

DETECTION AND ALARMS EXPLAINED

Detection and alarm systems are essential to alert occupants in a building that they need to evacuate. However, this can take a lot of different forms. This edition of Explained will try to give an overview of the different systems available.

Detection types

The most basic way of detecting a fire and raising an alarm is via manual call points, which is still acceptable in low-risk premises. However, this relies on people being present and raising the alarm, which may not always be the case.

In most buildings it is very common to provide automatic smoke detectors to remove the reliance on human presence.

In areas where the use may interfere with smoke detectors (e.g. kitchens), in order to minimise the number of false alarms, heat detectors are usually preferred instead.

Other more sophisticated detection systems can be provided in buildings to address specific risks: beam detectors in areas with very tall ceilings like atria or warehouses, aspirating systems in datacentres or heritage areas or flame detectors in other sensitive or external areas.

Alarm types

In most cases, simple alarm sounders built into the detector heads will suffice. Visual alarm devices like beacons can also be provided in areas with noisy environments or where people might have difficulty in hearing an alarm.

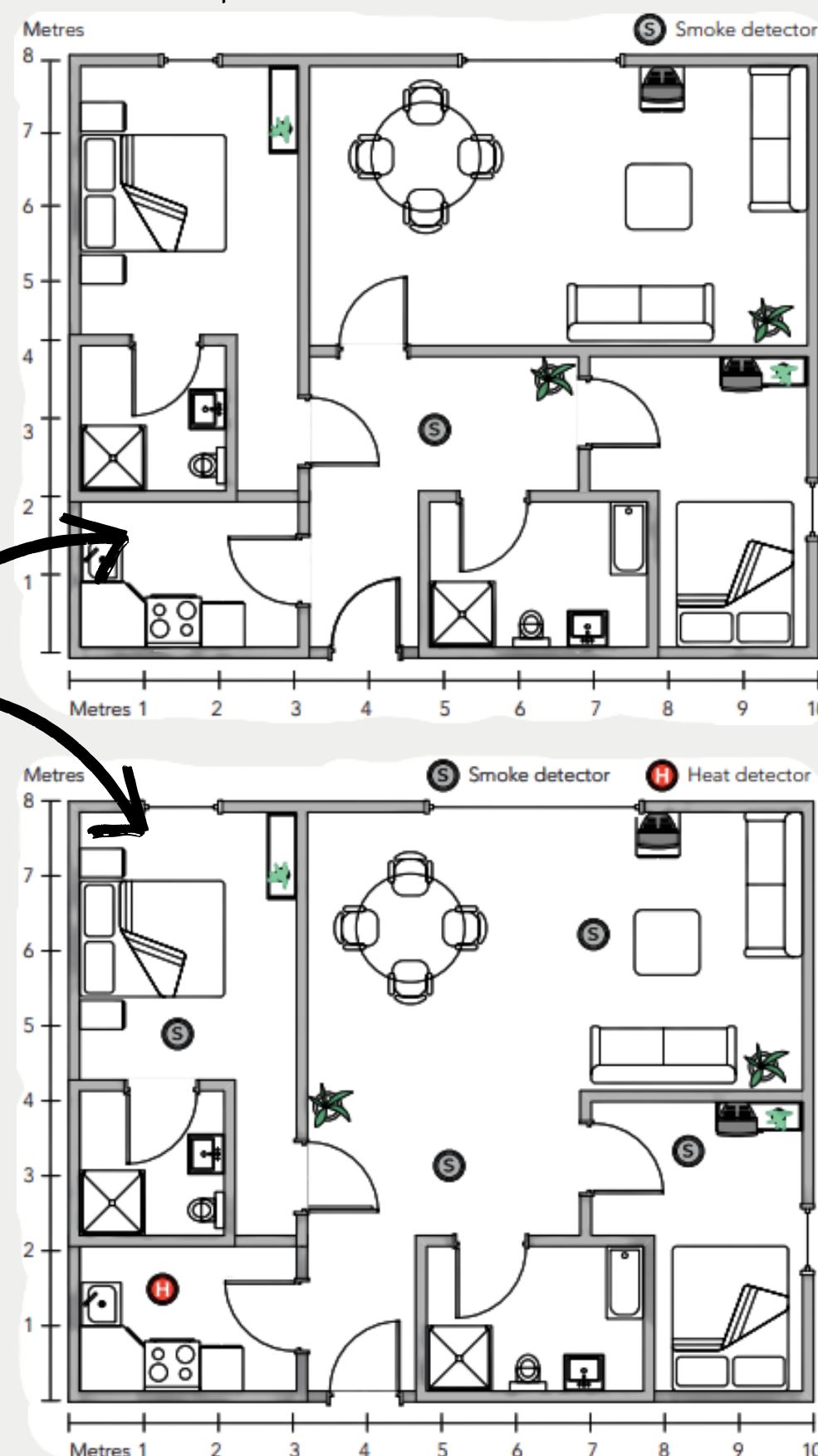
In more complex evacuation strategies, voice alarm and public address systems can also be incorporated with either pre-recorded messages or live emergency messages. This has the benefit of reducing pre-movement times for occupants and allows for more flexibility in the message being communicated. One example is phased evacuation strategies, where occupants on floors not evacuating are told via the public address to remain in place and await further instructions.

Level of coverage

The level of detection coverage will depend on the risk presented by the use of each space.

Simple layouts of apartment or dwellinghouses will only need detection in the circulation areas, whereas open-plan type apartments will require them in all rooms.

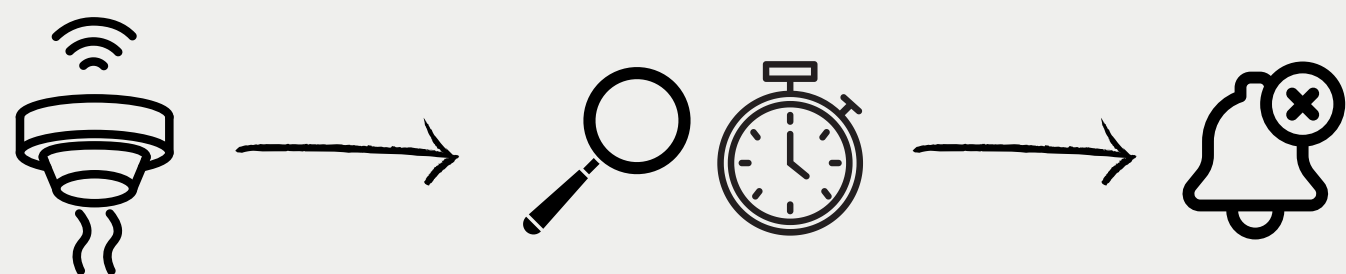
These figures are taken from the report by NHBC assessing life safety in open-plan layouts. These diagrams illustrate the difference in detection coverage required between apartments with a protected entrance hall and an open-plan apartment.



Similarly for most commercial buildings, detection only in circulation spaces and place of higher fire risk will suffice. But in buildings with higher risk to occupants, such as a sleeping risk or large assembly and recreation buildings, providing detection in all rooms may be necessary. Increased coverage could also be used to mitigate for other departures from guidance (e.g. extended travel distances).

Reducing false alarm disruption

One way to minimise the likelihood for business disruptions due to false alarms is by implementing an investigation period (can be provided in both simultaneous and phased evacuation buildings).



Upon activation of a detector, an alarm signal is transmitted to the alarm panel

Members of staff have a pre-determined timeframe to investigate the alarm (normally between 3-5 min)

If a false alarm is confirmed within the set timeframe, building-wide alarm and evacuation can be cancelled

Note: If any of the following occur, the system will go into building-wide alarm : Timer runs out, second detector activates, manual call point is triggered or the sprinkler system is activated.



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