Guidance on the protection of school building services systems in cold weather

Introduction

This document is provided to give guidance on steps that can be taken to protect school building services systems e.g. heating, water, electricity during periods of cold weather.

Taking preventative action is the best defence against having to deal with cold weather conditions. The school should use this guide to establish a management plan to deal with extreme weather. A number of key staff should be familiar with this plan.

Check List

The school may consider having a check list of items for inspection as part of the school's annual maintenance regime, based on the individual needs and circumstances appropriate to the school.

Make arrangements for regular checks to be carried out during cold weather periods including boiler houses, stand alone teaching buildings and external stores.

Water Services

It is critical to take precautions against water freezing in plumbing systems; frost protection prevention is always cheaper than the cure.

Ensure you know the location of the internal and external stopcocks and ensure that these are easy to operate same. Stopcocks should be insulated.

Know the locations of the internal isolation valves on the internal water distribution systems from the high level water storage tanks in the school.

Schools should consider completely draining their water systems if the school holiday periods are expected to coincide with severe cold conditions or if the building will be left unattended and not inspected for any length of time.

It is a wise precaution to provide unoccupied buildings with heating if only for part of the day/ night when there is still water connected.

Consideration should also be given to turning off the stopcocks on the mains water supply in periods of cold weather when the school is not in use. This will help minimise water damage in the event of a pipe burst.

External taps should also be isolated and drained by running the tank after closing the isolation valves during frosty weather.

During periods of severe cold weather pipes should be checked for any signs of splitting caused by frost. If any damage is spotted a plumber should be called. Failure

to get damaged pipes repaired early may result in flooding once the water thaws.

Insulation

All pipes and fittings not located in heated areas need to be insulated, especially those in the roof space.

If your school availed of the attic insulation upgrade then you should double check that the contractor complied in full with the scheme grant aid conditions and that all water tanks and pipe work are adequately protected in the roof space against frost.

All cold water distribution services pipe work in locations likely to give rise to freezing or condensation should be appropriately insulated with insulation incorporating a continuous vapour barrier.

Hot water cylinders/ calorifiers that have no insulated or are poorly insulated should be insulated using appropriate insulation jackets.

All hot water services distribution pipe work should be insulated.

The insulation should be of preformed sections of rigid mineral wool incorporating an aluminium foil laminate fixing and fitted in accordance with the manufacturer's instructions. The insulation shall also be applied to all connections, bends, tees and valves. Proprietary jackets with Velcro fixings shall be used on all valves over 32mm.

Appropriate colour identification bands and flow directional arrows should be affixed to all insulated pipe work.

Even when insulation is provided, water freezing in fittings cannot always be prevented if the cold weather continues for an extended period unless the area receives some heat. In sustained cold weather consider allowing a little heat into the attics by opening access doors to help prevent the pipes and cold water storage tank from freezing.

Heating Services

Ensure that there is sufficient fuel available in the fuel storage tanks for periods of severe cold weather. The main switch on the boiler house control panel for the heating system should not be turned off during holiday periods. The holiday mode settings on the heating control panel and/or the time clocks on the heating system should be used to enable the heating system to remain available to protect the school building in cold weather periods while not wasting unnecessary fuel.

The school heating systems should be fitted with a frost protection system. The Department of Education and Skills technical documents identifies such systems as a requirement in school heating systems.

The school management should have their heating contractor check as part of the annual boiler service that the frost protection system is working.

Two-stage frost protection should be provided and so arranged as to activate the heating circulating pumps at temperatures below +5ºC and to activate the boiler burners when heating pipe return temperatures drop to +2ºC. The frost protection system should be independent of any optimum start controllers.

Where heating pipe work is not being used as a useful heating surface, insulation of appropriate thickness and quality should be applied. The insulation should be of preformed sections of rigid mineral wool incorporating an aluminium foil laminate fixing and fitted in accordance with the manufacturer's instructions. The insulation should also be applied to all connections, bends, tees and valves. Proprietary jackets with Velcro fixings shall be used on all valves over 32mm.

Ensure that radiators in lobbies or stores that may have been turned off during normal weather conditions in the interest of energy conservation are turned back on in severe weather.

If the school heating system is frozen do not switch on the heating boilers. A heating contractor should be called for assistance.

If a school has a gas-fired central heating system, it should be noted that only registered gas engineers are legally allowed to work on gas fired boilers.

Electrical Services

All unnecessary electrical equipment shall be left unplugged when unattended for lengthy periods and when the building is empty.

If electrical heaters are installed for frost protection in stores and boiler houses check that the temperature dial on the heater is set at 0ºC. Make sure they are working by temporarily adjusting the temperature setting to above the room temperature, this should bring the heater on; remember to reset the setting to 0ºC after testing.

If your school has an electrical trace heating frost protection system installed on heating or water pipes check to see if the system status indictor is illuminated, if in doubt have an electrician ensure that it is in working condition.

During periods of cold weather check that the school has not experienced power cuts as these may effect the correct time clocks settings on the heating systems (this is easiest done by checking if one of the schools electrically powered clocks is indicating the wrong time). Most control systems have a battery back up to protect against this, but it is good to check anyway.