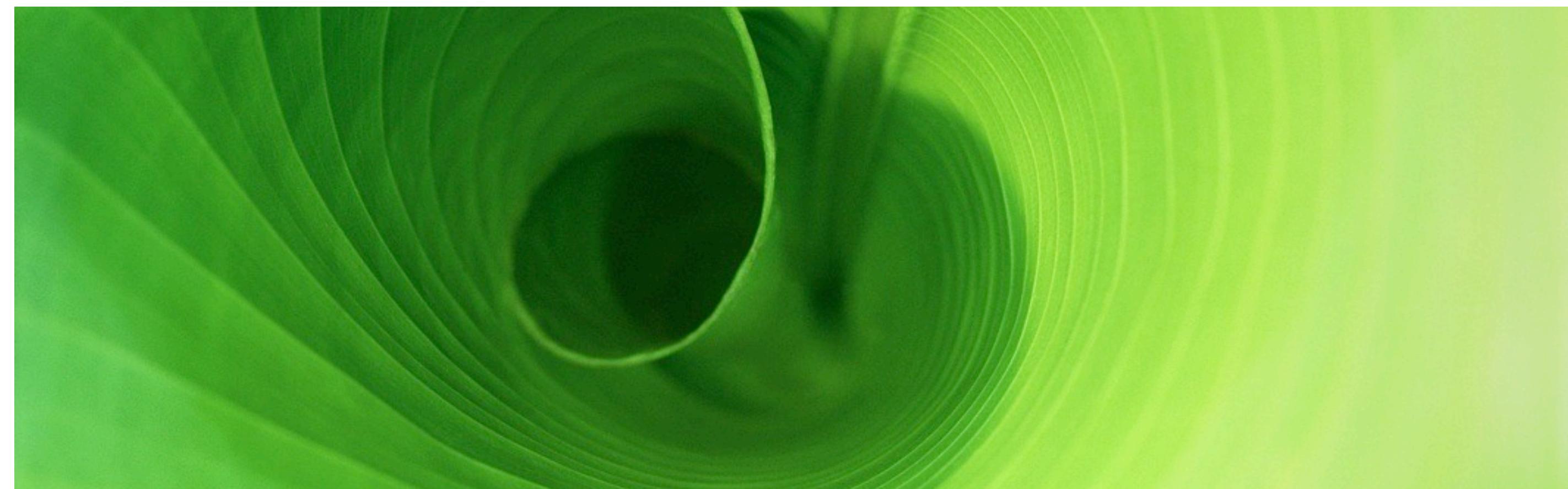


white design



white design



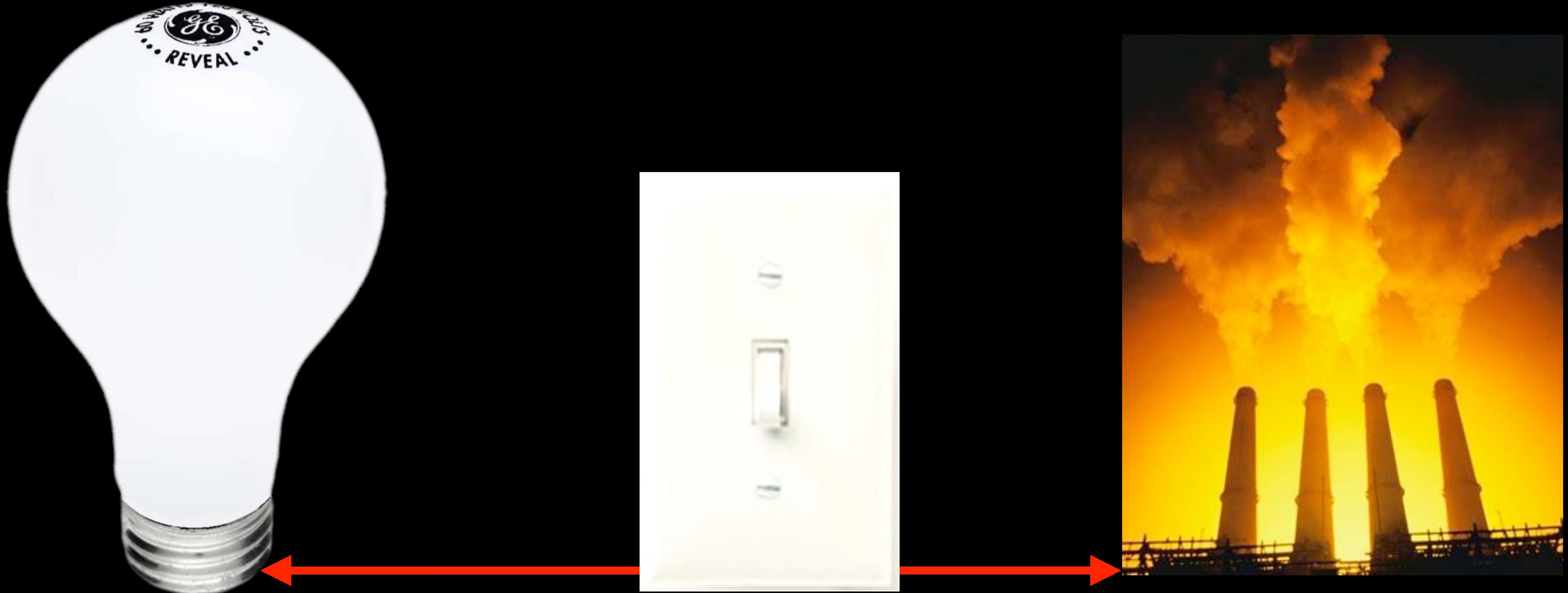
1.9 hectares per person



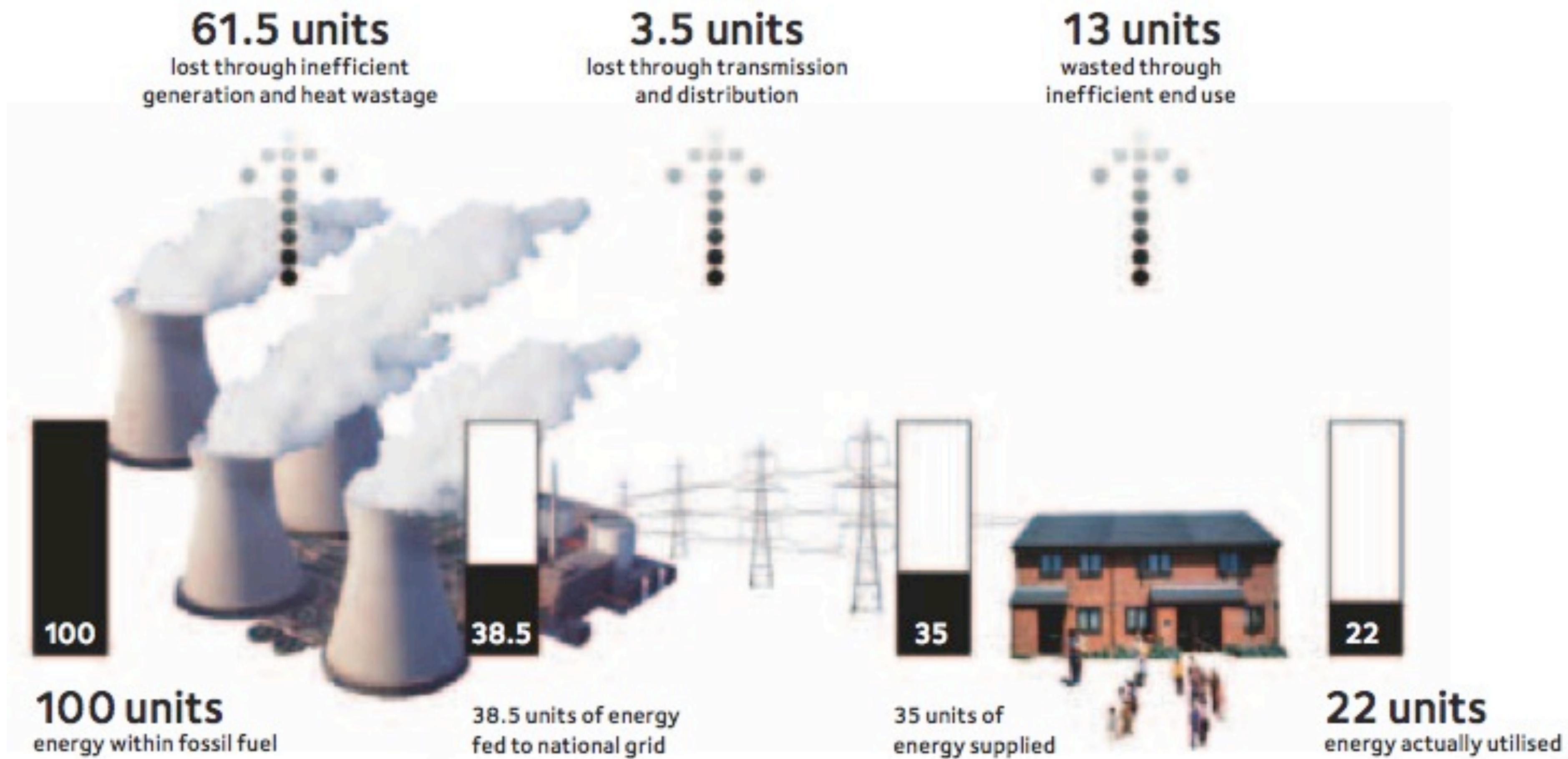
austria 62 hectares

one planet living

energy, buildings and the environment

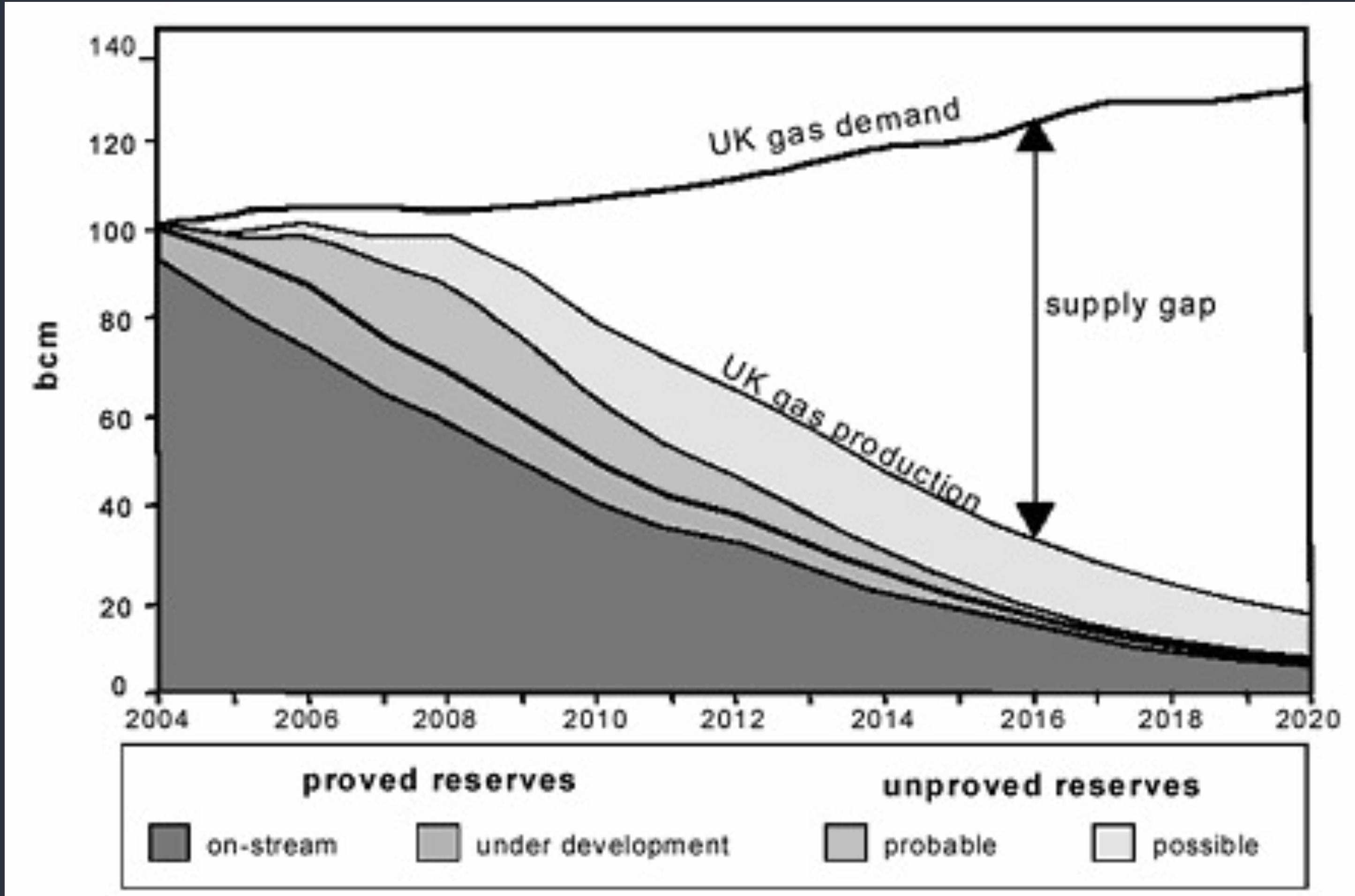


white space design



energy, buildings and the environment

white design



utility costs have doubled in the last 2 years

40% from
the
middle east



40%



by 2020 the UK will import 80% of its gas needs - from where?

Zero Carbon Housing by 2016

Zero Carbon Buildings by 2019

Energy Performance Buildings Directive

New Planning Guidelines on Climate Change

Energy Performance Commitment

New Planning White Paper

60% of the buildings we need in the 21st century already exist.

To deliver Kyoto every new building needs to be carbon negative.

New buildings simply results in a net increase in CO₂ emissions.

Solution - Buildings as power stations. New buildings generate enough power to exceed their own needs.

Not in my lifetime!

Better still, put an existing building into ReHab and wean it off its energy addiction.

Delivers a net reduction in CO₂.

mean lean clean

Mean - Passive Systems - Free - Maximise

Orientation

Thermal mass - heat store heat regulation

Fabric - Insulation preventing heat loss

Natural ventilation

Daylight - lighting and solar gain

Air Tight

Lean - Active Systems - Energy/CO₂/Cost impact - Minimise

Heating

Artificial light

Ventilation

Cooling

Clean - Renewable energy to meet residual demand

it's not rocket science

white paper - sign - designed by

Space heating in the home
Hot water
Appliances
Personal transport
Embodied energy of home
Waste and consumer items

Food

Shared services (energy for running - schools, hospitals financial services)

Shared Infrastructure (energy for constructing - schools, hospitals roads, airports etc)

behaviour

society

4%
4% } regulated CO₂
3% } code level 6

18%

3%

13%

23%

12%

20%

EPBD

Fully glazed facades will be limited to prestige buildings

Building energy labelling will make architectural greenwash more difficult,

Mandatory pressure testing will require closer attention to detail

**major new liability for architect and contractor
should result in better compliance enforcement
will drive-up construction quality**

**Greater integration of passive energy systems:-
free cooling/heating**

passive/natural ventilation

optimised use of daylight

exploiting the thermal mas

Design teams will need to adapt

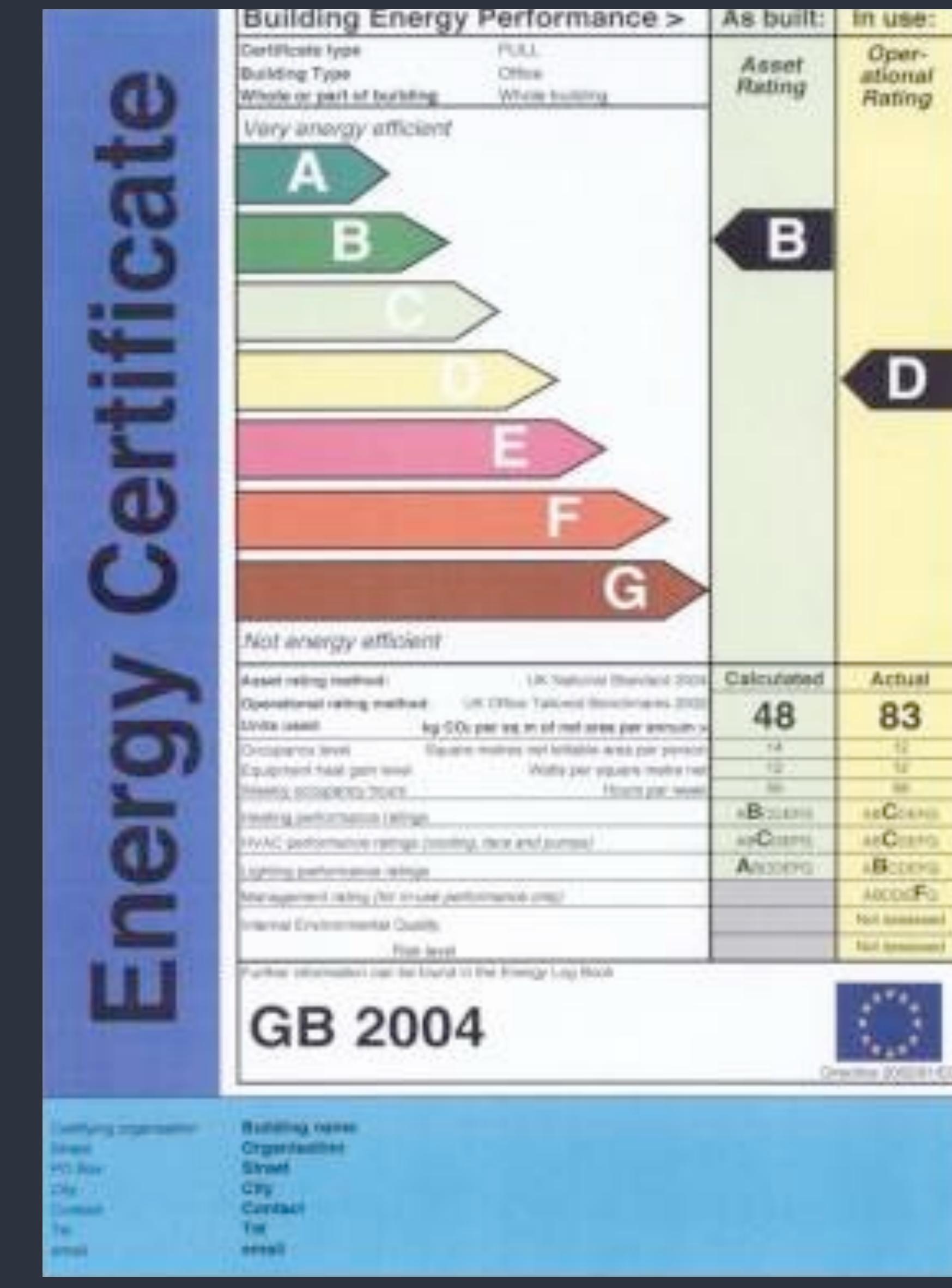
Design teams will need to address building energy in a much more holistic way

a whole building approach will be required

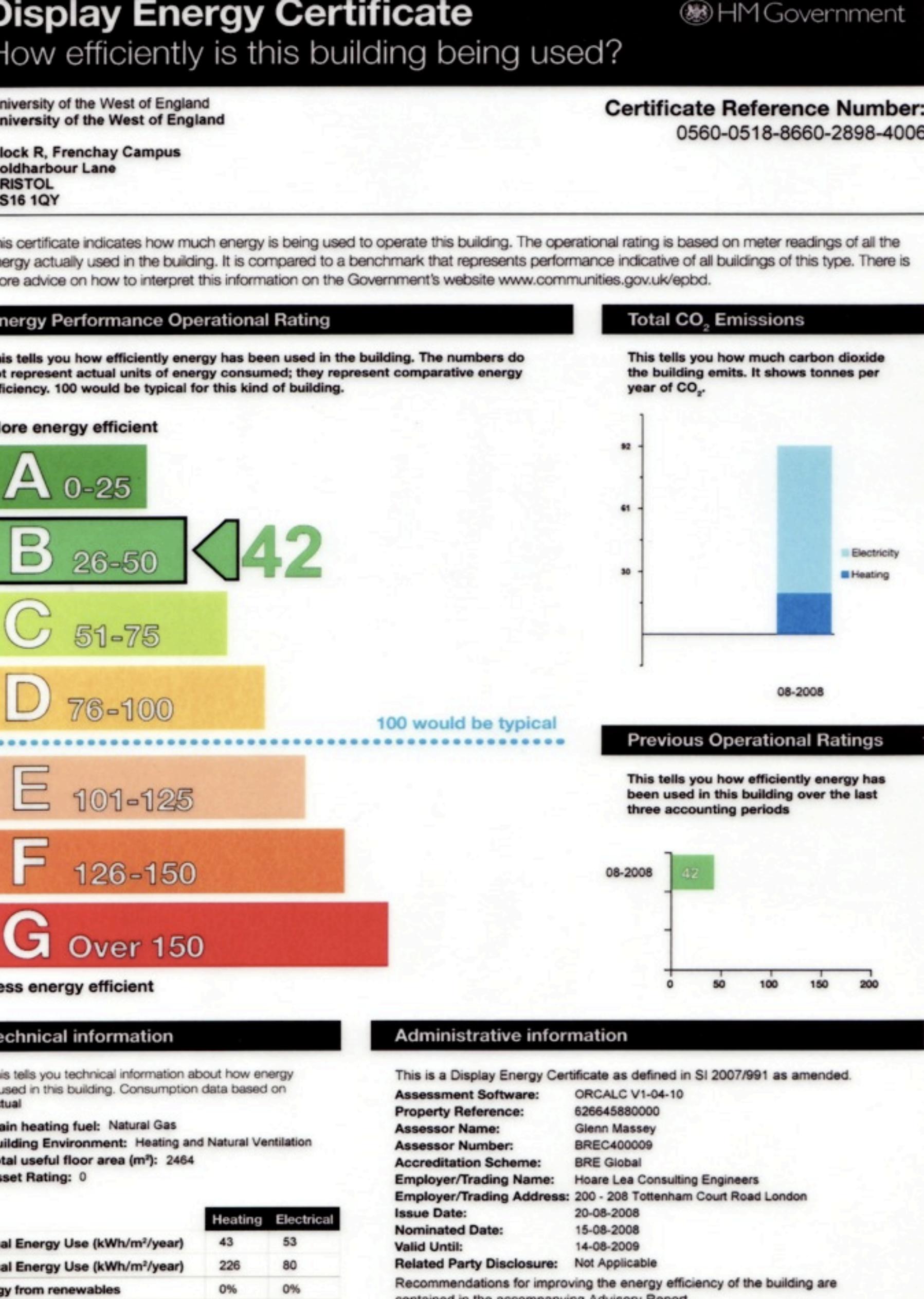
façade design and the efficiency of the HVAC

lighting system will become inextricably linked

**As designers we will become responsible for
energy in use**



white
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completed in 2002
two Part L upgrades ago
uses half the energy of building built at
the same time elsewhere on the campus
seven time less energy than the building
it replaces and 12 times less energy than
uwe's worst performing building
nat vent, thermal mass, shw, pv
rainwater harvesting, m4i case study
DEC - B rated
cost £1024 m²



ting

sed in the building. The numbers do they represent comparative energy building.

2

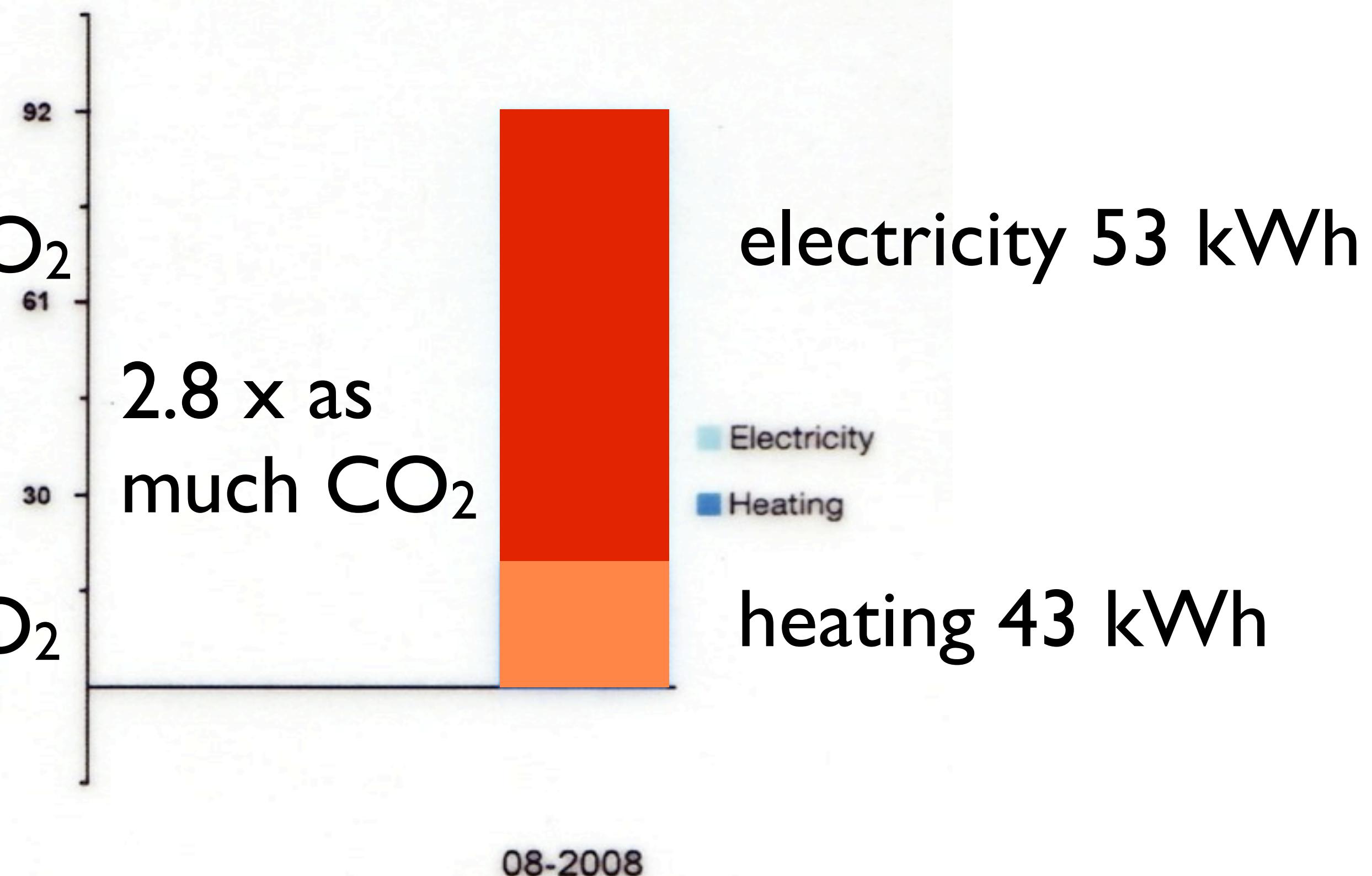
100 would be typical

electricity 68 kg CO₂

heating 24 kg CO₂

Total CO₂ Emissions

This tells you how much carbon dioxide the building emits. It shows tonnes per year of CO₂.



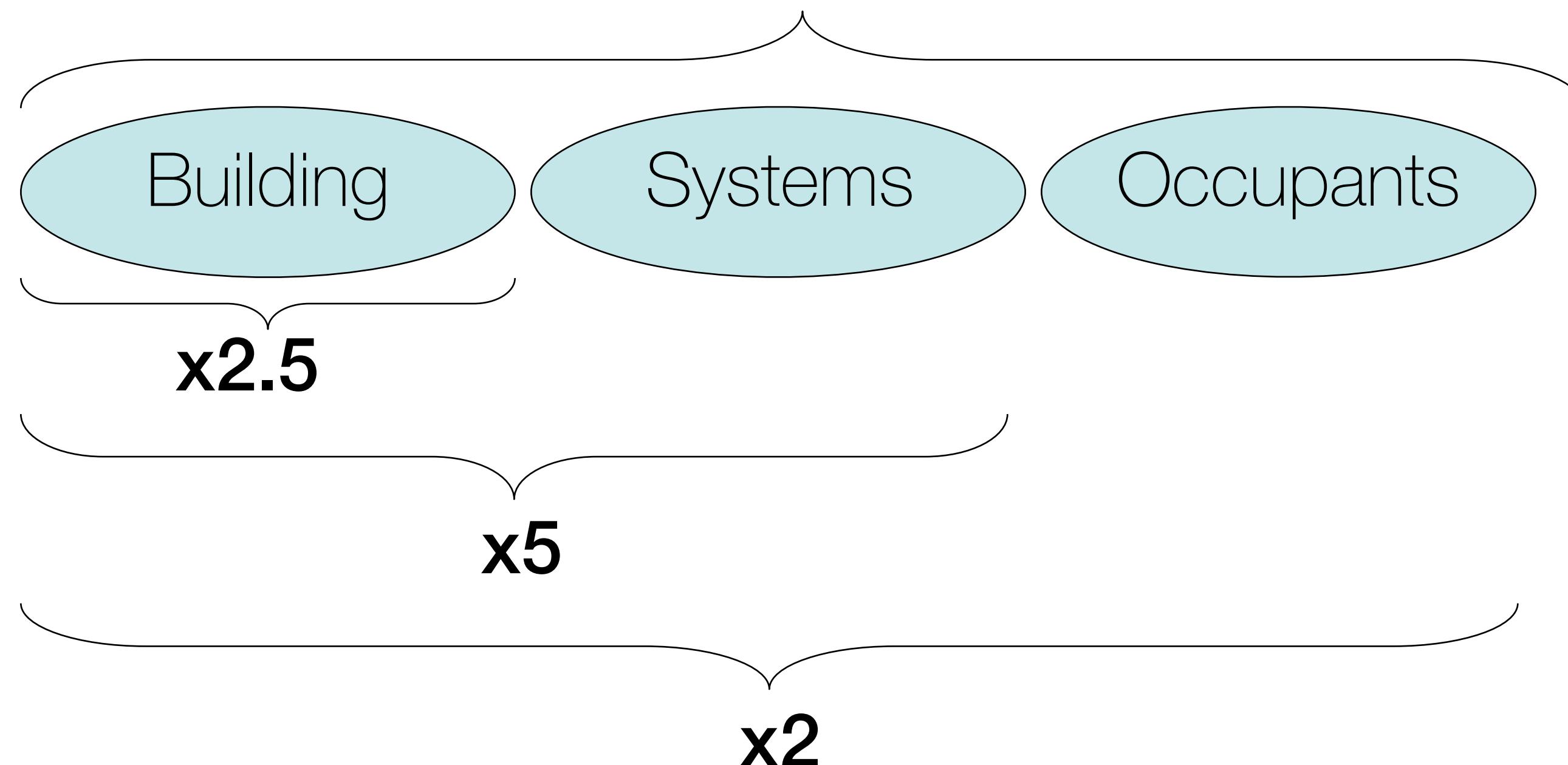
Previous Operational Ratings

uwe studio building

white design

1. Building Design
2. Systems Design & Performance
3. Occupant Behaviour

From field studies - 10 x variation



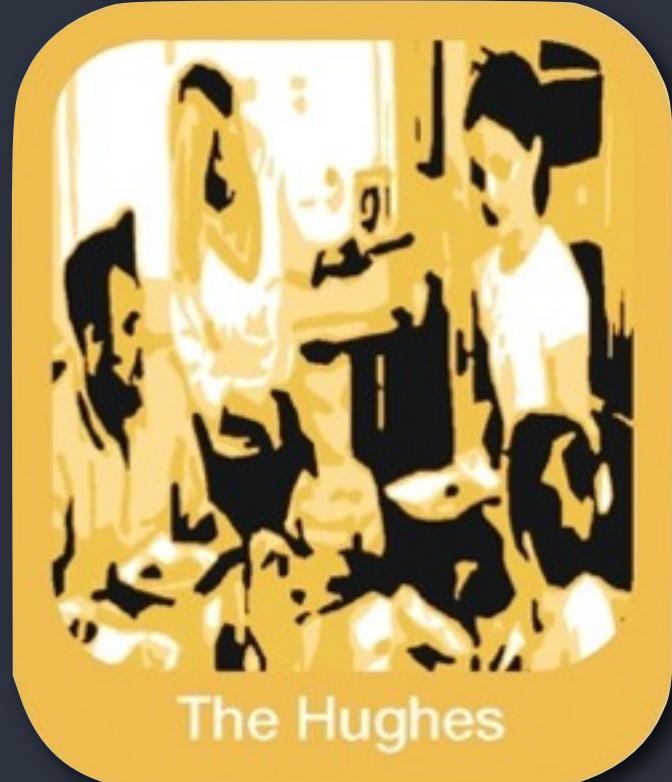
10 x 10

why does energy use vary so much?

white design



Ruby and Ted



The Hughes



Joe



10 x 10

carbon profiling

white+ design



Display Energy Certificate
How efficiently is this building being used?

HM Government

Certificate Reference Number:
0182-1171-9483-0601-0571

Torfaen County Borough Council
Units 1 - 4
Cwmbran
NP44 5AZ

This certificate indicates how much energy is being used to operate this building. The operational rating is based on meter readings of all the energy actually used in the building. It is compared to a benchmark that represents performance indicative of all buildings of this type. There is more advice on how to interpret this information on the Government's website www.communities.gov.uk/epbd.

Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed; they represent comparative energy efficiency. 100 would be typical for this kind of building.

Total CO₂ Emissions

This tells you how much carbon dioxide the building emits. It shows tonnes per year of CO₂.

More energy efficient

Less energy efficient

A 0-25 < 20

B 26-50

C 51-75

D 76-100 100 would be typical

E 101-125

F 126-150

G Over 150

09-2008

Previous Operational Ratings

This tells you how efficiently energy has been used in this building over the last three accounting periods.

09-2008 200

Technical Information

This tells you technical information about how energy is used in this building. Consumption data based on Actual.

Main heating fuel: Natural Gas
Building Environment: Heating and Natural Ventilation
Total useful floor area (m²): 145
Asset Rating: 0

Administrative Information

This is a Display Energy Certificate as defined in SI 2007/991 as amended.

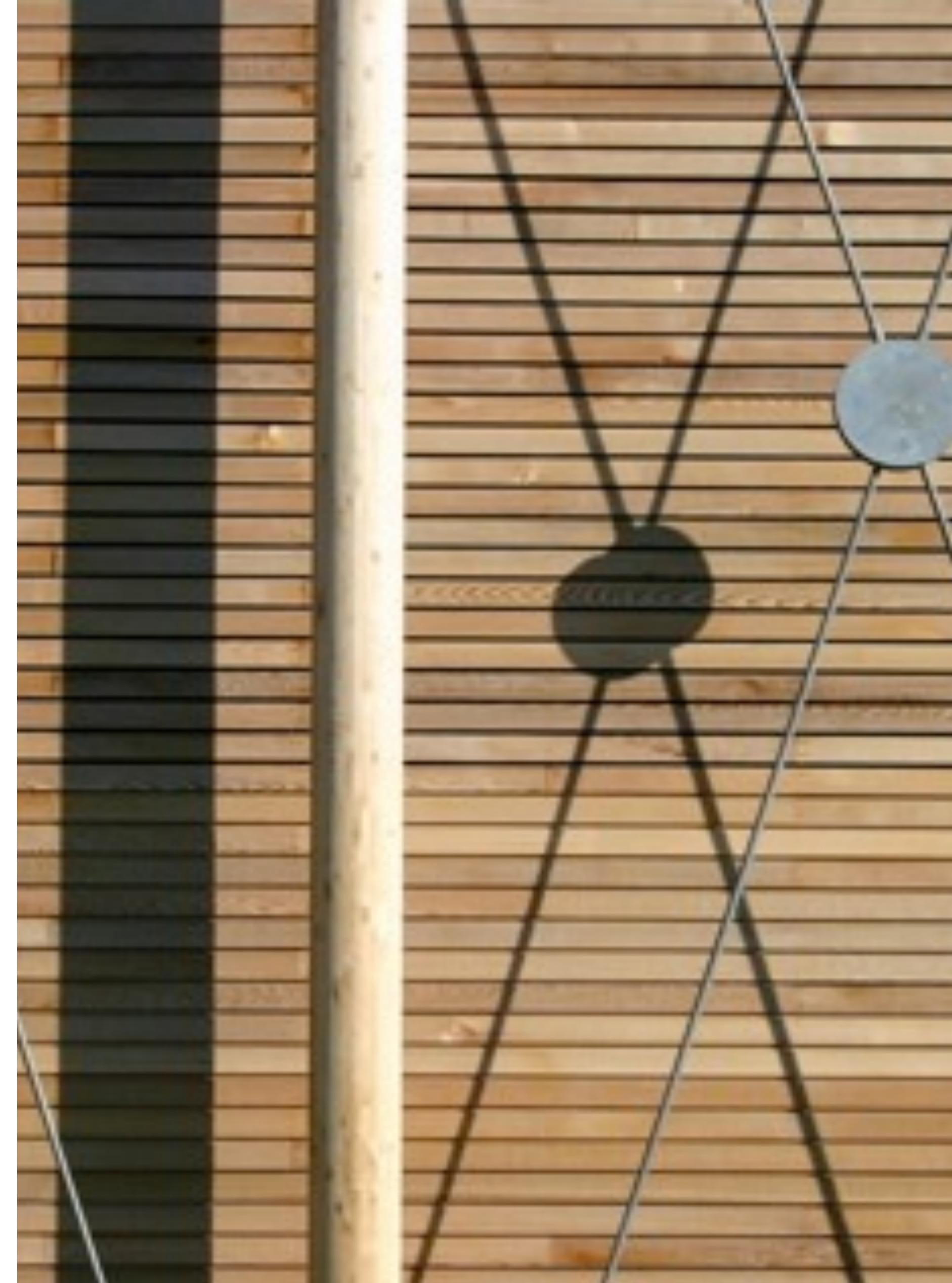
	Heating	Electrical
Annual Energy Use (kWh/m ² /year)	40	13
Typical Energy Use (kWh/m ² /year)	116	95
Energy from renewables	0%	0%

TEAMSIGMA V4
123456789101
Allan Jones
LCEAD
CIBSE Certification Limited
Torfaen CBC
Civic Centre, Pontypool, NP4 6YB
30-09-2008
30-09-2008
29-09-2009
N/A

Recommendations for improving the energy efficiency of the building are

torfaen eco building

white design



kingsmead primary

white design



naturally daylit
every child gets the same daylight level
daylight linked artificial lighting
naturally ventilated
gullwing roof harvests rainwater

the low carbon section



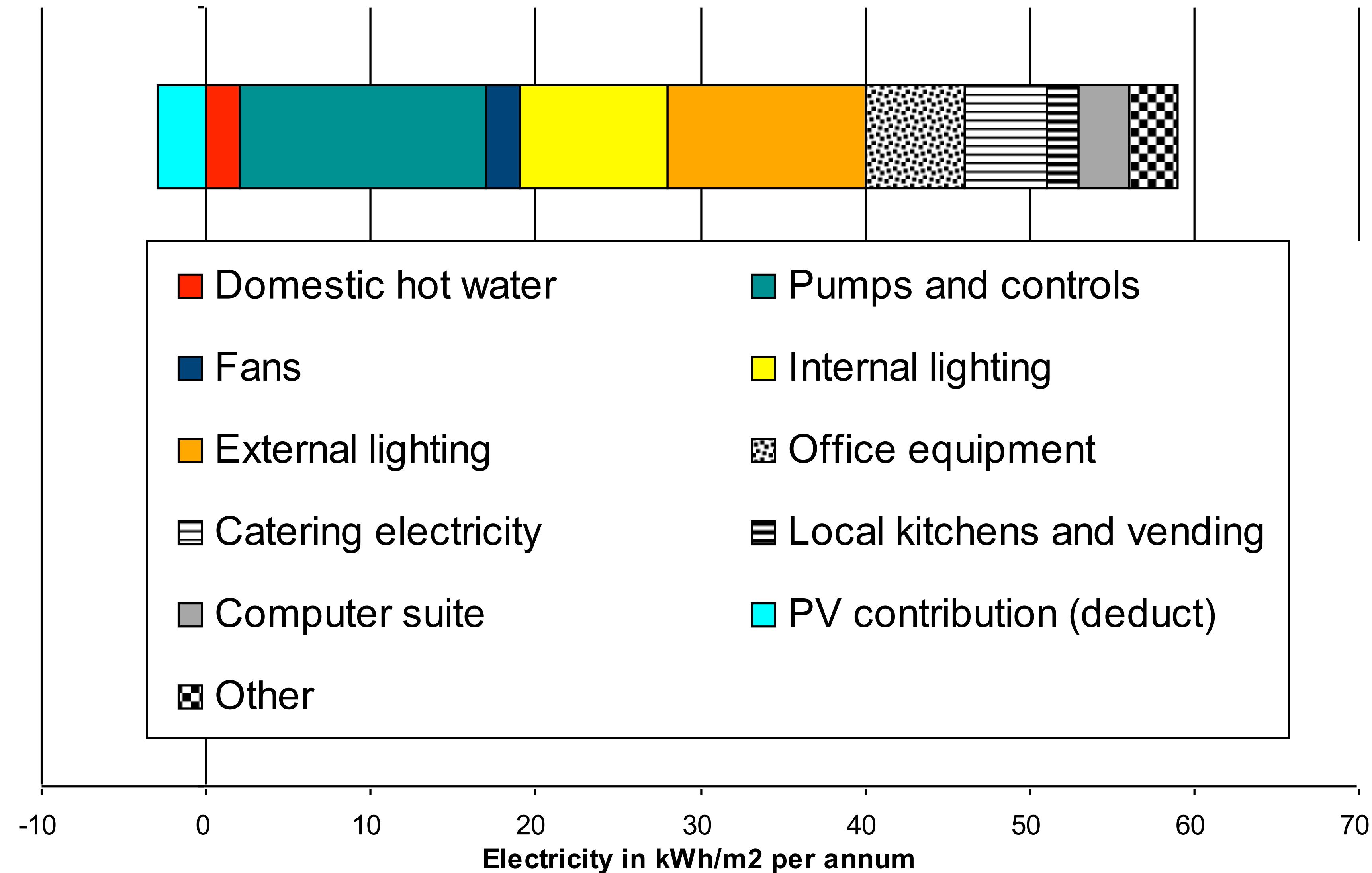
Energy Report

Kingsmead Primary School TM22 www.bsria.co.uk

September 2009

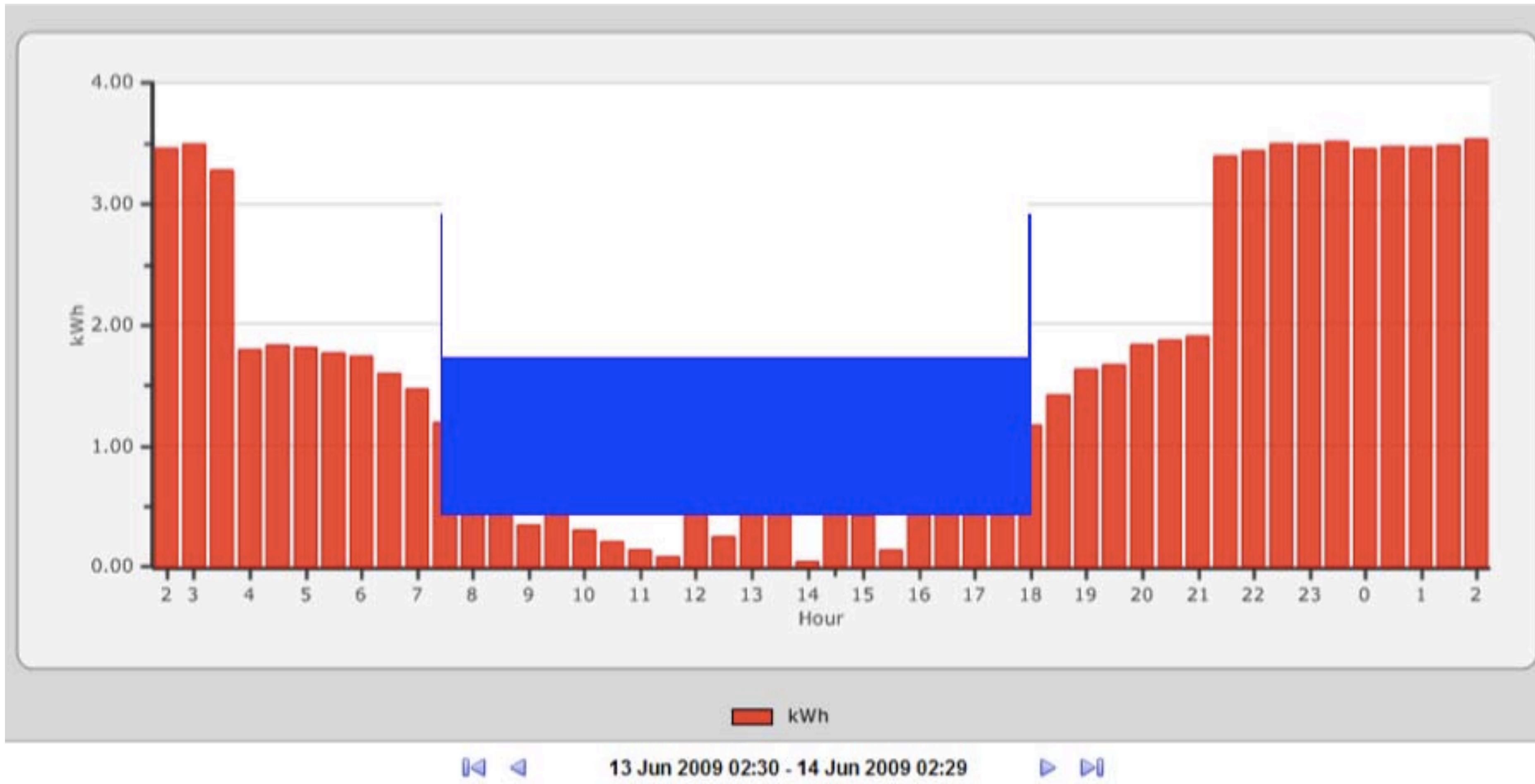
Compiled by: Roderic Bunn

Kingsmead Primary School annual electricity in kWh/m² per annum



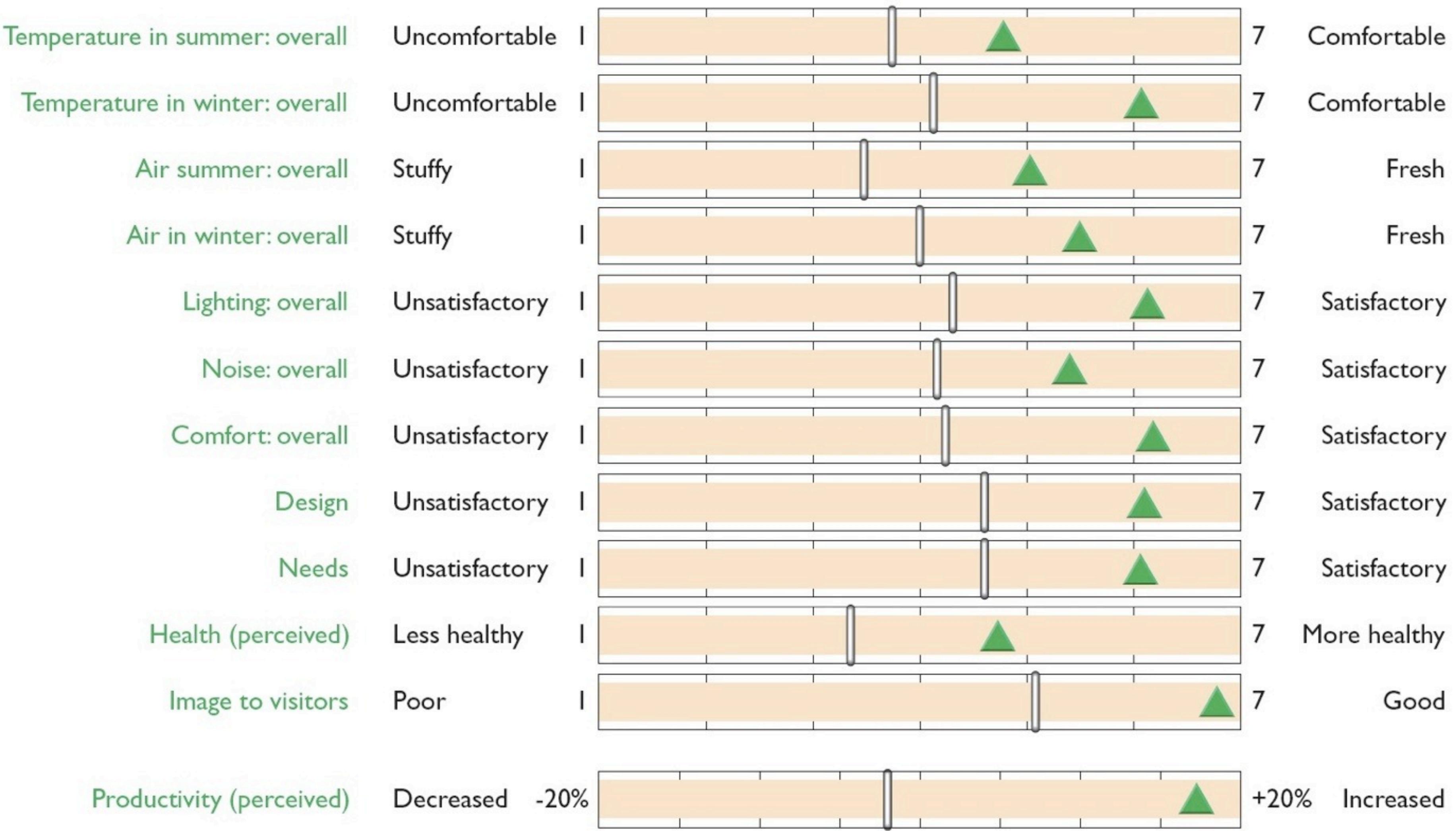
where does the electricity go?

white design



external lighting and the effect of pvs

white sign - S I G N - D E S I G N -

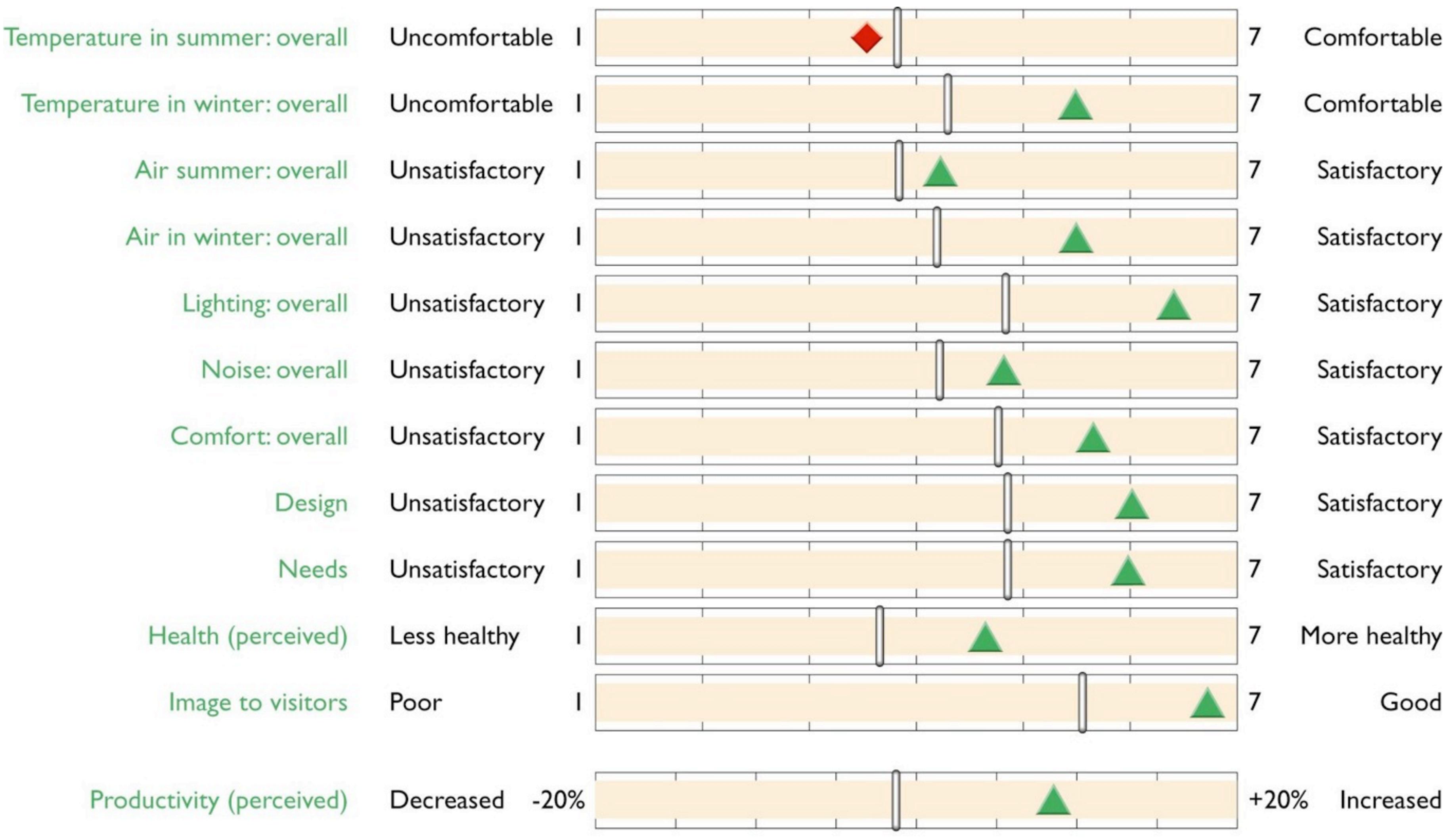


0%

© Building Use Studies 2006

post occupancy evaluation 2006

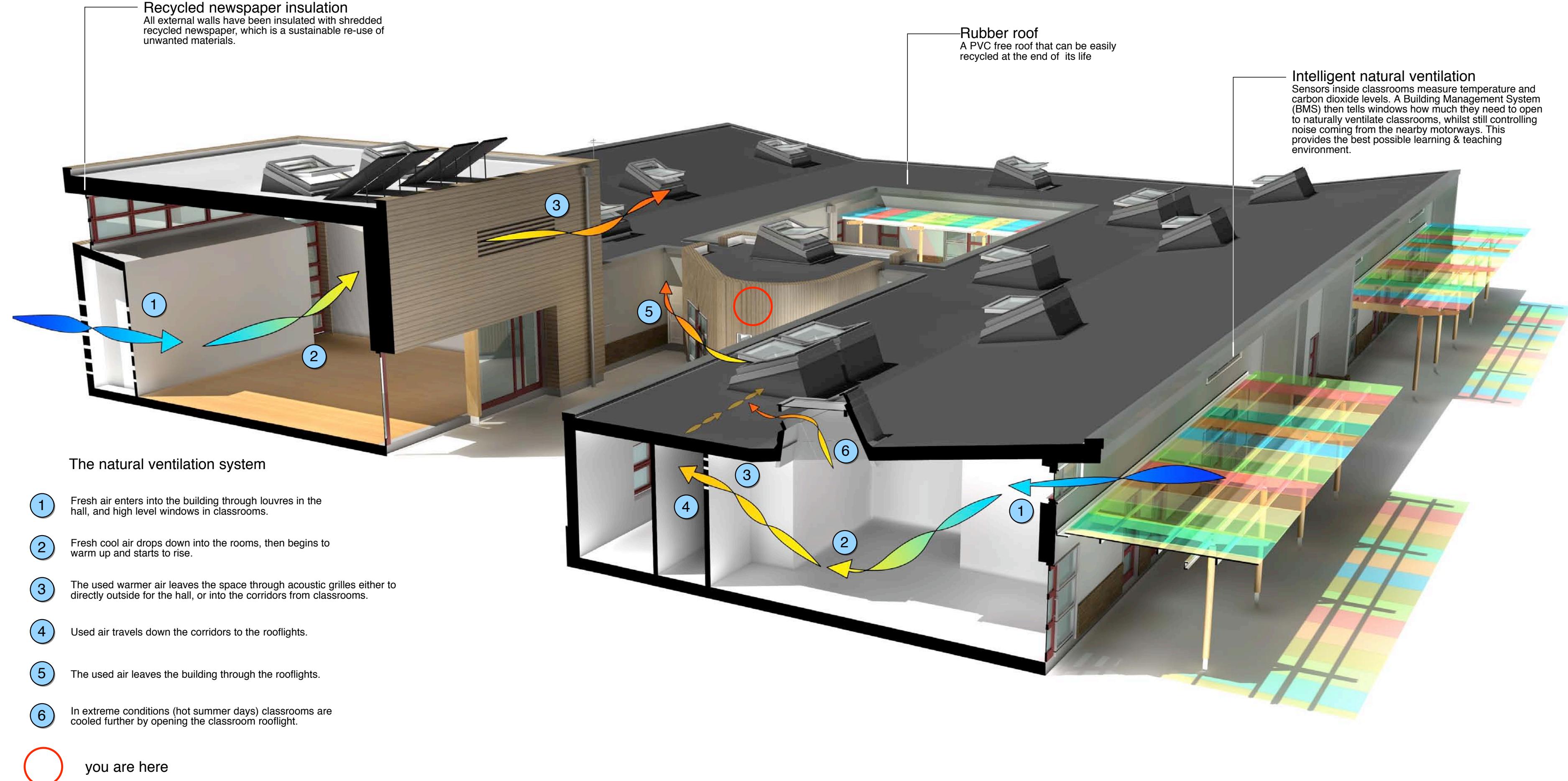
White sign



© Building Use Studies 2009

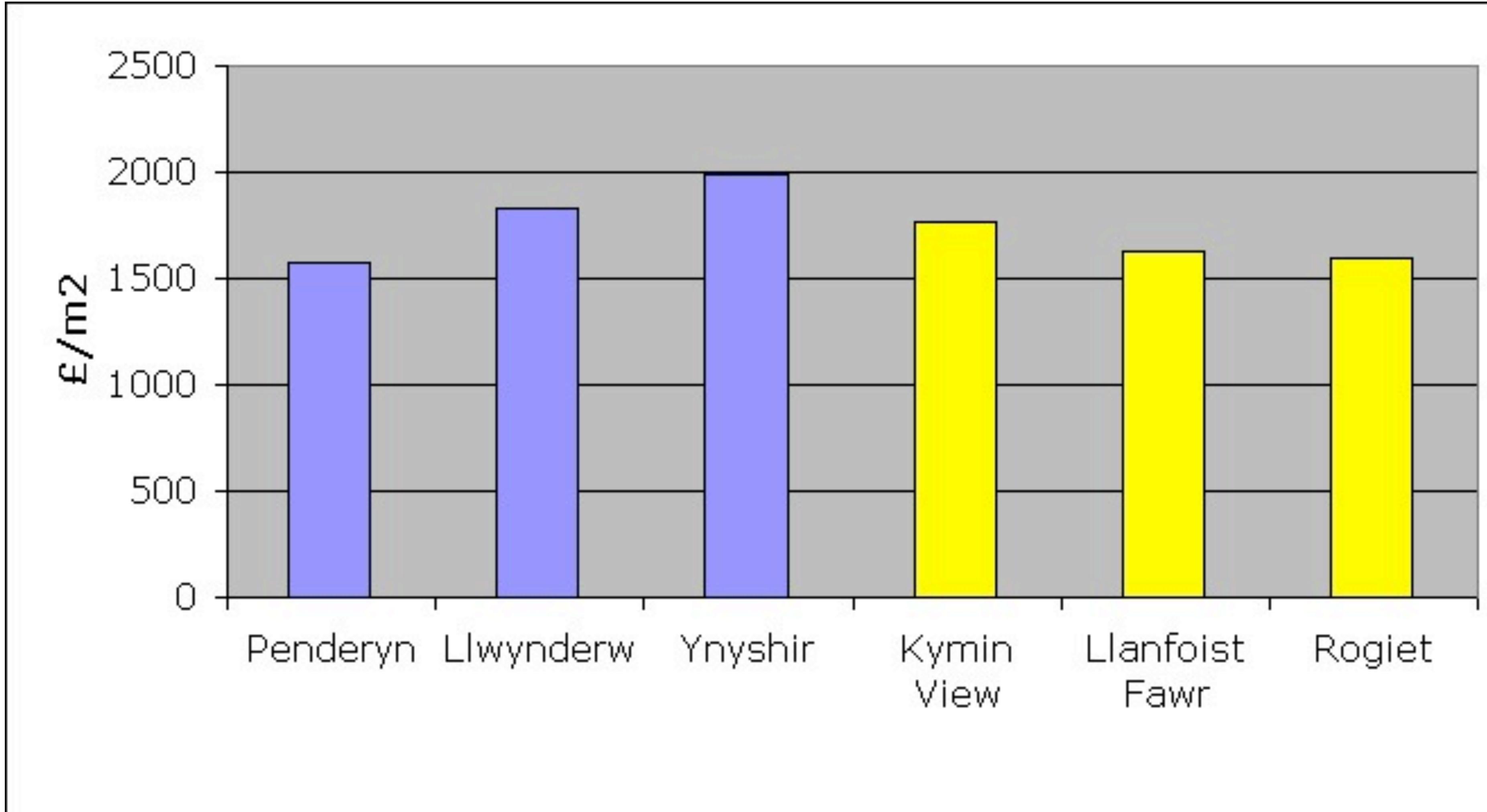
post occupancy evaluation 2009

white+ design



rogiet acoustics

white design



benefits of working in a framework

white+ design



rojet - highest BREEAM score for schools

white design



dartington primary

white design



dartington

white
design



dartington primary

new types of business that can:

learn how to generate wealth
in the low carbon economy

How?

we have to own carbon emissions
fees linked to performance
understand behaviour

a building will be for life
not just for christmas

the new low carbon economy

white design



crossing our fingers and hoping isn't good enough

white design



eauc
mind the gap

23 03 2010

craig white

