

## Guidance Note No.2: Putting out small fires and the use of extinguishers in historic buildings, museums and religious sites during times of Armed Conflict

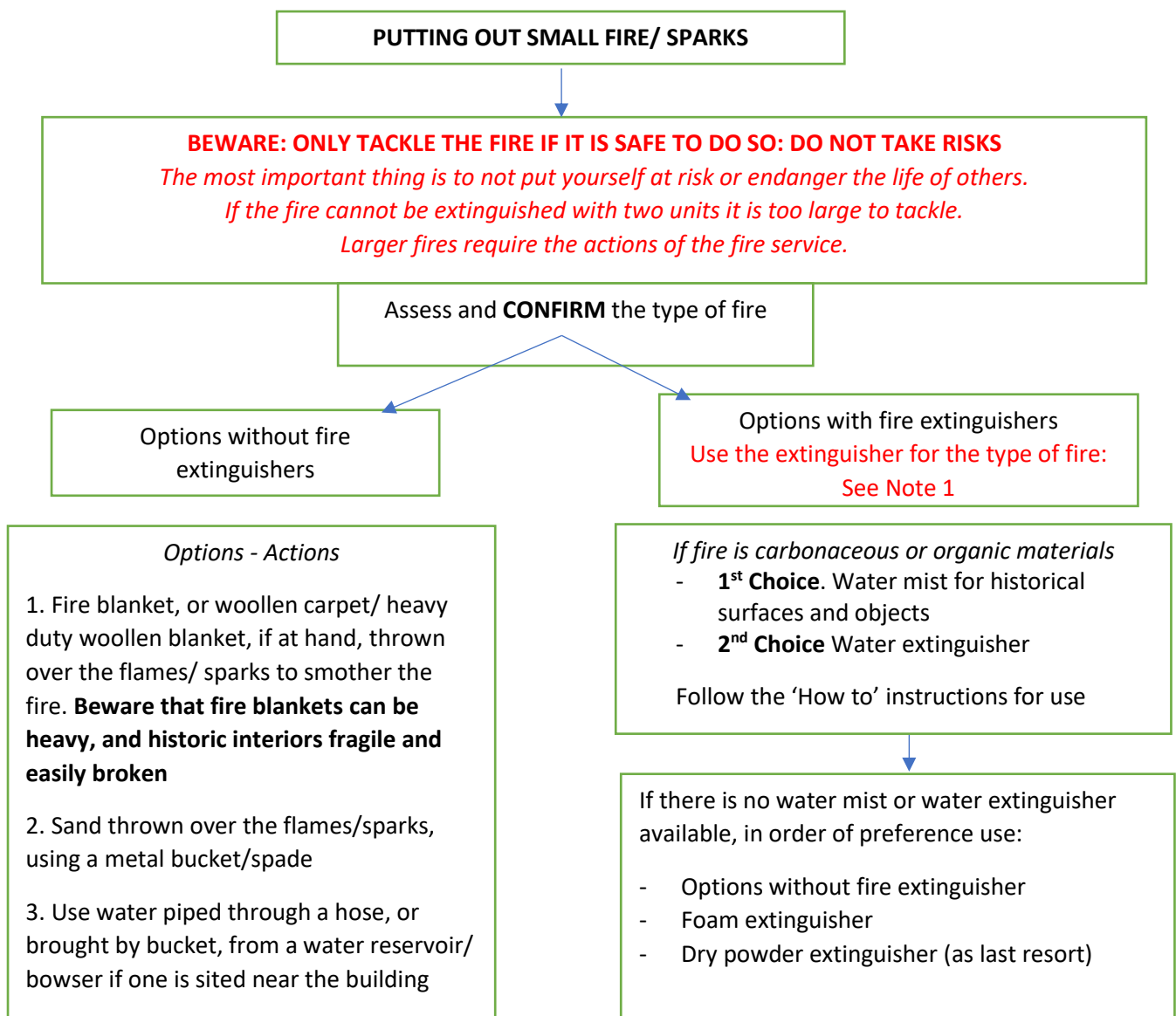
This is a brief Guidance Note on methods for putting out small fires at sites with significant cultural property during times of armed conflict. It should be read with the accompanying 'How to' Note on first response and the safe use of fire extinguishers. It does not replace standard procedural guidance. Additional advice is available on the first aid and recovery of collections and buildings following a fire, to minimise collateral damage from water. For use of fire blankets see *Icon Guidance Notes: No 1: Protecting Iconostasis during times of Armed Conflict*.

### Extinguisher options in order of preference (see NOTES overleaf)

1. **Water mist (with no additives)** – Most suitable for buildings with significant and fragile interiors; least damaging to fragile surfaces and collections, including porcelain, artworks and printed material.
2. **Water** – next best
3. **Foam**
4. **Dry powder** - most damaging and corrosive. Do not use in historic interiors, if at all possible.

*'it is important to remember that in an incipient fire situation, not using an extinguisher is likely to have more damaging repercussions than using an available extinguisher, even if it is not the ideal type'*

Jensen and Sommer-Larsen, 2006



## ADVANCE PREPARATION – always take preventive measures where possible:

- **Check** fire alarm systems
- **Restrict** potential for spread. Remove combustibles and clear space around fixed collections so fire is less able to travel. Isolate power supplies, close doors, windows, and operating ventilation systems.
- **Appoint** fire wardens, if volunteers are available, to keep watch over building - provide with instructions.
- **Acquire** fire extinguishers. If water mist extinguishers are not available, then standard hose reels, water buckets or water extinguishers may be used on normal combustibles.
- **Prepare** metal buckets of clean, dry sand and place in the building; create reservoirs/ tanks of water using tanks or bowsers, and position near the building.
- **Collect** available emergency material supplies for first response - store in an accessible, ancillary building.
- **Train** those who are likely to be first responders in the use of equipment.
- **Record** your site with photographs. Include overall images of whole spaces, walls, doors, ceilings, and floors, as well as key details. Ensure photos are digitally backed up or copied. Video clips are also useful.

## NOTES ON EXTINGUISHERS

1. There are five main types of extinguishers, for which the standard industry guidance for use is as follows:
  - **WATER/WATER-MIST:** flammable solids, such as wood, paper, and textiles
  - **FOAM:** flammable liquids (petroleum products, paints, solvents, and thinners) and liquefiable solids (such as wax, butter, tar, and car tyres). [Can also use SOME water mist extinguishers. CHECK SUPPLIER'S DETAILS.]
  - **DRY POWDER:** electrical type fires caused by flammable/combustible gases (natural gas, LPG, acetylene). Do not fight these fires but try to isolate gas supply. Health and safety risk of inhaling the powder. Not recommended for indoor use. [Can also use SOME water-mist extinguishers. CHECK SUPPLIER'S DETAILS]
  - **CO2:** flammable liquids and electric fires. Extreme care required if using in a confined space. Can also use a water mist extinguisher which is marked as safe for use on live equipment.
  - **WET CHEMICAL:** cooking oils and fats
2. Research shows that water mist fire extinguishers are the least damaging for most materials found in historical interiors and historical items, including paintings/painted surfaces. The use of water mist fire extinguishers, and water extinguishers without additives is advised. Some foams are acidic and can damage historic surfaces (e.g. can adhere to polychrome) but are less damaging than the discharge from powder extinguishers. Powder from dry powder extinguishers is the most damaging, discharges over a large area, and when damp/wet the powder is corrosive, and forms concretions once dry. CO2 extinguishers are not efficient on wool or textile. The CO2 is discharged from gas under pressure and the 'frost' effect is more damaging to paintings than water mist.
3. CHECK SUPPLIER'S DETAILS. Many water mist extinguishers when purchased are filled with deionised water. Some can be refilled with normal water. CAUTION: for these extinguishers if deionised water is scarce, once filled with normal water (which conducts electricity) it MUST NOT be used to put out electrical fires. If there is a choice, buy a stored pressure water mist extinguisher, which is lighter, and simpler to inspect and maintain than a cartridge extinguisher (i.e., no cartridge that needs to be changed).

## PRIMARY REFERENCES

- Kjølseth Jernæs, N. and Teijgeler, R. (2022) *Guide on Historic Buildings and Fire in War-affected Countries*, representing the [Norwegian Institute for Cultural Heritage Research](#) (NIKU) and [Heritage for Peace](#)
- Kidd, S. (2017), *Overlooked Asset: a reappraisal of portable fire extinguishers - a new outlook on their value in heritage protection and beyond*, *Fire and Risk Management Journal*, November, pp.30-35.
- Benfer, M. et al. (2016), [Impact of Fire Extinguisher Agents on Cultural Resource Materials FINAL REPORTS \(Quantitation & Assessment\)](#), Fire Protection Research Foundation ([Exec Summary](#)) [Accessed 19.04.2022]
- Jensen, G. and Sommer-Larsen, A. (2006) [Manual Fire Extinguishing Equipment for Protection of Heritage](#), Riksantikvaren the Norwegian Directorate for Cultural Heritage and Historic Scotland. [Accessed 19.04.2022]

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