‘Retrofit and the Challenge of Tenements’

Energy Action Scotland Annual Conference 23.11.23

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What level of Energy Efficiency should we aim for?

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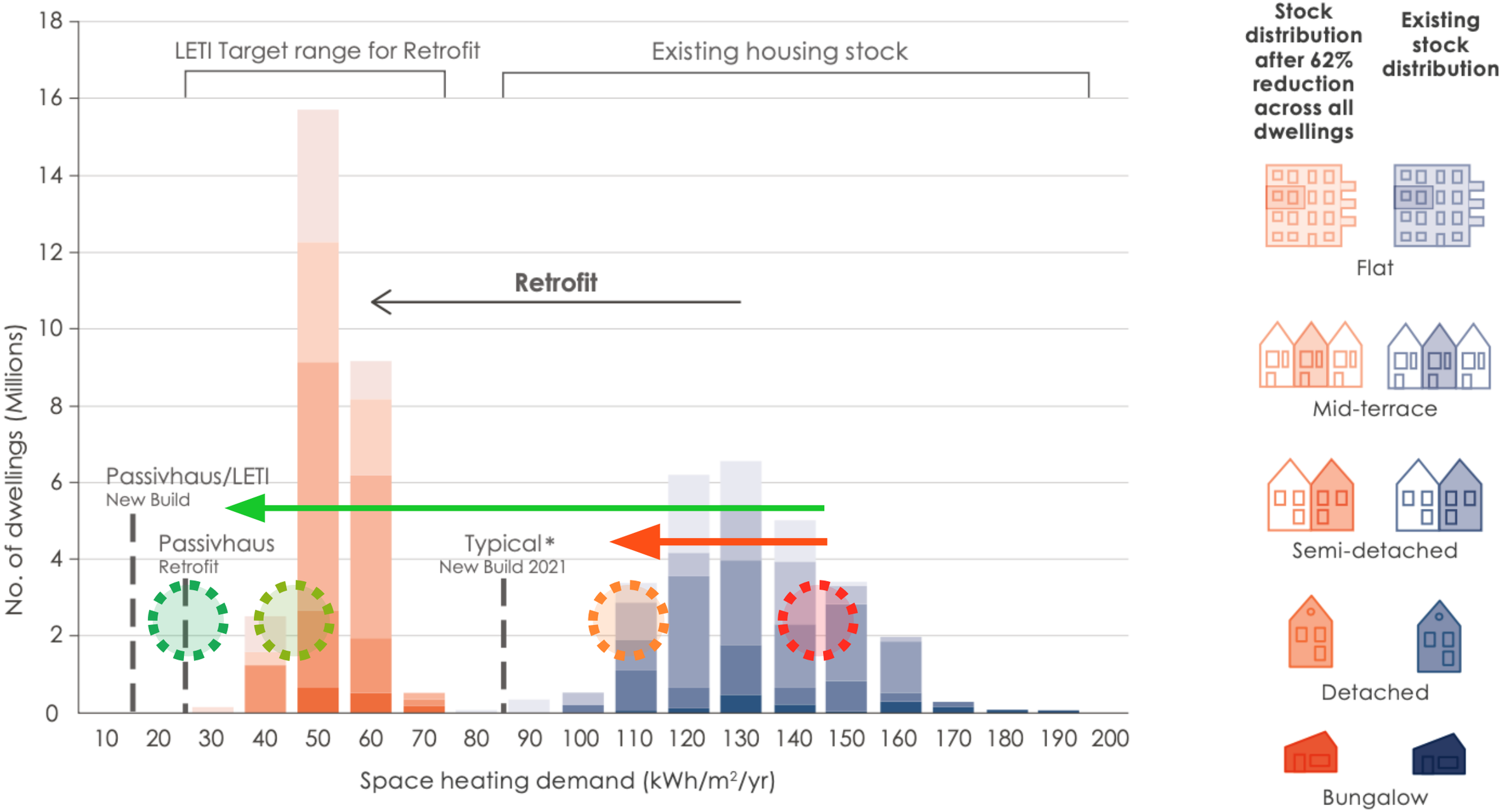

* Includes for an assumed performance gap

Figure 0.1 - Total number of UK dwellings broken down by their space heating demand, showing the transition required from existing levels of high demand to the LETI retrofit target range. Figure based on stock modelling carried out by LETI.

EnerPHit / AECB Retrofit Standard

- Level of aspiration / achievement is about right - 80-90% reduction in BOTH carbon emissions and fuel costs

- We know we will achieve what we set out to achieve (i.e. we close the performance gap)

- Works well with future renewable energy supply scenarios

- Significant improvement in comfort (winter-proofing and summer-proofing)

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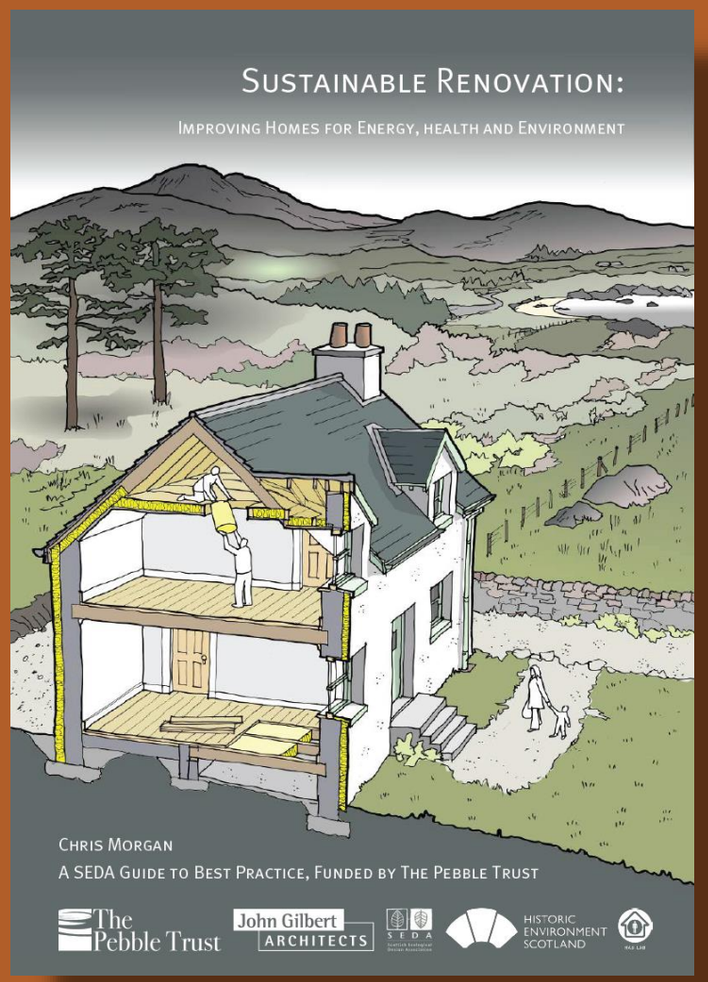
BUT… its not just about energy and carbon - Holistic / Sustainable Renovation

Table 3.5: UK treatment cost burden estimates to the NHS for selected hazards

Risk Factor	Total cost burden estimates to the NHS
Physical inactivity	£0.9-£1.0 billion
Overweight and obesity	£5.1-£5.2 billion
Smoking	£2.3-£3.3 billion
Alcohol intake	£3.0-£3.2 billion
Poor housing	£1.5-£2.5 billion

Using this approach, it is estimated that the total cost to society of poor housing in England, Wales and Northern Ireland is some £20 billion per annum (Table 3.4). This suggests that the annual treatment costs to the NHS is around 7.7% of the societal costs of all poor housing in these countries.

BRE: The Housing Stock of the United Kingdom



Our Guide and how it is different from other guidance

4 Principles

Balance

Reality

People

Heritage

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The Need for Balance:

- The current focus on energy efficiency creates ‘unintended consequences’:

- Energy Efficiency
- Comfort & Health
- Building Fabric

Balance

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Reality:

- Better Surveys
- Modelling vs Reality
- Construction Quality
- Moisture

Reality

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Engaging with People:

- Often the largest variable in building performance

- Better Controls
- Education
- Engagement

People

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Heritage Considerations:

- Drawing on the lessons of the conservation sector to improve the retrofit sector

- Different construction
- Maintenance
- Significance

Heritage

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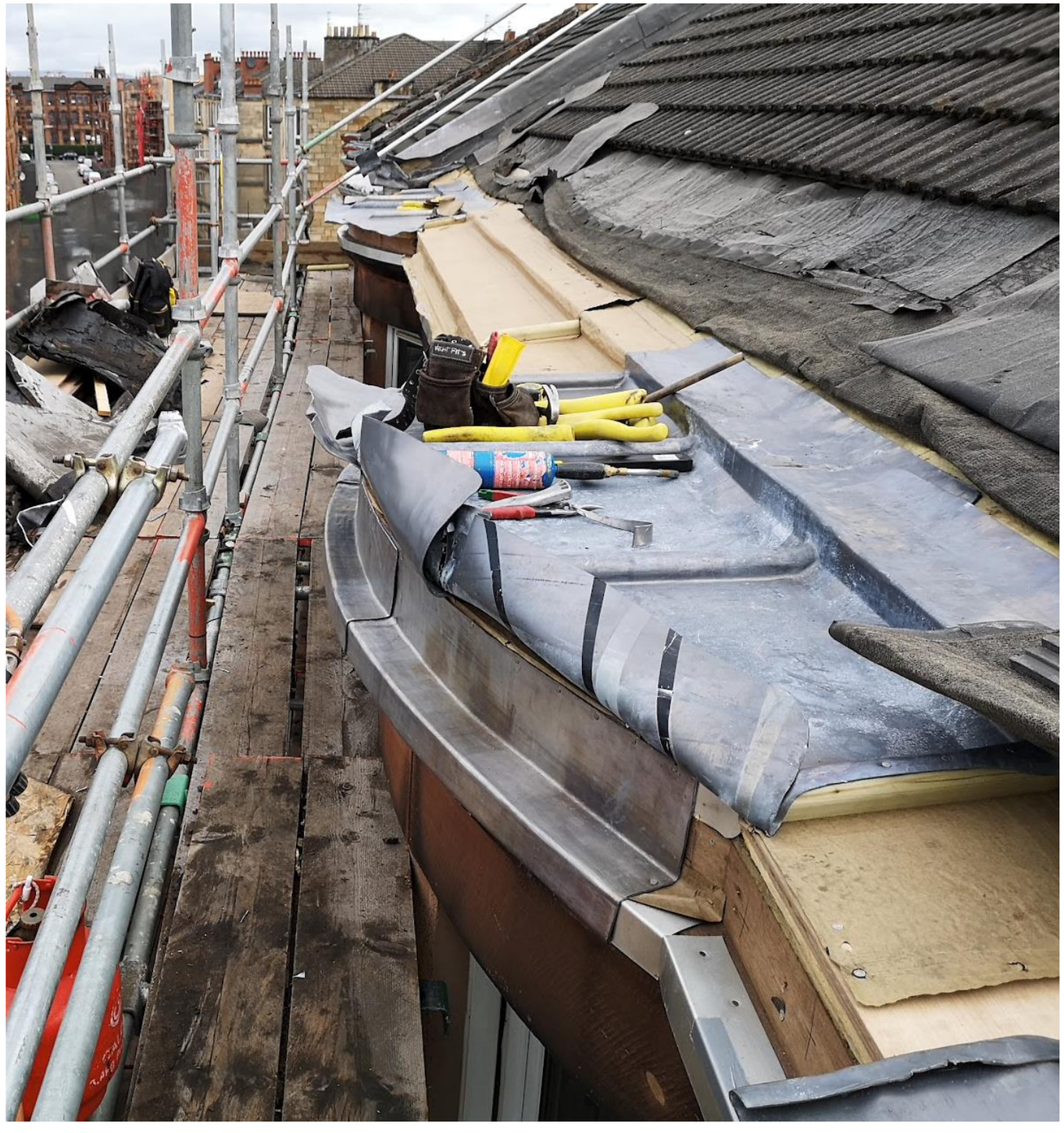
Mitigation / Adaptation

- Warmer, Wetter, Wilder
- Overheating / thermal stress / freeze/thaw, UHI, wildfires
- Flooding / biological growth / rain penetration / wet/dry cycles / ground
- Storm Damage / drought



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Mitigation / Adaptation

- Older buildings are at greater risk

- Conservation as building resilience and protecting buildings from the coming storm, not just as a visual exercise

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Niddrie Road Case Study

107 Niddrie Road Glasgow

Tenement EnerPHit Passivhaus Retrofit

1. Top up insulation up to 450mm thick

2. Lower area of slates removed to check for timber decay and ensure insulation wraps over wall head to meet EWI

3. Two smaller windows knocked into one larger window for more light and heat gain into living areas

4. New high performance triple glazed windows and doors

5. External wall insulation to rear and gable walls, extended below floors, into window reveals, all downpipes replaced

6. Mechanical ventilation with heat recovery unit in bathroom ceiling removes almost all outgoing heat keeping flats warm with lots of fresh air

7. Wastewater heat recovery from baths and showers

8. Internal wall insulation to front elevation, walls stripped back to stone, wood fibre insulation and lime plaster added

9. Street side stone wall repaired with stone repair and repointed using lime

10. First floor joists removed from wall to avoid decay, allowing for continuous insulation and airtightness

11. Layout altered for better space planning

12. Ground floor insulated along with careful airtightness measures

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Southside HOUSING ASSOCIATION

UK COLLABORATIVE CENTRE FOR HOUSING EVIDENCE

University of Strathclyde

Glasgow CITY COUNCIL

CCG

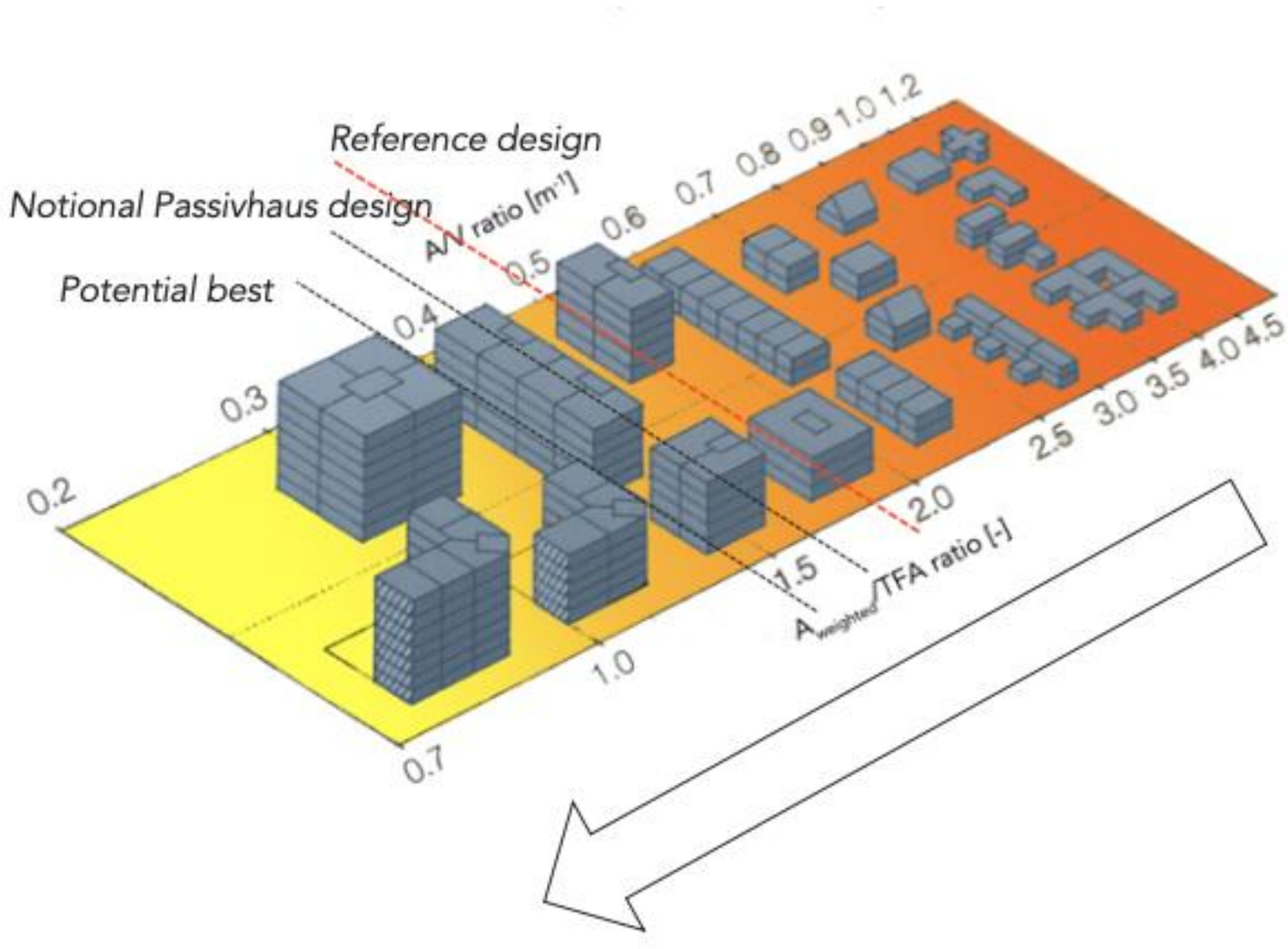
Concluding Thoughts

Tenements

- Often discussed as inefficient
  - not the case -
  fundamentally efficient form

- Efficient extends to transportation, utilities, placemaking, value and desirability

- Critical part of our built heritage



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Benefits of good Fabric First Tenement Retrofit

Carbon emissions reductions +

1. Reduced Fuel Costs for Occupants
2. Improved Thermal Comfort
3. Increased fuel security
4. Reduced renewables costs
5. Opportunity to maintain heritage
6. Improved building value
7. Lower embodied energy
8. Improved neighbourhood
9. Lifetime Guarantee (sort of)
10. Employment / skills / materials ratio
11. Improved occupant health
12. Improved mental health of occupants
13. Improved climate resilience

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Thank you

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