

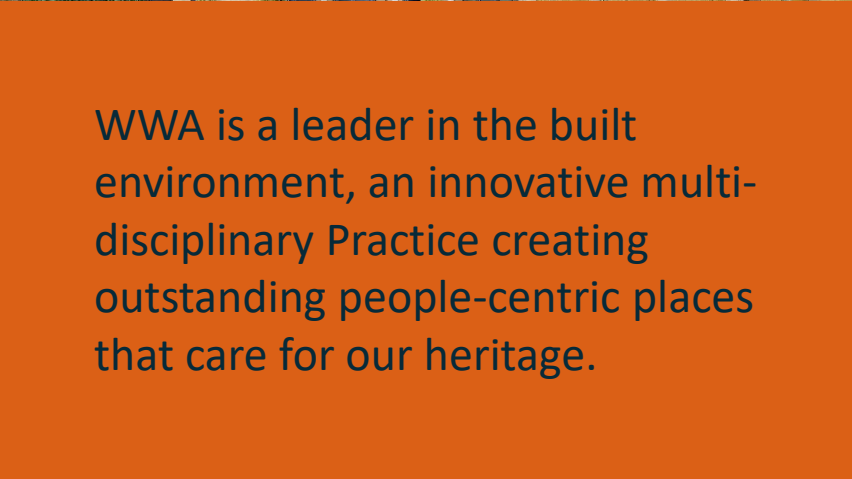


WEST WADDY ARCHADIA



Designing for Future Sustainability





WWA is a leader in the built environment, an innovative multi-disciplinary Practice creating outstanding people-centric places that care for our heritage.





# CLIMATE CHANGE

- **The concentration of carbon dioxide in our atmosphere is the highest it has ever been**
- **The 20 warmest years on record have been in the last 22**
- **The world is hotter by 1.1 degrees from 100 years ago – with 1.5 degrees deemed the maximum safe rise**

**2021** has already seen many extreme weather events

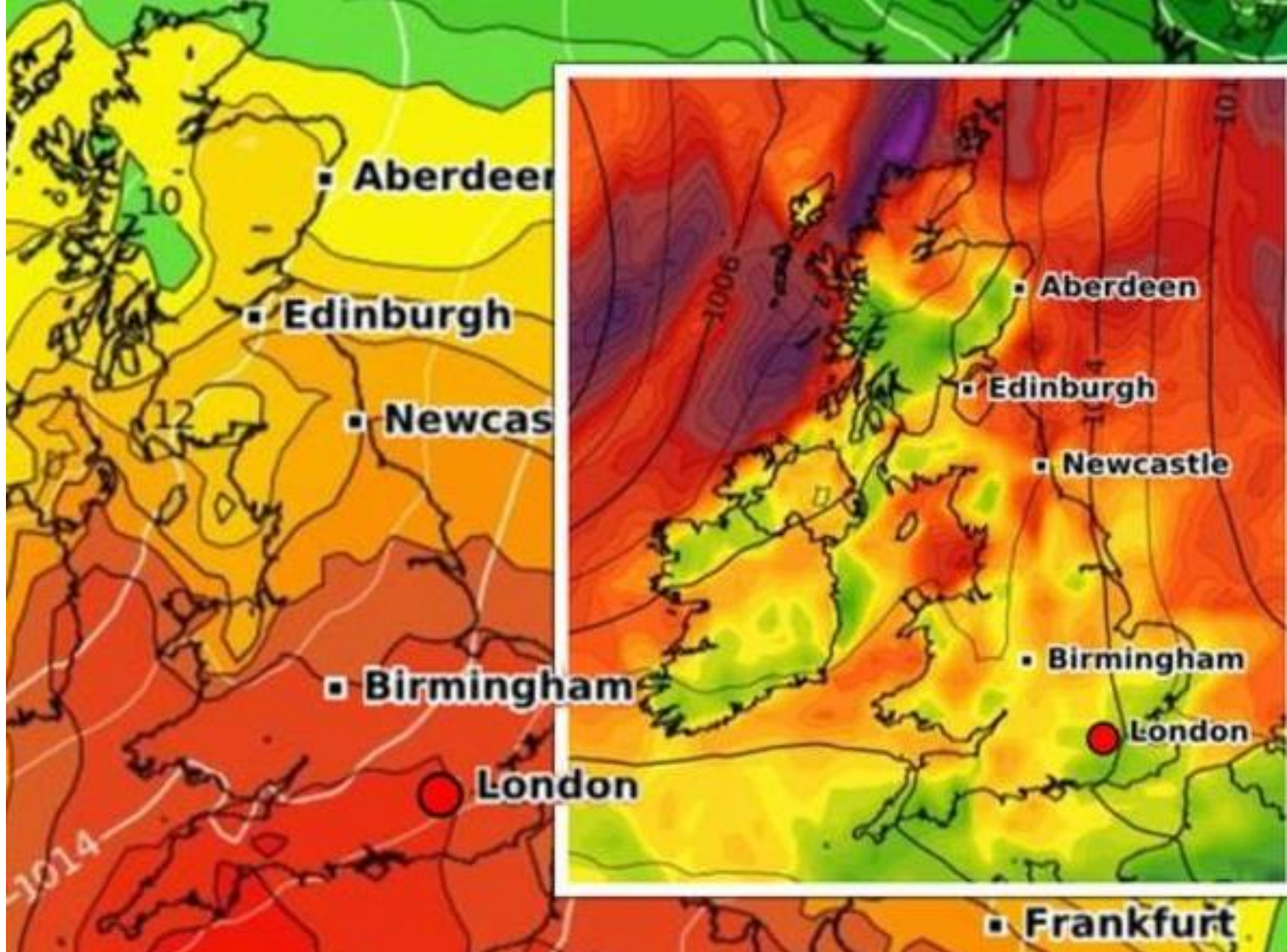
# Flooding in Germany

**2021**





Hottest  
Autumn in  
100 years



**2021**



# Wildfires in Western United States

**2021**

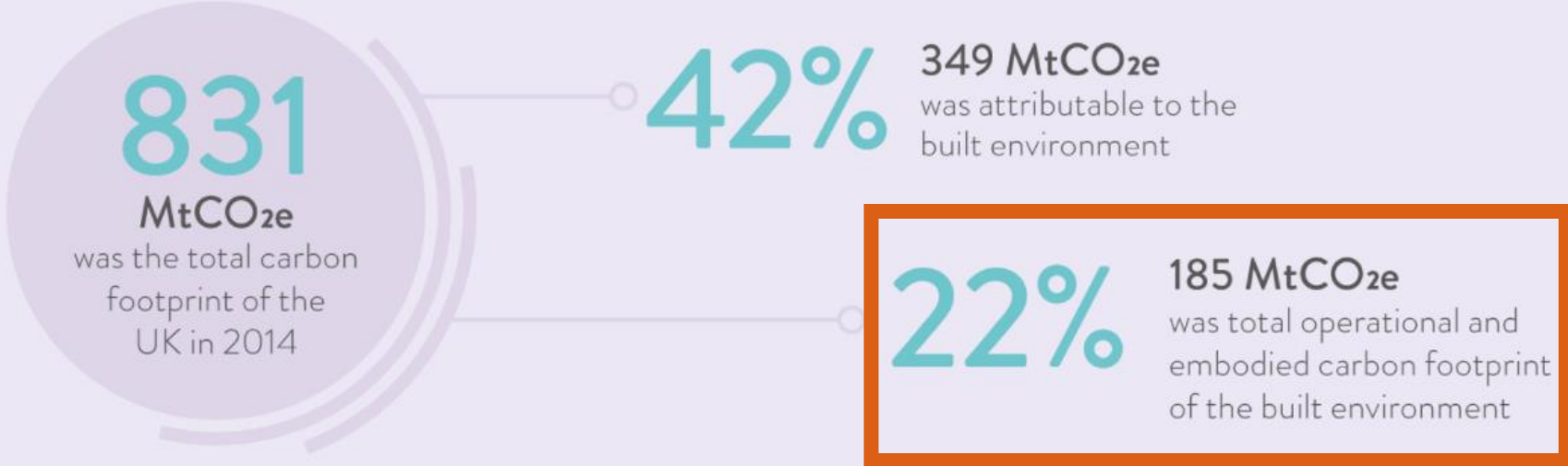


# UK GOVERNMENT TARGETS

- **All housing to be zero carbon by 2050**
- **80% of homes people will occupy in 2050 are already built**
- **Social landlord's properties to have a minimum EPC rating of 'C' by 2030**

42% of the UK's carbon footprint is attributable to the built environment

# Carbon impact of the built environment





**WHAT IS THE FUTURE?**

Light touch  
living?





Sustainable  
pod living?



Holistic  
approach to  
future  
development



**THE MIDDLE GROUND  
IS ALL ABOUT THE  
SEARCH FOR  
BALANCE**



# PASSIVHAUS

*'high level of occupant comfort while using very little energy for heating and cooling'*

- **Originally developed in Germany**
- **Quality assurance certification scheme for low energy buildings**
- **Requires buildings to be tested independently**
- **Achieves 75% reduction in space heating demands when compared to standard new build**

# Principles of Passivhaus

- Ensure high indoor air quality
- Ensure thermal comfort
- Ensure acoustic comfort
- Reduced heating demands
- Ensuring details and products work better
- Encourage use of efficient electrical appliances

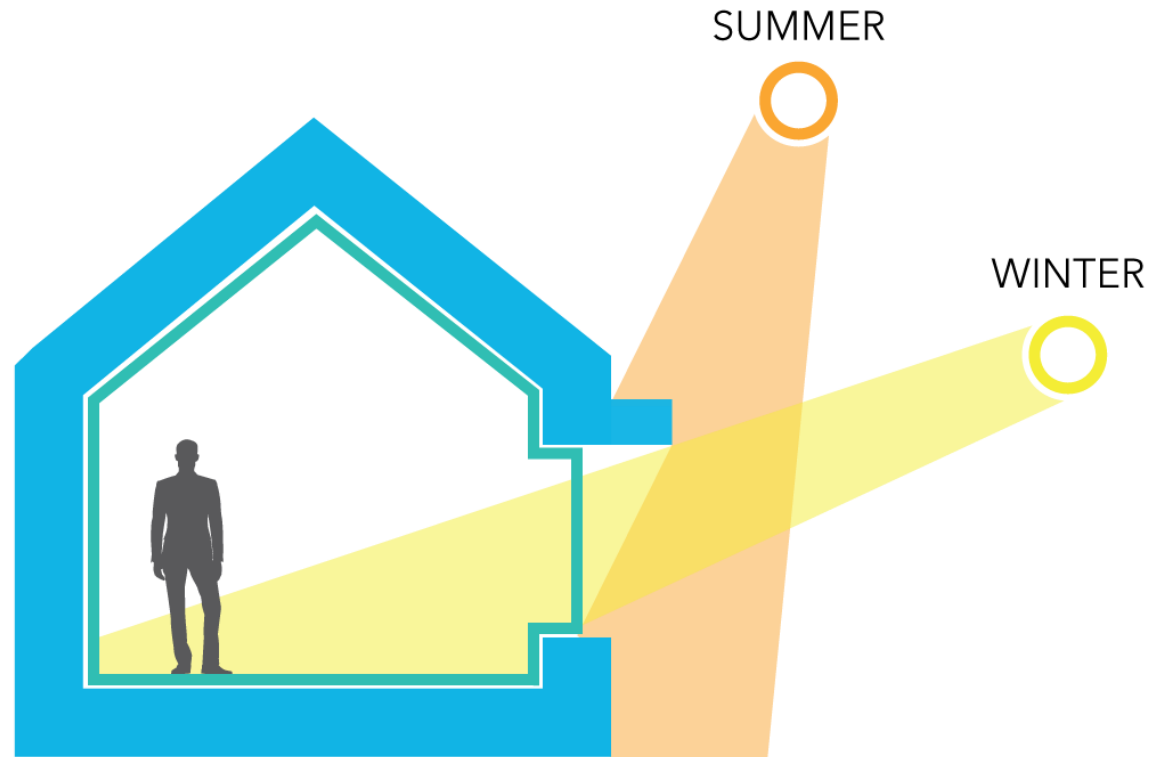




# Get the Orientation and Shape Right

- Maximise solar gains in winter
- Avoid overheating in the summer
- Take site context into account
- Minimise external surface area

## SUMMER VS WINTER SUN



# Keep the heat in

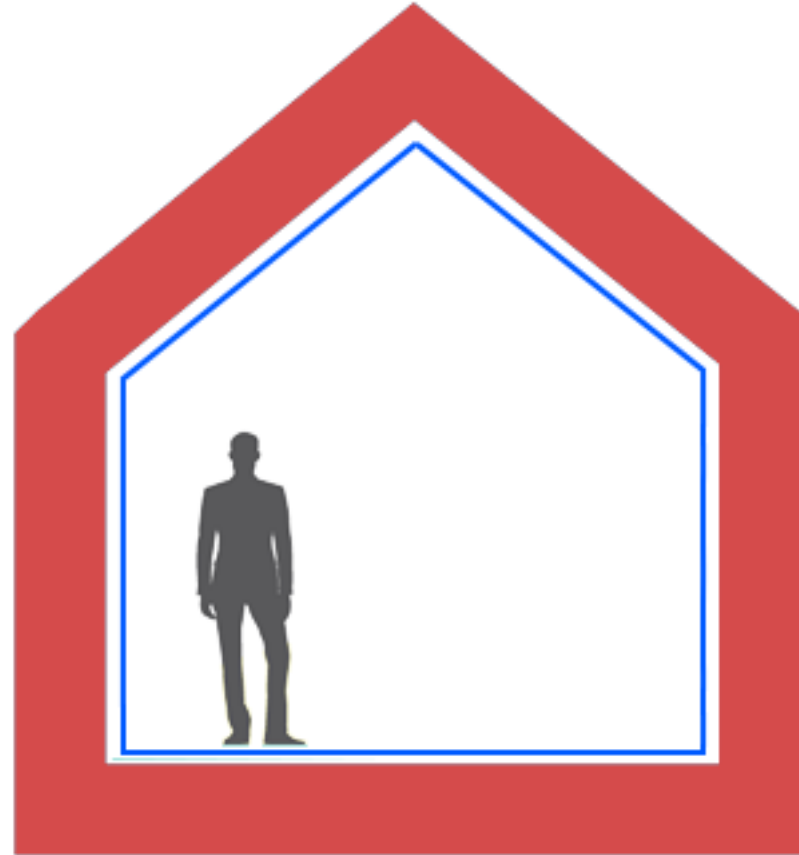
- High levels of insulation
- Prevents heat loss and reduces heating load





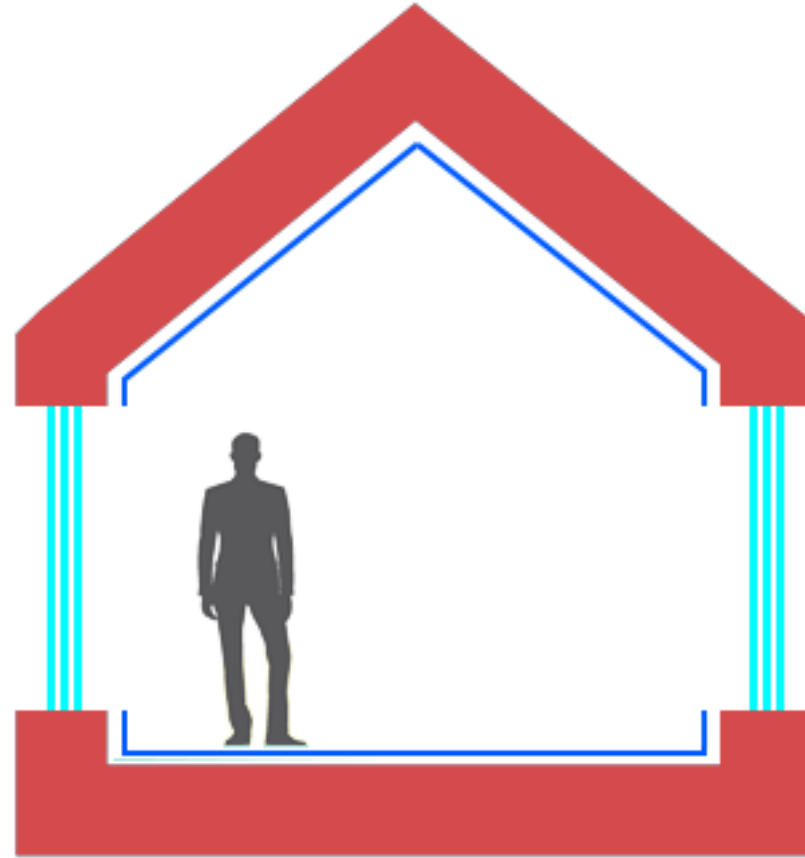
# Ensure there are no gaps

- Airtight fabric
- Prevent uncontrolled loss of heat
- No draughts!



# Install great windows

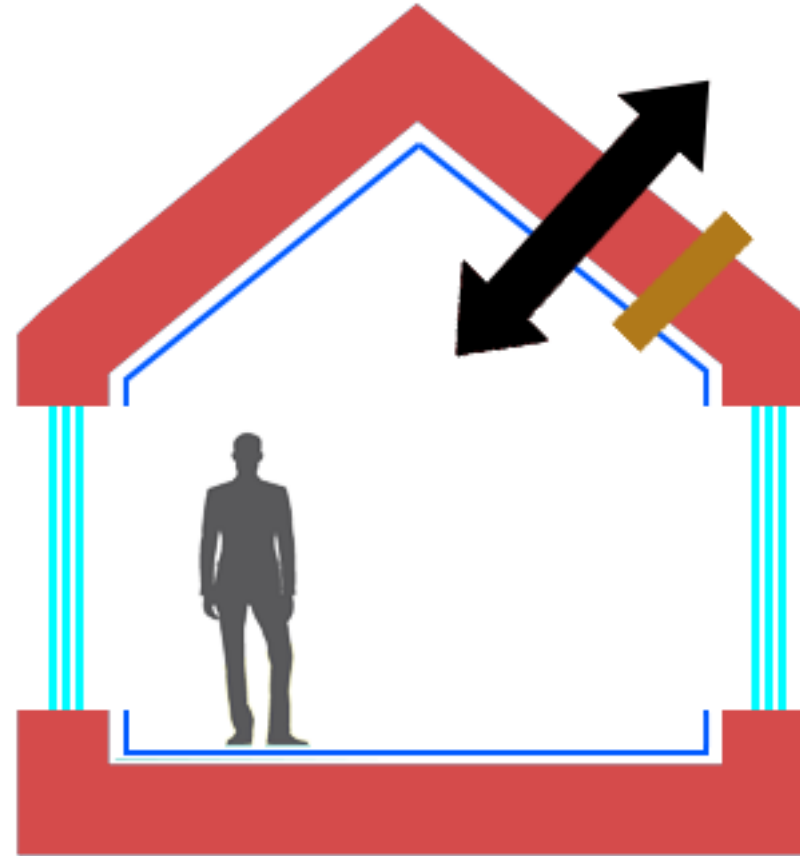
- High performance windows
- Triple glazed
- Position in correct location





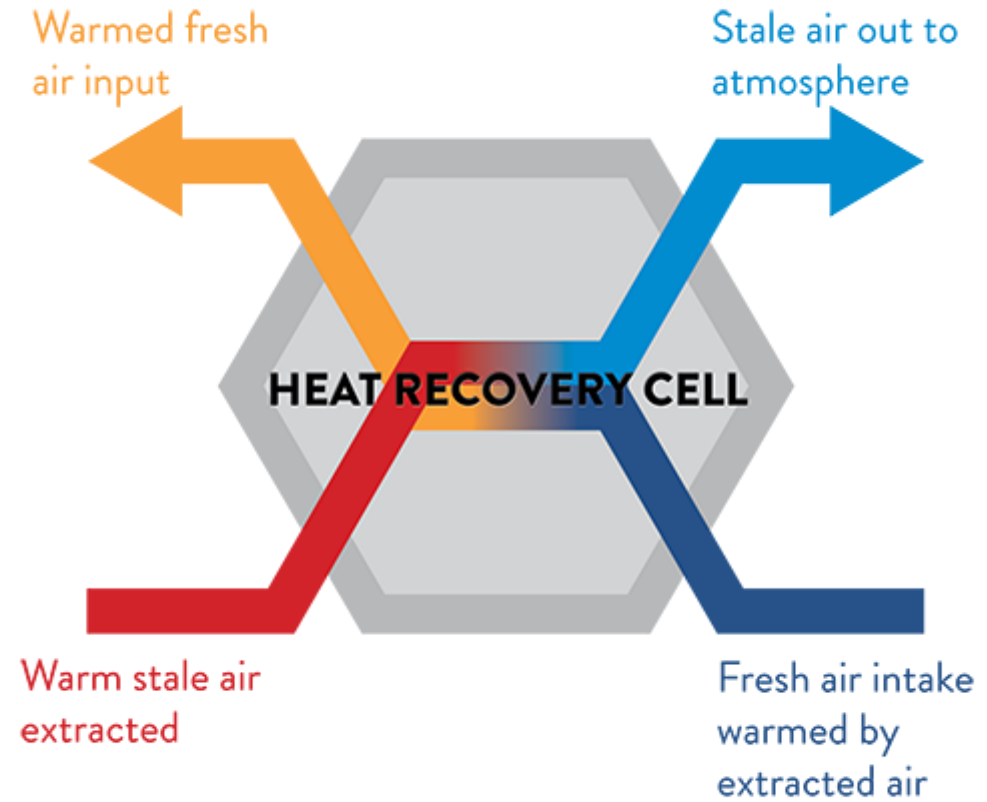
# No puncturing insulation

- No thermal bridges
- Careful detailing by design team



# Install mechanical ventilation

- Brings in fresh air
- Uses waste heat to warm incoming fresh air
- Extracts stale air
- Highly efficient system required





# IN SUMMARY

- **We need to act to prevent further damaging consequences of increased carbon in the atmosphere**
- **The built environment is a big culprit**
- **Holistic approach to design to balance variety of factors**
- **Passivhaus is a certified method for achieving targets**

# THANK YOU



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