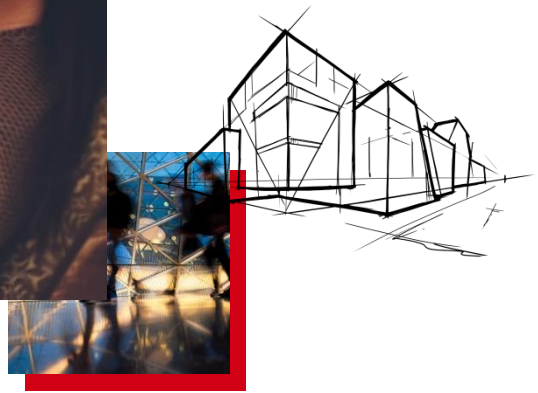
Building in warmth, acoustics and fire safety to support health and well-being

November 2018



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HEALTHY BUILDINGS: WARMTH AND ENERGY EFFICIENCY

Why does warmth matter?

"An efficient heating system, high levels of insulation, and a well specified ventilation system can improve the health and wellbeing of individuals." - *UKGBC Regeneration and Retrofit report 2017*

Health consequences of damp and cold homes:

- Cardiovascular illnesses
- Arthritic symptoms
- Respiratory problems such as asthma
- Irritation for the skin, eyes, nose and throat

Excess winter deaths:

- The UK has one of the highest EWD levels in Europe
- Average of 25,000 excess winter deaths/year 2000-2010
- Around 30% due to cold homes and could be prevented

Temperature /change	**Effect** *– Age UK*
below 16°C (indoors)	marked decrease in the body's ability to stave off respiratory illness
below 12°C (indoors)	rise in blood pressure, increasing the risk of heart attacks and strokes
for every 1°C drop below 5°C	GP consultations for respiratory infections can increase by as much as 19%

Annual cost to the NHS in England of cold homes = **£1.36 billion** + the associated cost to social care services - *Age UK*

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HEALTHY BUILDINGS: WARMTH AND ENERGY EFFICIENCY

Who is affected?

As of 2017, were are still 19 million homes with an EPC rating of lower than C – *Frontier Economics*

There is also a high correlation between energy inefficient buildings and fuel poverty:

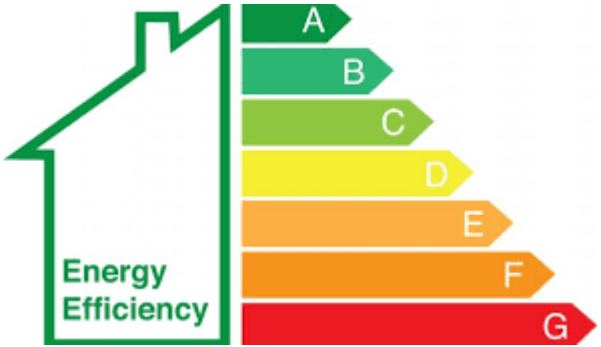
- An estimated 52% of homes in the socially rented sector fall below EPC C in the UK
- Around half a million households in social housing living in homes with an EPC of E or below

In 2016, fuel poverty affected:

- 11% of households in England or 2.5 million
- 26.5% of households in Scotland
- 23% of households in Wales
- 42% of households in Northern Ireland

Significant debt is associated with energy costs:

- One in five households has been in energy debt
- 3.8 million children in households struggling to pay their energy bills



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HEALTHY BUILDINGS: WARMTH AND ENERGY EFFICIENCY

Solutions: Wilmcote House

Largest social housing block to have been refurbished to the EnerPHiT standard with residents in situ

Funded by Portsmouth City Council - 30 year business plan

- projected savings in heating system upgrade, maintenance costs, rent arrears for PCC
- projected savings in energy bills for residents

Last winter (Beast from the East)

- over 60% of residents interviewed used their heating system less than once a month
- nearly 40% never used their heating at all
- despite this, internal temperatures in virtually all flats remained well above WHO thresholds for human comfort

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HEALTHY BUILDINGS: WARMTH AND ENERGY EFFICIENCY

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HEALTHY BUILDINGS: NOISE AND ACOUSTIC MEASURES

Why does noise matter?

Noise is the second largest environmental cause of ill health after air pollution

Exposure to noise during sleep has health consequences:

- above 40dB - sleep disturbance and awakenings
- above 55dB - elevated blood pressure and ischaemic heart disease

UK exposure to noise above recommended levels resulted in an additional:

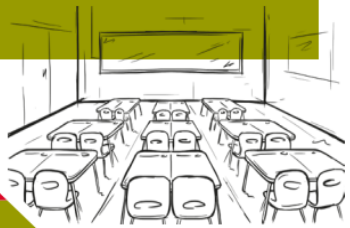
- 1169 cases of dementia
- 788 cases of stroke
- 542 cases of heart attack in a single year

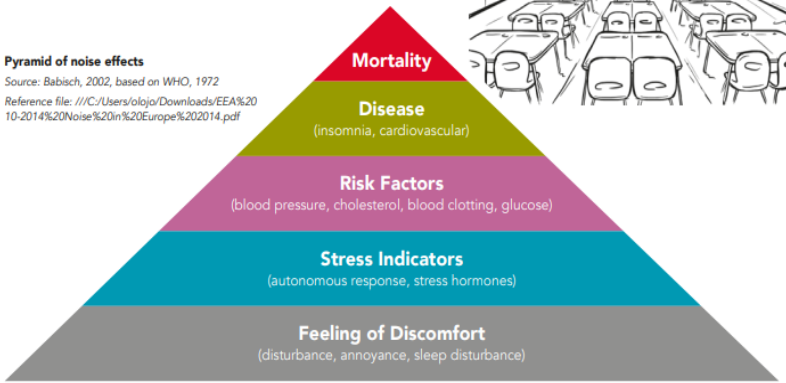
A German study highlighted issues with the effects of noise on children at home:

- hyperactivity
- inattention
- emotional problems

At least one million healthy life years are lost every year in Western Europe as result of exposure to environmental noise.

A study of British primary school children showed that an increase in transport noise of 5dB led to a two month reading delay.





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HEALTHY BUILDINGS: NOISE AND ACOUSTIC MEASURES

Who is affected?

“Urbanisation is a global mega trend, with three million people a week moving to urban environments. In the UK alone, cities take up 8% of the land whilst accounting for 54% of the population.” – ROCKWOOL UK Good Growth, Quiet Buildings report 2017

Noise is the urban environment is increasing due to:

- the growth of high density developments
- mixed-use buildings and neighbourhoods
- 24-hour economy

Noise level	Sound equivalent
40dB	Quiet office
50dB	Large office
50-60dB	Loud conversation
55dB	Coffee percolator
60dB	Sewing machine
78dB	Washing machine
85dB	Noisy restaurant
110dB	Pneumatic drill
130dB	Jet take-off

Public opinion and studies demonstrate the breadth of the issue:

- 48% of people feel that their home life is spoilt by noise
- between 2000-12, noise increased from being the 9th environmental priority for the public to the 4th
- noise is one of the main reasons given by Londoners for leaving, with 41% citing it
- noise is the most frequent complaint from hotel guests, topping the charts in most cities
- noise levels in hospitals have increased over the last forty years from 57dB to 72dB

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HEALTHY BUILDINGS: NOISE AND ACOUSTIC MEASURES

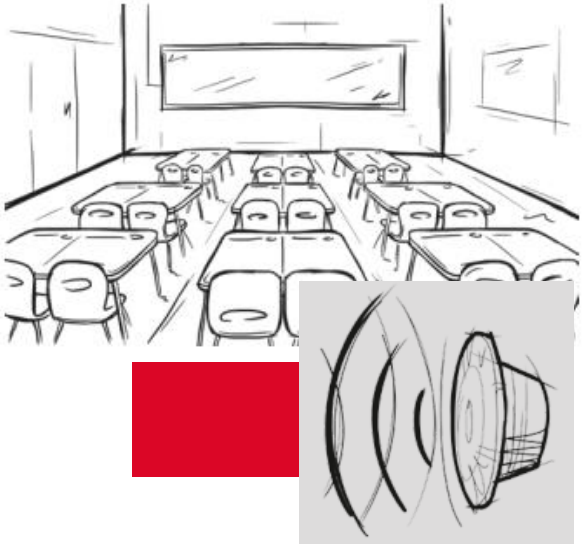
Solutions: The Anderson School

Noise, learning and productivity:

- In educational settings background noise has been shown to have a detrimental effect on educational attainment
- Similarly noise affects productivity levels in offices - a study at a call centre found that improving acoustics delivered a 20% increase in sales productivity

The Anderson School:

- Studies show that people with autism are particularly sensitive to noise
- National Autistic Society owned 13 acre Enterprise Campus - brand new facility for autistic students, aged 11-19
- Aimed to create a calm, productive and quiet learning environment for all students
- RMA Architects recognised the role that effective sound insulation could play in helping to meet this objective



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HEALTHY BUILDINGS: NOISE AND ACOUSTIC MEASURES

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HEALTHY BUILDINGS: FIRE SAFETY

Who is affected?

Buildings:

- 457 buildings with combustible ACM cladding identified by MHCLG
  - Social housing
  - Private housing
  - Schools/hospitals
  - Hotels
  - Student accommodation
- Many more high-rise and high-risk buildings with *other* forms of combustible insulation and cladding *not* yet identified by govt

Examples in Scotland:

- Glasgow School of Art - combustible insulation in the roof
- Edinburgh Napier's Bainfield Halls of Residence - combustible cladding
- Queen Elizabeth University Hospital + Royal Hospital for Children - combustible insulation
- 19 private high-rises blocks in Glasgow - combustible cladding

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HEALTHY BUILDINGS: FIRE SAFETY

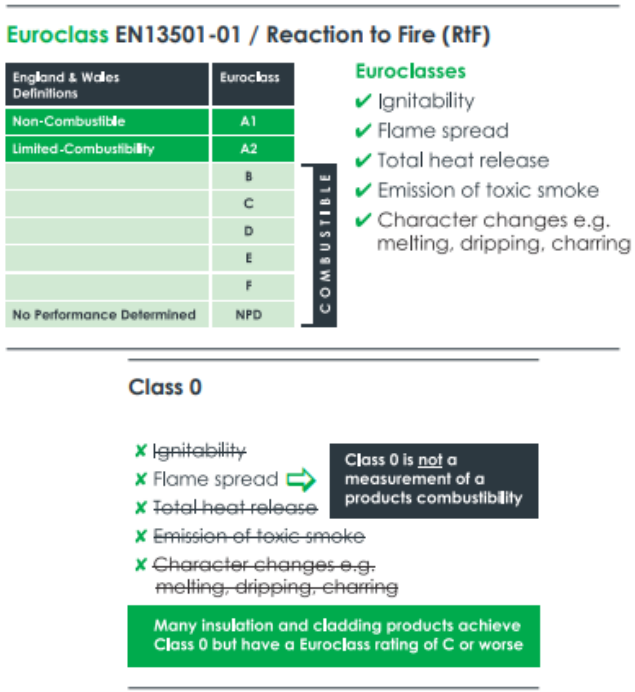
What are experts saying?

Building regulations have allowed combustible materials on the façades of buildings across the UK

- **Dame Judith Hackitt** - regulations are “not fit for purpose”; using non-combustible materials is “undoubtedly the low-risk option”
- **RIBA, LGA, FPA, ABI, APPFSRG, HCLG Select Committee and other experts** - calling for regulations to permit non-combustible materials only on high-rise and high-risk façades

Incidence of fire:

- ABI data shows fires are becoming more severe
- This reflects changes fire-loads within the fabric of the building and building contents



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HEALTHY BUILDINGS: FIRE SAFETY

Status across the UK nations – high-rise and high-risk façades

Nation	Current	Proposed
England	No ban on combustibles	Ban due to take effect June 2019 for high-rise; high-risk tbc
Wales	No ban on combustibles	Ban proposed – details tbc
Northern Ireland	Official guidance = non-combustible only	Review proposal to require non-combustible
Scotland	No ban on combustibles	**Proposal to retain routes to compliance for combustibles**

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Thank you