

#UKPHC19

# Agar Grove

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conference 2019



 **WARM:**  
Low Energy  
Building Practice

 **Camden**

**Hawkins\**  
**Brown**

 **pba**  
peterbrett

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Mæ

**grant associates**

**ARCHITYPE**

 **savills**

 **ARCADIS**

 **robinsons**  
MECHANICAL, ELECTRICAL & AIR CONDITIONING ENGINEERS

**BWC**

 **Hill**





1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	







# Planning, District Heating, CHP



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# Planning, district heating, CHP

- Default scheme at the time:  
district heat network, CHP

# Planning, district heating, CHP

- Default scheme at the time:  
district heat network, CHP
- Implications:
  - High construction costs
  - High distribution losses
  - High system temperatures
  - Low efficiency





# Planning, district heating, CHP

Business as usual	
Reasonable fabric, airtightness, glazing etc	
Central energy centre with gas boilers	
Lots of renewables	

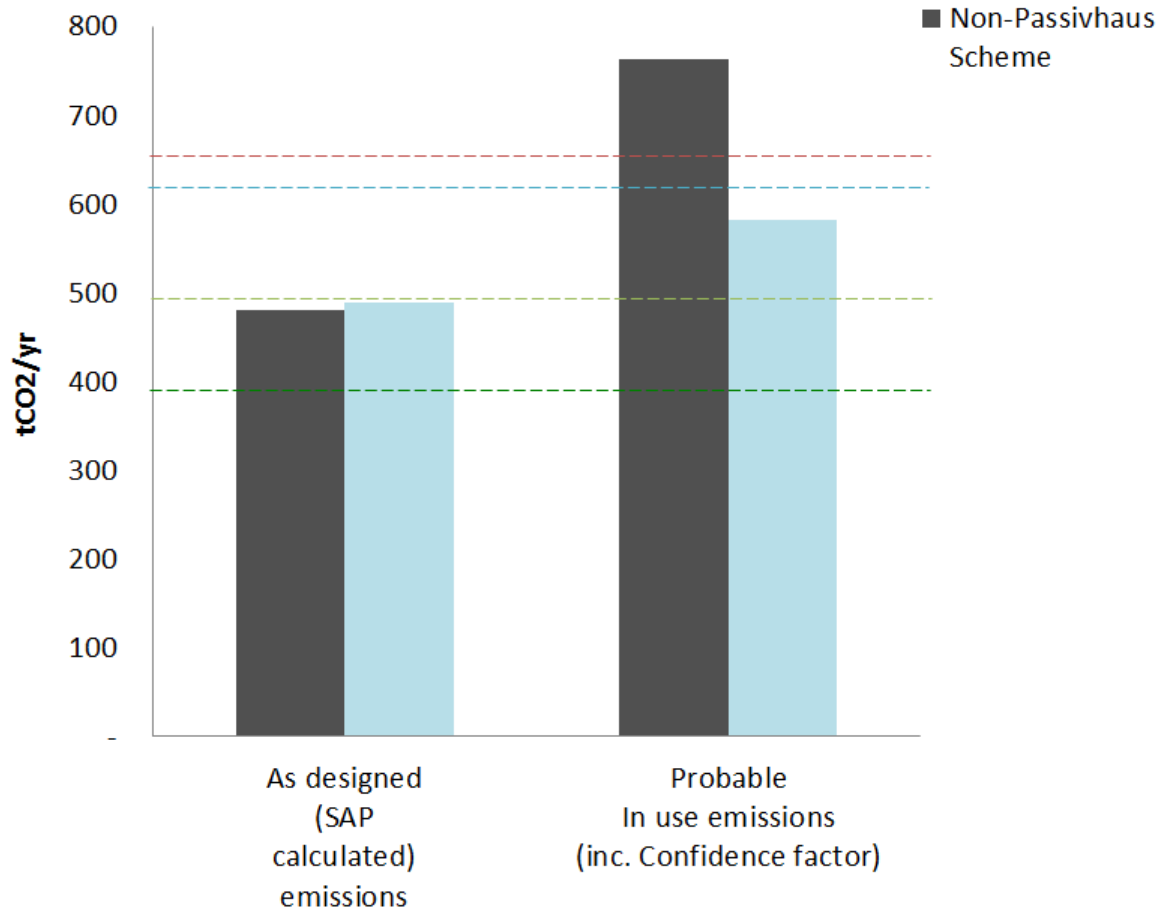
# Planning, district heating, CHP

Business as usual	Passivhaus
Reasonable fabric, airtightness, glazing etc	Passivhaus airtightness, triple glazing, good fabric
Central energy centre with gas boilers	Block by block gas boilers, lower temperatures
Lots of renewables	Less renewables

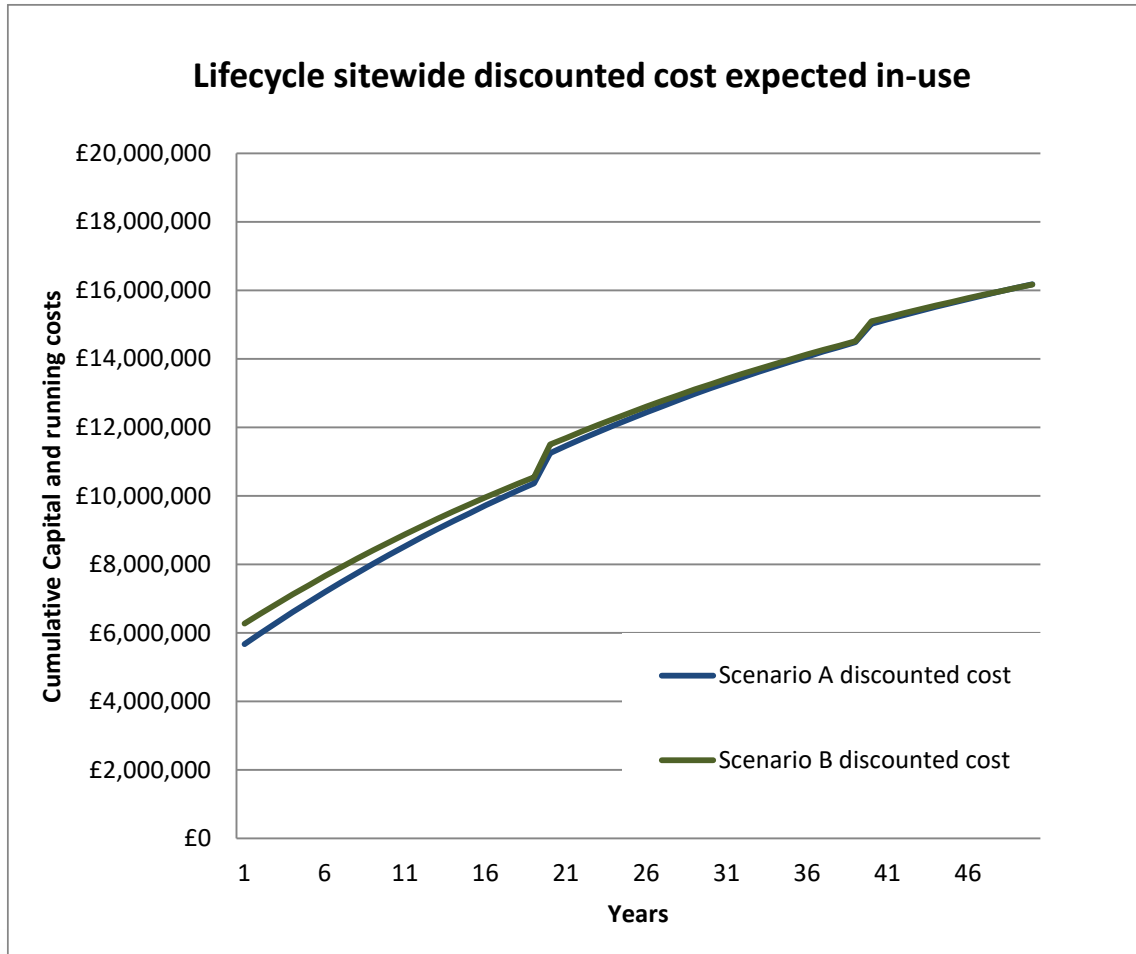




# Planning, district heating, CHP



# Planning, district heating, CHP





# Planning, district heating, CHP

- Agreed approach:

Passivhaus



CHP



Heat Network



# Buildings



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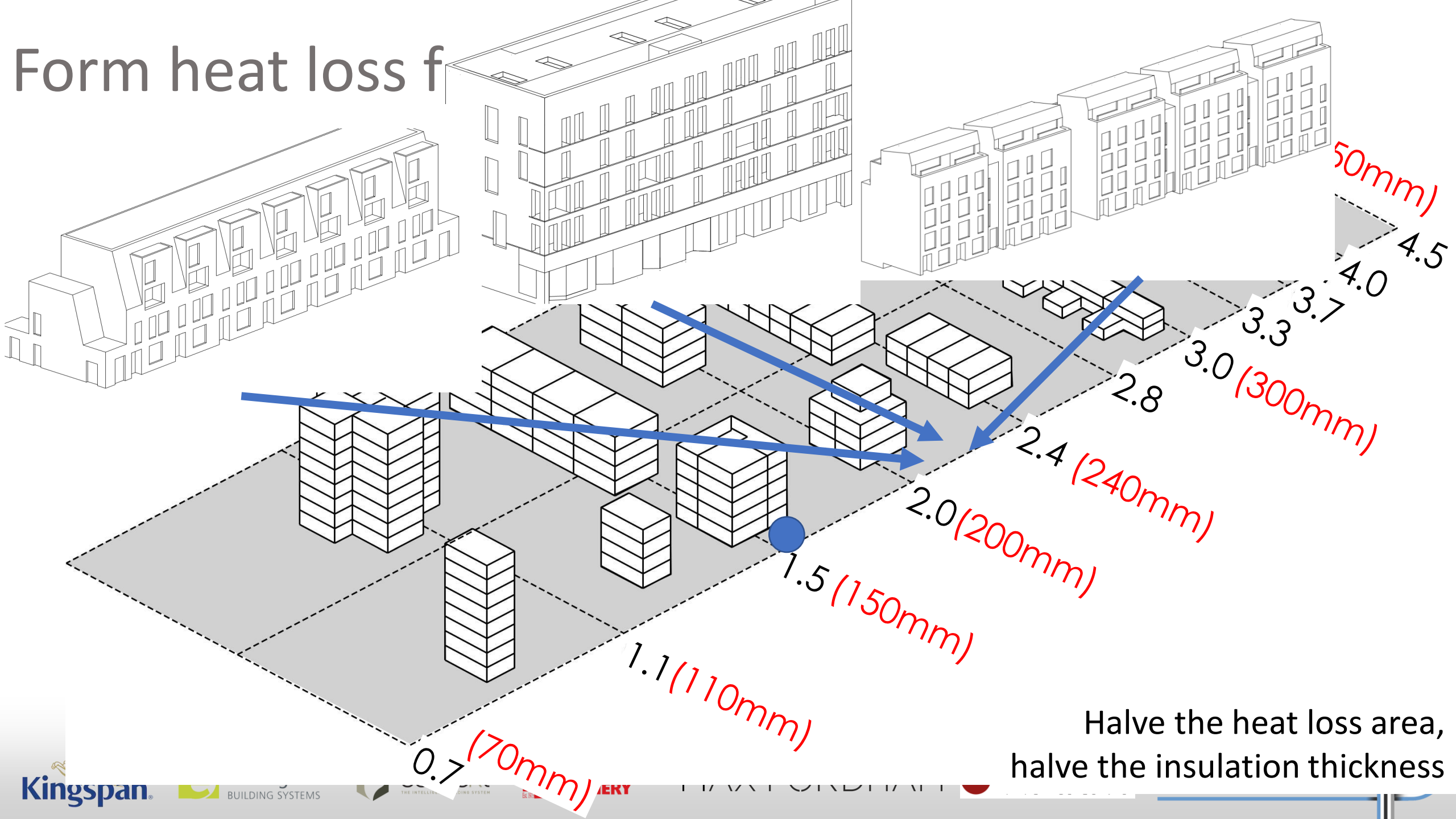


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# Form heat loss f



Halve the heat loss area,  
halve the insulation thickness

150mm of  
insulation



**Camden**





Image by S. Hermann from Pixabay



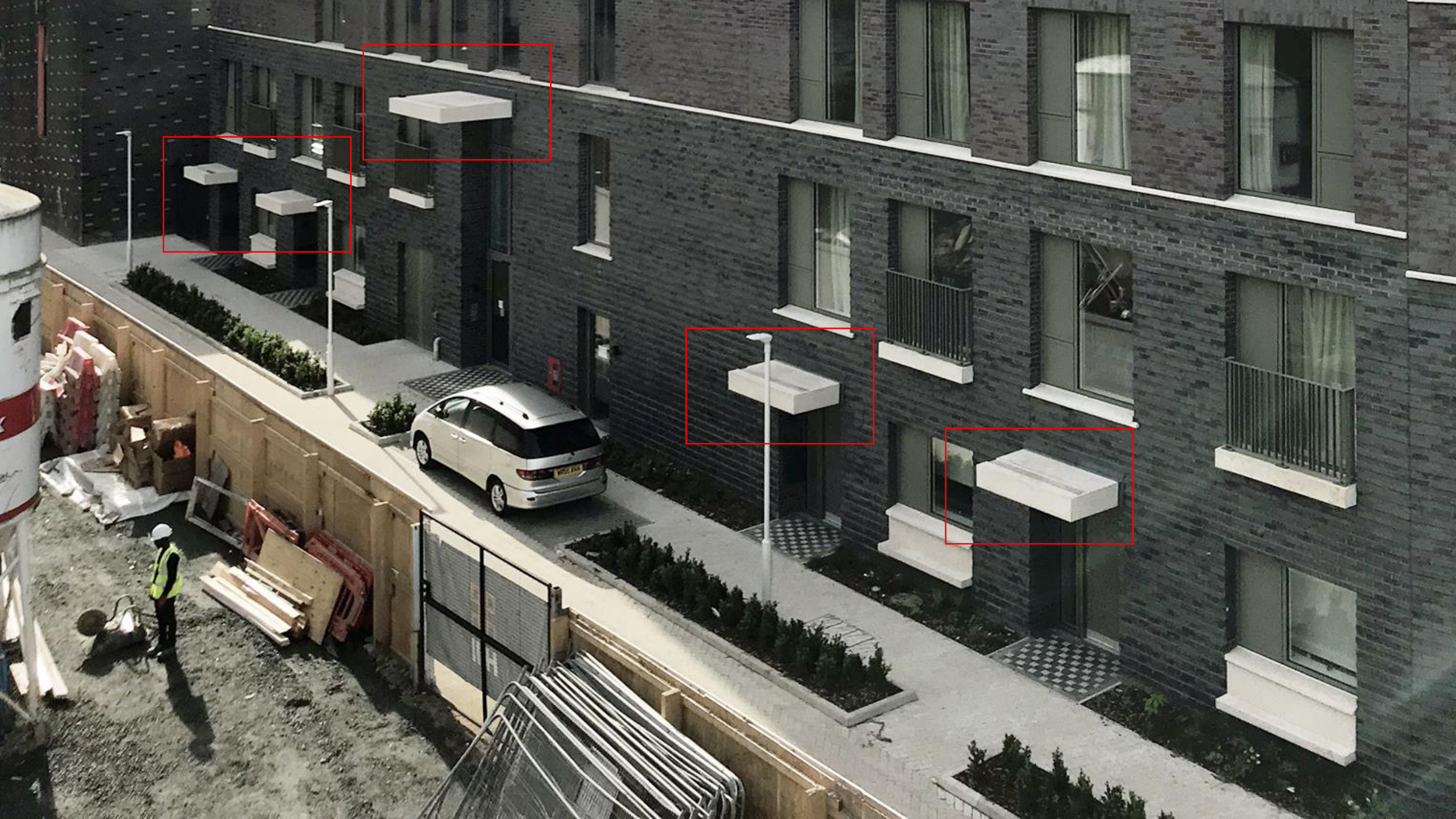
Simple aesthetic, complicated thermal envelope





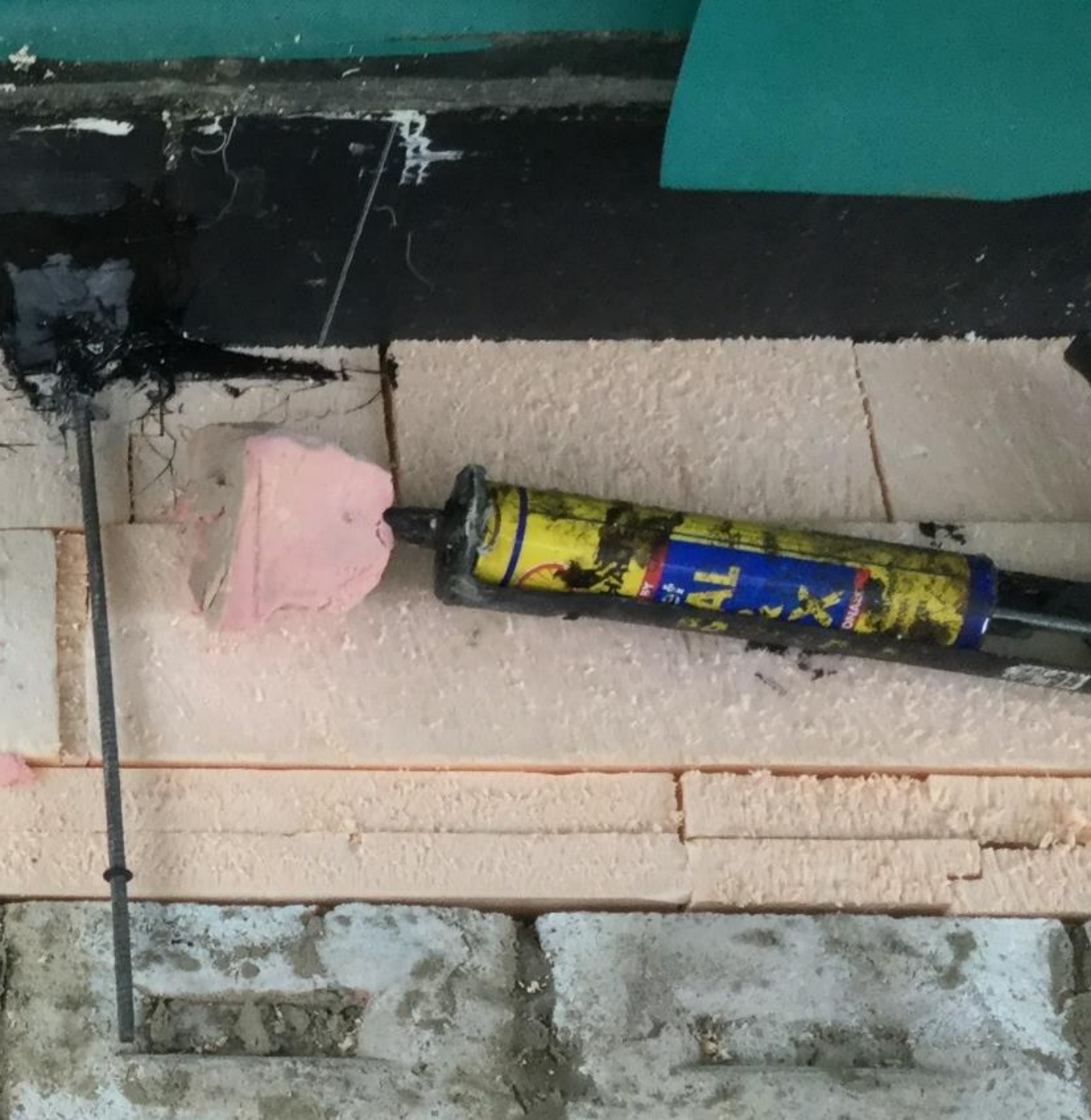












# Why bother? Thick insulation is hard

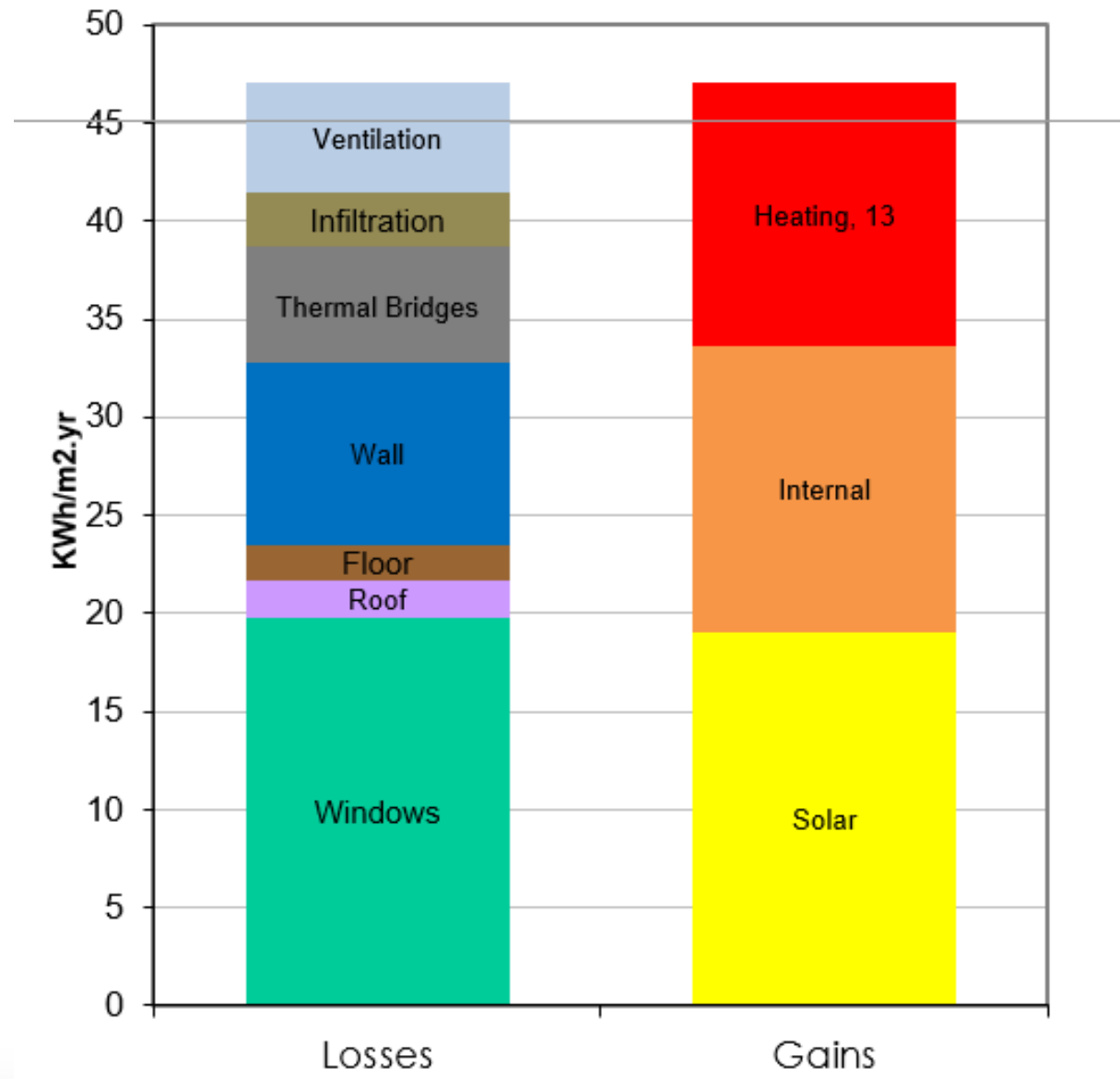
“Absolute limit of  
200mm to avoid tb’s”











# Services revisited

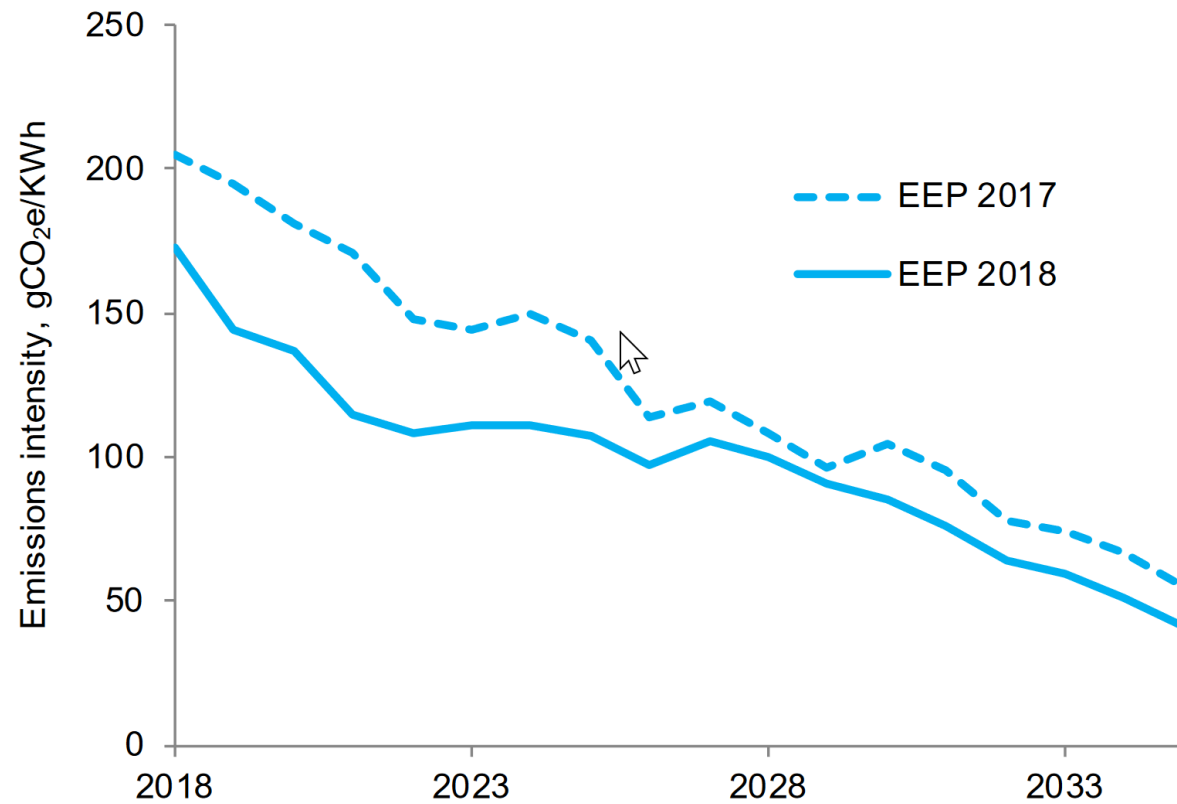


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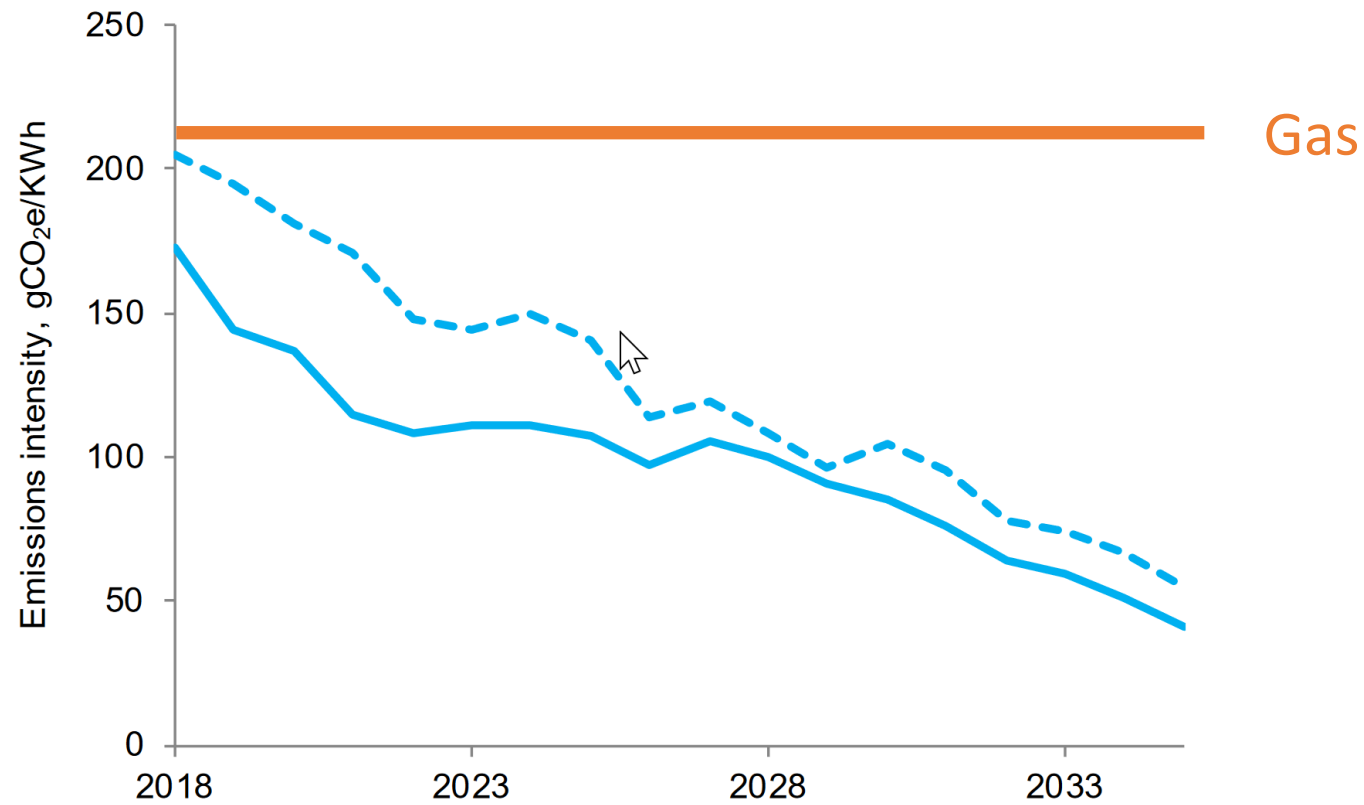




# Decarbonisation of electricity



# Decarbonisation of electricity



# Distribution losses



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# Hot water actual vs. design losses

- Design: 6.2 kW (163 W/dwelling) >>> Measured: 7.3 kW (192 W/dwelling)
- 18% increase in losses even with best endeavours
- Impact:
  - More energy used year round
  - Increased potential for summer discomfort







Heat source: air source heat pump / other

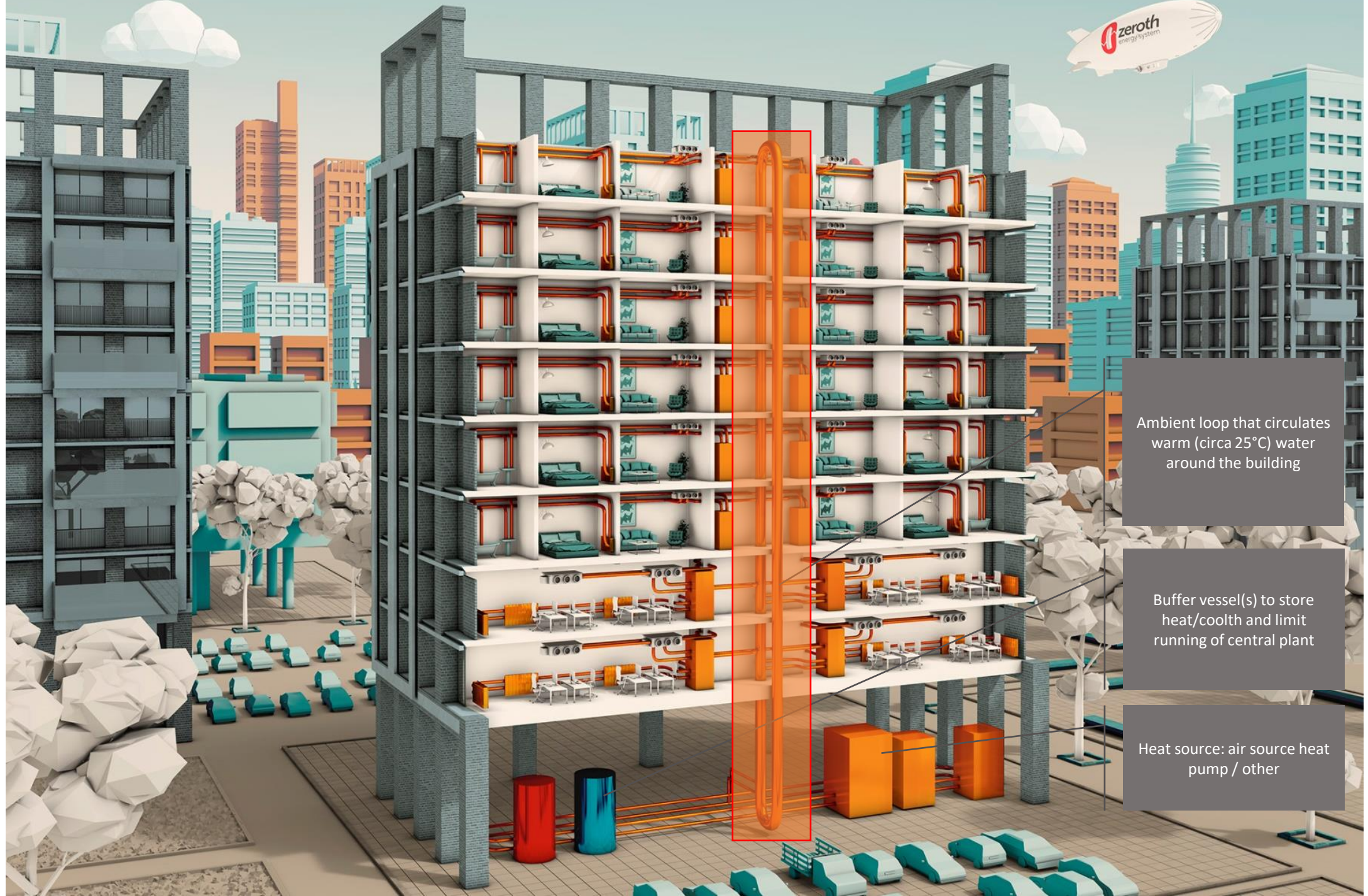




Ambient loop that circulates warm (circa 25°C) water around the building

Buffer vessel(s) to store heat/coolth and limit running of central plant

Heat source: air source heat pump / other







In-apartment terminal units that generate hot water for space heating and domestic hot water

Ambient loop that circulates warm (circa 25°C) water around the building

Buffer vessel(s) to store heat/coolth and limit running of central plant

Heat source: air source heat pump / other





# Post Occupancy Evaluation



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# Post Occupancy Evaluation

- Light
- Airy
- Comfortable

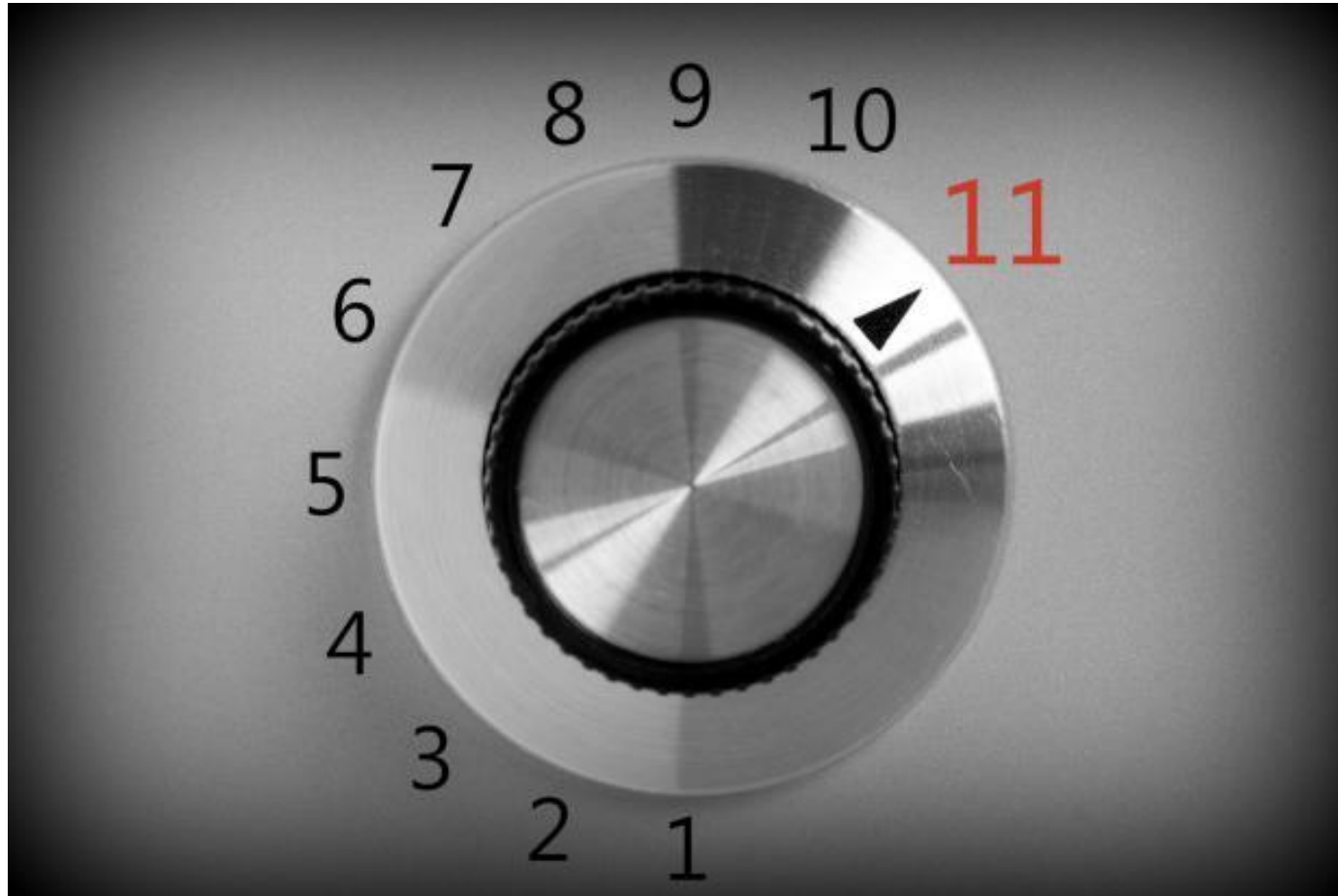


# Ventilation





# Ventilation



# Balconies







“The construction cost was comparable to other traditional schemes for the borough at that time.”

Camden Borough Council



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Thank you...

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