can cause bindings to distort
	Coated paper can adhere

DESSICANT DEHUMIDIFICATION	
Materials are left in situ on-site and dried by large commercial dehumidifiers.	
PROS	**CONS**
Good for large quantities of material of low intrinsic value and for wet furnishings	Soluble media will bleed, coated papers 'block' etc
Eliminates costly packing and moving materials off-site	Unsuitable for collections of high intrinsic value
	Must be initiated in first 24 hrs or so
	Dessicant dehumidification may be too rapid for historic structures which require slow, controlled drying to reduce stress in the building fabric [research underway at Centre for Sustainable Heritage]