

A STRATEGY FOR DISASTER MANAGEMENT IN THE BUILT ENVIRONMENT



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ABOUT PERSES

PERSES was formed in 2013 to provide consultancy services and training courses to the specialist demolition and asbestos removal sectors. It has since moved into providing health and safety advice and training courses to all sectors, including temporary works, safety awareness for construction, occupational health and safety, as well as demolition works.

PERSES is primarily a demolition consultancy with experienced demolishers working within the business capability and as a company and staff, has significant experience in dealing with disasters and other types of crises.

RESEARCH TEAM

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ABOUT THE IDE

The Institute of Demolition Engineers (IDE) exists to promote and foster the science of demolition engineering.

The main objectives include the:

- promotion of use of more efficient techniques in the industry
- encouragement of safer methods of working
- provision of a qualifying body for the industry

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1. OVERVIEW

1.1 PURPOSE OF THE DOCUMENT

This document aims to propose a strategy for managing disasters that afflict the built environment in the UK, and to highlight the role of the demolition industry in the process.

1.2 TARGETED AUDIENCE

This strategy is principally aimed at demolition contractors, local authorities, emergency services, Health & Safety Executive, government, and decision makers in the UK.

1.3 BENEFITS OF THE PROPOSED STRATEGY

The proposed strategy sets out a broad step-by-step procedure to abide with in case a disaster occurs in the built environment. The strategy lays out the role of the government before the occurrence of a disaster by engaging with demolition contractors and emergency services in the UK. While the strategy articulates that health and safety must dictate all decisions, it also considers sustainability once the disaster is over.

1.4 WHY THE DEMOLITION INDUSTRY?

We deem the demolition industry to be the most qualified industry to deal with disasters. This is primarily because demolition by its very nature is risky, considered rough, and operates in similar conditions to disasters. Hence, demolition professionals are accustomed to dealing with precarious structures and have sufficient experience to detect and manage any potential hazards associated with them. Further, the industry owns equipment that is designed to demolish the most complicated structures safely and to manage the arisings¹ that stem from the process. Finally, demolition professionals are experienced in dealing with hazardous materials in the safest and most professional manner, and through experience, can identify potential hazardous substances on-site. Therefore, their expertise is deemed essential.

2. The Proposed Strategy

The proposed strategy is composed of four main phases: prior to disaster preparations, early action, the recovery, and records & feedback. The strategy is illustrated in figure 1 below. Each step will be explained in detail in the following sections.

2.1 PHASE 1: PRIOR TO DISASTER PREPARATIONS

Disasters occur in different forms at unexpected times. They include natural disasters such as severe weather conditions, or man-made disasters such as wars, or simply fragile structures due to poor or inadequate maintenance. Since such events come at unexpected times, it is crucial that the UK's government prepares an action plan to be followed if such events occur. Hence, the first step is to be prepared for the occurrence of disasters. This phase is composed of two main points: firstly, establishing collaboration with demolition professionals, and secondly, establishing collaboration with emergency services.

¹ For this document, arisings represent any retrievable material that comes out of the structure that will not be sent to landfill. Waste, on the other hand, represents hazardous materials that cannot be processed, and any other materials which end destination is landfill.





Figure 1: Proposed Strategy for Disaster Management



2.2.1 ESTABLISHING COLLABORATION WITH DEMOLITION PROFESSIONALS

This step begins with the government selecting various qualified² demolition organisations in the country to establish collaboration and agree to react if a disaster occurs. This can be done in liaison with the National Federation of Demolition Contractors (NFDC), the Institute of Demolition Engineers (IDE), and National Emergency Services Support Taskforce (NESST). This collaboration enforces a duty on the chosen demolition organisations to react under the government's orders to any emergency without expecting any profit from the event. However, the government must cover all expenses related to labours, plant, and any other expenses used to demolish and clean up the site. Some studies on disaster management advice governments to provide landfill sites for waste disposal in cases of emergencies (Zawawi et al., 2016). However, this option is unhealthy for the environment and would add to the waste stream. It is preferable that the government establishes a safe ground in each city in the UK for debris management in case of emergencies. This is a better option and would allow the demolition industry to clear the site and send all collected arisings to the safe ground to be processed once the disaster passes.

2.2.2 ESTABLISHING COLLABORATION WITH EMERGENCY SERVICES

Dealing with damaged structures is part of the expertise of the demolition industry. Their advice to the emergency services during disasters can be invaluable. A demolition engineer can assist in identifying potential hazards by thoroughly reviewing the site, and can provide advice on establishing exclusion zones, detecting hazardous materials and their removal procedures, and identifying safe entrances to confined sites (Diven and Shaurette, 2010). Additionally, in almost every project, demolition contractors deliver site briefings³ and toolbox talks⁴ highlighting any existing risks to the workforce and provide countermeasures to ensure the safety of everyone affected by the site. Such talks could be delivered to the neighbourhood where the disaster occurred to ensure everyone's safety. A prominent example of an established collaboration between demolition engineers and emergency services in the recovery of the injured and the dead⁵ (Anthony, 2011).

2.2 PHASE 2: EARLY ACTION

At this stage, the selected demolition contractors across the country are bound by contracts with the government to react to emergency events. Early action was emphasised by Lauritzen (2019), who deemed it paramount for disasters management. He highlighted clearing roads of any debris to maintain access and egress to and from the damaged area as one of the most important steps for early action. Once access to the damaged area is secured, demolition engineers can assess the risks caused by the damage and any potential hazards and take immediate actions as appropriate. The demolition method, depending on the results of the assessment, must be selected based on speed and efficiency to make the structure safe. This will often limit the choice to machine demolition, which we deem to be the quickest and safest demolition method⁶. Before demolishing the structure,

⁶ All works must be subject to CDM 2015 regulations and the Health and Safety at Work Act 1974, and as such, this may require the involvement of the Health & Safety Executive.



 $^{^{2}}$ Qualification depends on the type of disaster, e.g., the size of the project, the nature of the works, contractor's expertise, etc. Note that the selection of the contractors should be based on competence, not company size or turnover.

³ Daily briefings are short talks that are delivered daily to the workforce to ensure their constant engagement and to raise their awareness concerning the risks associated with the activities on that specific day.

⁴ Toolbox talks are short talks that are delivered on weekly basis to the project workforce to raise their awareness level on the importance of the control measures to tackle potential on-site risks.

⁵ Read more about this in Anthony (2011) in The History of the National Federation of Demolition Contractors.

if it is safe to do so, it is preferable to remove any hazardous materials present on site, especially asbestos-containing materials.

Note: Sustainability during disasters should not be considered if it compromises the health and safety of those who are affected by the disaster.

2.3 PHASE 3: THE RECOVERY

Once the demolition process is complete, the arisings are collected and sent to the designated ground established by the government in phase 1 for arisings management. This phase begins once the disaster is overcome. Demolition contractors in this phase will use the appropriate plant to separate the arisings for recovery purposes. It is important to presume that all materials on site are contaminated and that all appropriate measures are taken during the recovery phase⁷.

2.4 PHASE 4: RECORDS & FEEDBACK

Maintaining accurate records of the event and the execution of the contingency plan is crucial to extract lessons learnt from the event and opportunities for future improvement. According to Lauritzen (2019), many countries exposed to disasters have established contingency plans for crisis times. For example, the Nepal government had planned a way to demolish damaged structures and to manage any arisings produced. However, when the emergency emerged, the plan was not executed because of the widespread stress (Lauritzen, 2019). Lessons learnt and case studies would help avoid similar situations and would ensure a better execution during future events.

3. LIST OF REFERENCES

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 $^{^{7}}$ Where possible, information for the site/property should be sought before a decision is made on how to process the materials, and which categories they come under.

