

**All Party Fire Safety and Rescue Group  
A Parliamentary Seminar  
22<sup>nd</sup> April 2013.**

**The Financial Constraints of Implementing Fire Safety Requirements  
into New Build Schools**

The debate around the provision of fire suppression into the new build schools portfolio has been a lively one for some time now having gathered momentum in early 2000 with a number of reports being considered both by central government but also across local education authorities nationwide. These reports culminated in central government introducing a new policy in March 2007 when Jim Knight MP, the then School's minister, made it clear to Parliament that it was the government expectation that all but very few new schools would be fitted with sprinklers as standard under the new policy. In November of 2007 the then DfES published Building Bulletin 100 which Approved Document B of the Building Regulations, revised in 2006 largely to take account of the Regulatory Reform Order 2005, refers to by stating that BB100 should be followed for the design of schools.

Since the introduction of BB100 there is an expectation that all new schools will have sprinklers fitted. Any exceptions to this will have to be justified by demonstrating that a school is low risk and that the use of sprinklers would not be good value for money. A risk assessment tool was therefore developed to help designers make the right decision.

School sprinkler design is about property, and not life protection. In the UK, life protection systems are more complex and hence more expensive. In almost every case the BB100 risk assessment tool is used the resulting indication is a medium to high risk outcome and thus a sprinkler system is required. It should be pointed out that the building bulletin is guidance only - not mandatory - and nor are sprinklers in schools a building regulation requirement. However, there is a feeling that whilst the risk assessment tool is the right approach in helping set a fire strategy, it should be reviewed, as it does not sufficiently reflect all local circumstances, history and knowledge. Whilst there are clearly parts of the country where arson and fire risk are very high and sprinklers are an effective solution, likewise there areas of low risk and the tool weighting is not appropriate to reflect that. For example, we do not install sophisticated intruder alarms, CCTV systems and high perimeter fencing in a very low crime area just in case of a burglary. Yes it could happen, but local knowledge and experience makes it a very small risk.

Furthermore, what has also caused concern is the way in which many local authorities over the years have started to implement school sprinkler policies without full and proper consultation, especially given the impact on both capital and revenue budgets for such developments. All of the potential benefits were there for all to see, however, in reality, they were not all necessarily applicable in all circumstances. Moreover, much like booking through a low budget airline, the final actual cost of sprinklers was not matching many of the costs quoted at early stages by various bodies. As a consequence, construction professionals

were left either having to explain to their sponsors why projects were overspent, or that they would require further funding. As every QS will tell you, the first cost is the one that everyone remembers.

What cannot be ignored is that sprinklers, along with other fire management solutions, should be considered when developing an appropriate fire strategy and solution. School sprinklers are an emotive subject and it can be difficult to have a professional and rational debate without the accusation being made that construction design teams have no concern for either children's safety or that of fire officers who risk their lives tackling school fires. Naturally health and safety is the number one concern and always will be. But design teams on behalf of their Education Authority clients have to make difficult decisions, balancing all the competing demands on an ever decreasing budget. Whether it is sustainability, BREAM, gas or electrical regulation changes, energy conservation, or new building regulations, they all have to be funded out of that diminishing pot! In an ideal world every new initiative or requirement would be fully funded but the DCSF whilst developing sprinkler guidance and a risk assessment tool had no funding to offset this extra cost. This meant that Education Authorities had to find between 2.5 to 5% of the capital construction costs, often from within their existing budgets, to fund sprinklers in a typical primary school. Furthermore, schools would have to pick up the increased revenue costs. So was this providing value for money in safeguarding our children in schools or could/should the money be spent more effectively elsewhere was the question that was and continues to be asked.

The Department for Transport published statistics on road casualties in accidents reported to the police in Great Britain in 2008, and according to the arrangements approved by the UK Statistics Authority the number of children killed or seriously injured in 2008 was 2,807 (down 9 per cent on 2007). Of those, 1,784 were pedestrians, 6 per cent down on 2007. 124 children died on the roads. Contrast this to schools where it is rumored that two children have died in school fires since the Second World War (which apparently occurred in a playing fields shed). Of course that doesn't mean we should be complacent as a school fire could occur tomorrow with horrific consequences but statistically our schools have been very safe places compared to other environments that our children encounter daily. They are at far greater risk as a pedestrian and, therefore, it could be suggested that we should be directing further funding into road safety than school sprinkler systems in the interest of safeguarding their well being? Therefore for a school, perhaps sprinkler benefits are more about more about mitigating the psychological impact of a major fire. The need to relocate into temporary accommodation, and the effect on the children of being taught in these inadequate environments, the additional stress on the staff who then have to occupy these facilities, the loss of pupils work, (my dad still has the first model house I ever made in university some 27 years ago), the loss to the community of a central asset for adult education, pre and post school clubs, social gatherings and recreational amenities. Equally our Education Authorities have expressed a view that perhaps more attention should be focused not on our new build schools, which are built to far more stringent regulations, but on the fire risk of our existing building school stock.

Would the money being spent on sprinkler installations for new build be best spent on surveying existing schools and identifying potential risks and raising fire safety awareness across a portfolio, rather than the selective few? We need to be very clear in each case what the purpose of installing sprinkler systems is. Are they about safeguarding, reducing disruption to children's education and the wider community or for insurance reasons?

There is a lot of confusing and conflicting cost information published that, if taken at face value, could easily lead to an embarrassing financial shortfall if simply incorporated into a budget. There are many factors, not always immediately obvious to check:

- The sources of the costs published and ask could the author have a vested interest or perhaps have limited knowledge of the construction process?
- are the school figures quoted referring to a secondary school rather than a primary school? A secondary school has an economy of scale so perhaps 1.8% of construction costs for a secondary school is expected compared to 2.5% to 5% (or more) for a primary school.
- are the school figures quoted referring to a mains fed system or fully pumped system requiring a large housing for the considerable plant and tank?

It can be difficult to obtaining accurate historical cost information as many local authorities have out sourced their design teams and PFI providers are often reluctant – due to commercial confidentiality - to provide any meaningful cost data.

When looking at the developed cost plan it is worth checking that:

- all associated builders work associated with an installation is included. For example, holes for sprinkler pipe work, trenching, making good, valve chamber, full housing for a tank, painting pipes, etc. Remember if your tank will be incorporated within the school to include the cost of that dedicated space including the structural implications of storing the many tonnes of water.
- controls, electrical supplies, generator (if required), panel interface and other associated equipment are all priced.
- for the utilities cost, especially mains water connections are included
- the cost for designing and constructing a suitable housing has not been overlooked.
- the extra design costs for the design team associated with a sprinkler installation are identified.

Remember purpose built housings will need planning permission so make sure they are included in your planning submission.

It does well to remember that, when fitting sprinklers into an existing building, the location of the heads takes priority over all other services. This requirement

can result in considerable extra cost as a consequence of having to relocate light fittings, ventilation ducts, grilles etc.

Whole life costs are increased due to the added maintenance and servicing costs of plant associated with the sprinkler installation. This can create difficulty when attempting to prove VFM.

On a mains fed system what would be the implications and costs if the local water pressure fall and pumps and storage become required? Who would pay the school or LA? Could the design be easily adapted to include a tank and housing and would there be planning complications? This became a real issue for us in Lancashire some years ago when whilst we might have been in the comfort zone of knowing that as long as the Fire Brigade were able to attend within a given timeframe then surely all will be fine, not the case, although when one of our primary schools was the subject of arson, the fire brigade responded within a very tight timescale, when they arrived and connected up their hoses the water pressure was so poor that they were still not able to prevent the total loss of the facility.

What are the full ongoing maintenance costs? This ranges from the weekly testing to the full professional servicing. And remember if you are not able to demonstrate that you have maintained your sprinkler system in accordance with your insurers requirements, your insurer may legitimately reject any future claim.

Have you included for a "Red Care" or similar monitoring service? Again there is often assumption that all schools have intruder alarm systems connected to a monitoring service. This is a revenue cost for schools.

What are the insurance premium benefits that you will obtain? experience has been that Local Authorities that have block insurance are unlikely to realise premium reductions for the occasional school fitted with sprinklers (when the overwhelming majority of their stock are not fitted with sprinklers) other than on the individual schools that have had sprinklers fitted. Whilst there are often "deductable" or "excess" benefits to be had, premium reductions are not available unless schools are individually valued. Perhaps this is an important area for the insurance industry to consider.

It has to be acknowledged that a sprinkler system will allow savings to be made in other areas less fire walls due to larger compartments, a reduction in the number of expensive fire doors, more flexibility in design layout, a relaxation on the standard of surface finishes, a reduction the need for emergency lighting, a reduction the requirement in respect of stair widths, and a general increase in flexibility when considering access for the fire services during an emergency.

However, there are also issues and costs related to ongoing maintenance of sprinkler systems for example,

- voids above suspended ceilings may need to be fitted with sprinklers and need to be accessible. Sprinklered roof spaces will need safe access and lighting.

- some school clients prefer sprinkler heads to be concealed above the suspended ceiling, with just a small flush circular plate on show in the ceiling tile to minimise vandalism risk. It's essential that if these plates are damaged (which are designed to drop off above a set temperature) are not stuck back on with glue. Yes, it's happened or they have been painted by an over keen school premises manager.
- sprinklers are not a replacement for good housekeeping and only operate when everything else has failed. They do not prevent fires, they only respond to them and if there are no fires, they add no value to a child's education.

So what are we doing in Lancashire? In the last 7 years we have had 53 insurance claims as a result of school fires, with the total cost of those claims being some £800k giving an annual cost around £112k, around about the cost of a sprinkler installation in a new build 2 form entry primary school, we therefore give due consideration to all of our new developments, not just relying on the BB100 risk assessment but also considering other issues perhaps not considered by BB100. We are about to start construction on 3 new primary schools with costs expected to be £80k for a 1 form entry school in Weeton, and around £120k for our new 2 form entry primary school in Barnoldswick. Both of these school designs are our first to follow the principles of our new standard models to ensure we are developing in line with government wishes, and as a result of our standard models we have had the opportunity to liaise closely with Lancashire Fire and Rescue service allowing us also to consider the use of misting systems, however we are finding that the cost of misting systems is making full sprinkler systems more appealing. But by looking to include sprinkler systems we are increasing the budget pressure on our Education Authority who are already dealing a shortfall in funding just to meet the basic need requirements with the increasing birth rates which mean we have to find an additional 13 forms of entry across Lancashire by September 15'. Our current new build costs per pupil place are around the £10k mark with the DfE new build allowance being around £6.5k per pupil place. This leaves around £3,5k per place for the authority to find, a total of some £1.3 million to meet its basic need requirements. But even with this shortfall in funding should we be prepared to play the lottery when it comes to our children's education, when assessing the threat to life you may well think it is a price to high to pay, however when you consider the cost of the other issues mentioned earlier, that cannot always be measured in pound notes, the answer may be different and the default position must be to ensure a thorough project by project assessment is made as to whether sprinklers should or should not be included.

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