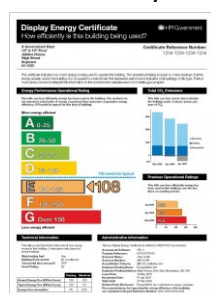


CLEAN AIR ZONES PILOT - THE INDOOR ENVIRONMENT

In order to improve energy efficiency and lower the emission of air pollutants locally and on a wider scale, measures to reduce building emissions from the schools were considered. An energy audit was undertaken or used at each school to assess what measures could be implemented.

WHAT COULD BE DONE?

Possible ways of reducing building emissions include:



- ❖ Replacing old boilers with newer more efficient ultra low NO_x boilers - this has the added benefit of contributing to the improvement of air quality in the immediate area
- ❖ Thermostatic radiator control valves to control the temperature of the radiators, thus reducing boiler use and emissions
- ❖ Draught proofing/excluders around windows and doors (chimney's, floors and skirting boards in older schools)
- ❖ Energy saving light bulbs, power down switches and timer switches to reduce energy use e.g. classroom lighting and computers
- ❖ Solar (heat rejection) film/solar shading for windows to cut down on over-heating from solar heat gain and the need to use a cooling system
- ❖ Radiator reflector panels behind radiators to reduce heat loss
- ❖ Improved classroom ventilation practices to encourage openable windows above radiators to remain closed to reduce heat loss and alternative classroom windows or ventilation extracts to be used instead



CASE STUDIES

BOTWELL HOUSE RC PRIMARY SCHOOL, HAYES

- ☞ **Power down timer switches** - for the computer room - this was particularly effective at this school as they also had a server cabinet serving a number of schools which had to be maintained at the right temperature. Turning off computers promptly would also reduce the heat from these sources which also meant the air conditioning did not have to work as hard to keep the room cool when the computers were not in use
- ☞ **Solar (heat rejection) film** - there were a few classrooms in the new school building that were too hot due to solar heat gain. The solar film applied to the affected windows reduced the heat gain, and reduced the need to use energy to cool the classrooms

WHAT WAS THE OUTCOME: A more comfortable classroom environment was created whilst also saving energy and cutting down on pollutant emissions (NO_x as well as CO₂). The school's energy efficient operational rating was 101 in band E. Department of Energy & Climate Change (DECC) indicate 100 would be typical for a building. Just these simple measures have reduced the school's operational rating to 83 in band D.

SIR JOHN CASS'S FOUNDATION PRIMARY SCHOOL, CITY OF LONDON

- ☞ **Lighting management system** – Lights remained permanently on in various areas of the school and there was no way of isolating lighting systems when parts of the school were not in use. The schools lighting control system was repaired and upgraded to ensure better control and efficiency.

☞ **LED Lights** – Within the gymnasium area, new, robust LED lights were installed to save energy and create an additional indoor play area which could be fully utilised by children during wet play and pollution episodes.

WHAT WAS THE OUTCOME: A lighting audit identified the scope for improvement. The repaired lighting control system means that any member of staff closing the school is able to shut down the entire lighting system and lights no longer remain on overnight. The gymnasium had been out of action for ball games due to the outdated lighting system which could be damaged. The replacement system will improve energy efficiency and provides a fully versatile indoor play area.

OXFORD GARDENS SCHOOL AND ST CUTHBERTS WITH ST MATTHIAS, KENSINGTON AND CHELSEA

- ☞ **Reflective panels** – The addition of reflective panels behind radiators were encouraged.
- ☞ **Openable windows** – Openable windows above radiators and adjacent to roadside emissions were encouraged to remain closed and alternative ventilation methods to be used instead.
- ☞ **Radiator valves** – Broken thermostatic temperature valves were replaced.

WHAT WAS THE OUTCOME: In both schools there were limited opportunities to make changes to the indoor environment. Alternative ventilation advice was welcomed particularly in the schools adjacent to busy and very noisy roads. This also benefitted by reducing the roadside emissions entering the classrooms from adjacent roads. Energy loss from radiators under windows was reduced whilst reflective radiator panels ensured efficient retention of heat within the classrooms.

Do's	&	Don'ts
<ul style="list-style-type: none"> ☑ undertake a detailed audit if needed ☑ ensure any measures implemented have maximum/long term benefits ☑ form a good relationship with school's maintenance team ☑ gain approval and agree on scheduling of works with school maintenance team and head teacher e.g. during holidays ☑ establish if future changes to the premises are planned and how energy efficiency measures can be introduced ☑ discuss changes to be made with school representatives to determine benefits and establish permissions for changes e.g. listed building / planning issues ☑ ensure the school is kept updated ☑ inform all staff of energy efficiency measures undertaken and the reasons why changes have been made ☑ ensure adequate training and maintenance of any new installations ☑ use assemblies and newsletters to inform children and parents of changes 	&	<ul style="list-style-type: none"> ☒ don't forget to check the building energy certificate to identify if improvement is actually needed ☒ don't forget low cost options such as staff training and awareness ☒ don't proceed without consulting with the school to identify areas where they feel emission reduction / energy savings can be made e.g. they know if classrooms are too hot or draughty ☒ don't forget to identify problem areas with school buildings e.g. areas to avoid due to structural issues ☒ don't introduce measures that the school consider unachievable or are unwanted e.g. lights which automatically shut down if there is no movement can be scary for children if introduced in areas which would become totally dark ☒ don't forget to provide updates of when energy efficiency measures will be installed/made