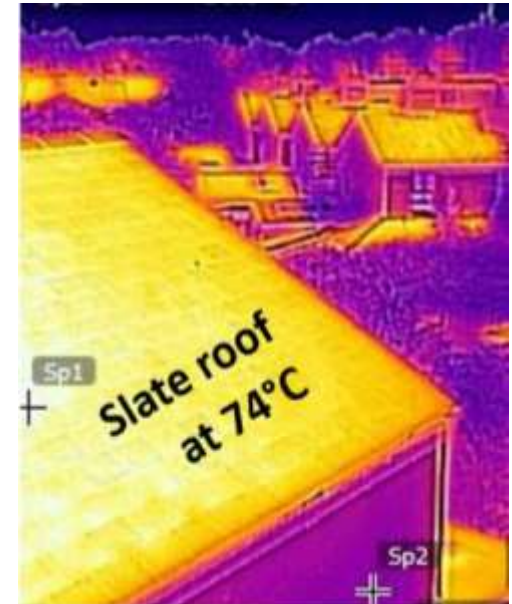


Cool Homes in a Heatwave



Mon 5th June 2023,
7:00pm – 8:30pm

Margaret Reynolds, Architect
Tom Bragg, CCF Trustee
Fran Sutton, CCF Staff



More Frequent & Severe Heatwaves

- 19th July 2022, Lincolnshire 40.3°C new UK record
- Chances have doubled & will double again by 2050
- 3,271 heatwave deaths in England & Wales, 2022
- Expect cascading problems: health & social care, transport, electricity, business, wildlife, soil



Cool Home in a Heat Wave

Poll 1

1 – More frequent + severe heatwaves - Tom

2 - Thermal mass & Shading – Margaret

Q & A

3– Ventilation & insulation – Tom

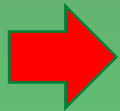
Poll 2

4 - Avoiding accidental overheating – Tom

5 – Personal cooling - Tom

6 – Using the garden – Margaret

Q & A



Cool Home in a Heat Wave

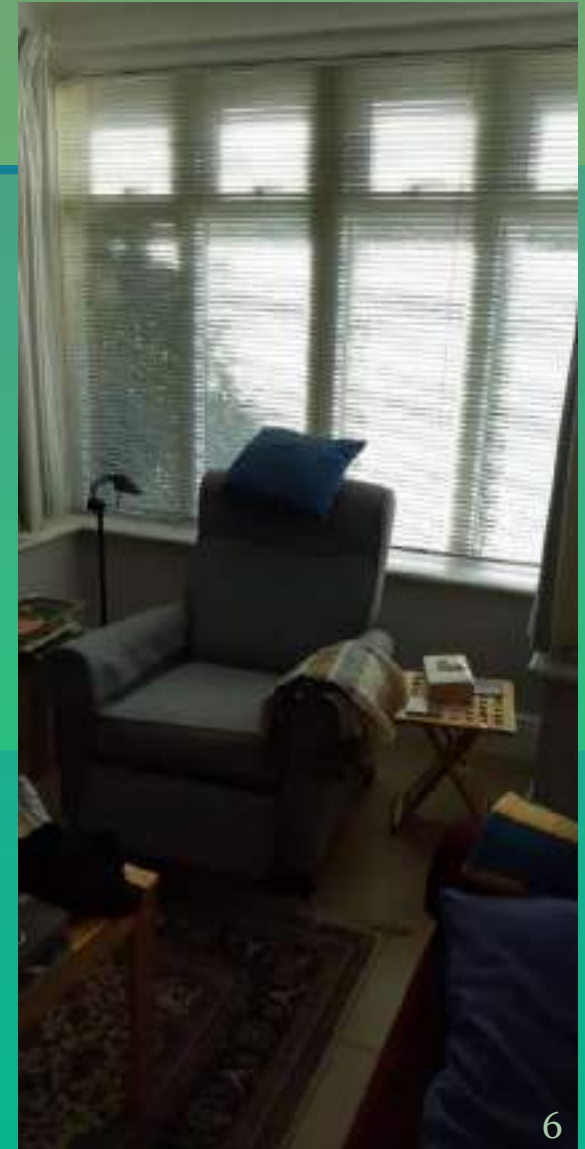
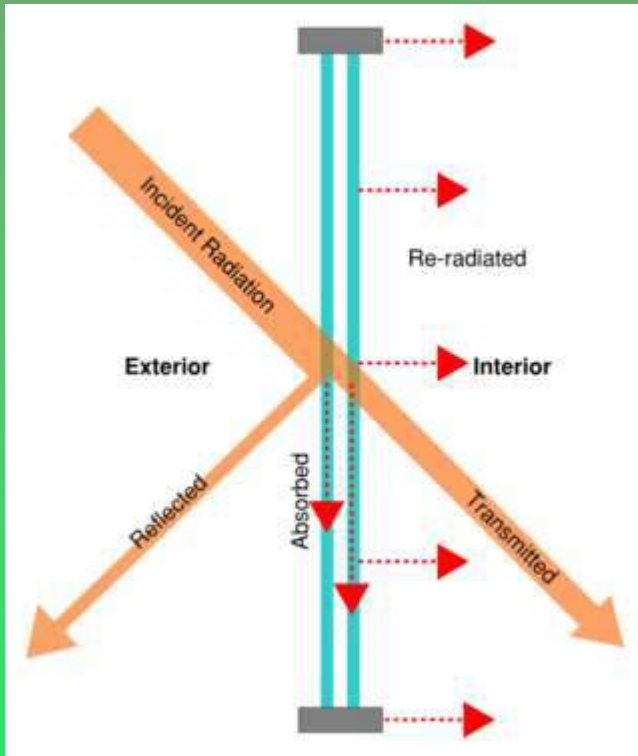
SHADING - Some BASICS:

- 1 – Materials absorbing heat/ “thermal mass”
- 2 – Seasonal & daily sun on your house

Materials and heat

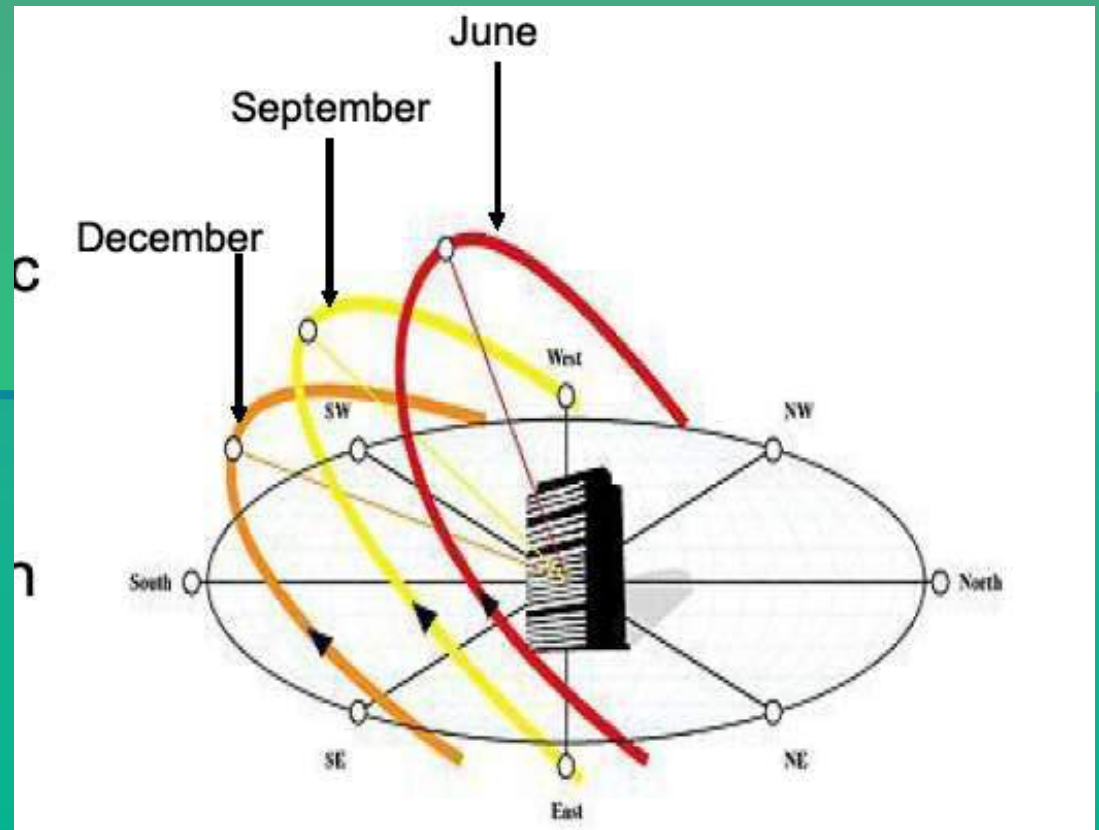
- 1 – Dense materials - concrete, brick, stone - absorb more heat & solar radiation, and they release it slowly. = greater “Thermal Mass”
 - metals absorb and release heat quickly - conductors
- 2 – Insulation foam, & timber generally absorb less heat = have less “Thermal Mass”
- 3 – Glass (even double & triple glazing) transmits heat
- 4 – Surfaces can reflect heat

Windows & glazed doors



Sunshine & Daylight

- 1 – To stay cool you need to know which parts of your home receive sun/light and WHEN
- 2 – North exposure shady, East = morning sun, West = afternoon sun, South, sunny
- 3 – You also need to know the outdoor temperature, or at least when it is cooler out than in



Source: www.coltinfo.co.uk

Internal Shading

1 – Roller Shades



2 – Blinds: vertical & horizontal



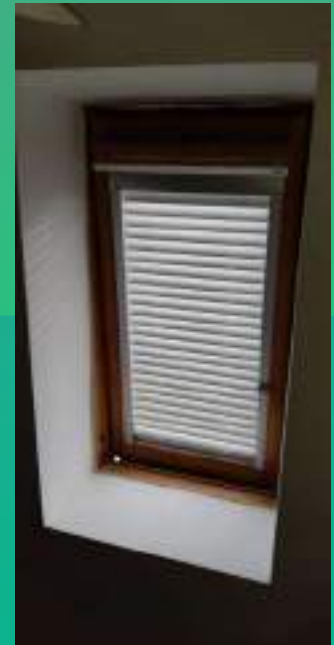
vertical



“closed”

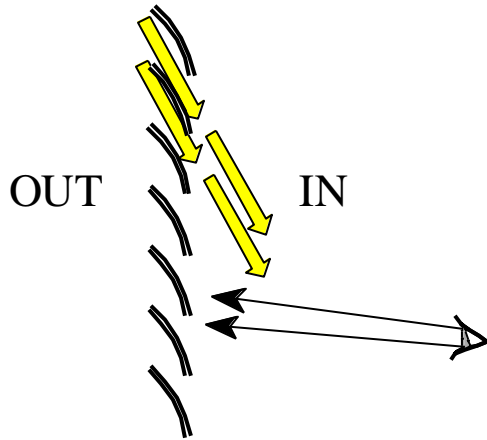


deflecting sun



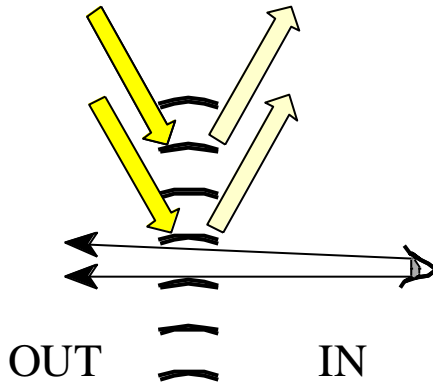
rooflight

Sun & Horizontal blinds



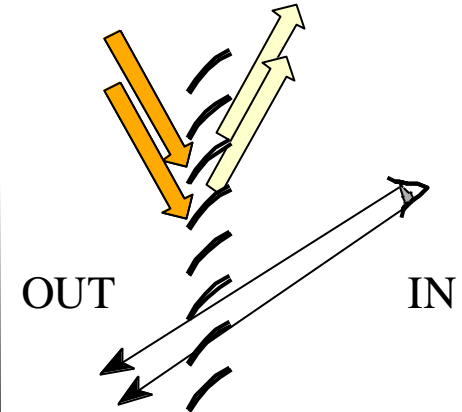
Summer: sun @ 61 deg
shines in, heats inside surfaces
No view out

Blinds “closed”



Summer: sun @ 61 deg
Some reflected light
View out

Blinds horizontal



Summer: sun @ 61 deg
Sun blocked
Only reflected light
Some view out

Blinds to block sun

External shading – slats & shutters



SOLAR SHADING

Secure shutters and inward opening window on the south facade provide rapid ventilation and solar shading.

solar shading blinds



External shading - rooflights

External awning blind transmits 4% - 14% of heat



Velux, installed 2010

Fakro, installed 2020:
Put in place for
summer season

Figure 3: Window with awning blind (depending on the fabric used) $g = 4-14\%$ (0.04–0.14) as per EN 13363-1



Figure 1



Figure 2



Figure 3

Fabric shades & sails



Bronwen Barry Archt



Harry Paticas, Archt



Bamboo roller screen



Electric, Automatic Awnings: Nice, shady space



Cool Home in a Heat Wave

DIY SHADING – Internal & External



Cool Home in a Heat Wave



1 – Shading –Summary

- When and where is the sun?
- Internal shading
- External shading

Questions, so far?

Please write them in Chat



Ventilation



When it's hotter outside:

shut doors, windows & vents

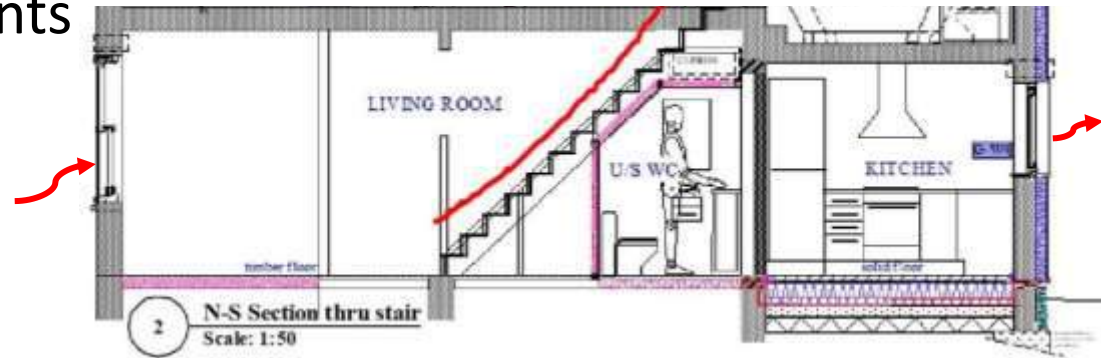
Usually: daytime, sunny-side

When it's cooler outside:

Open windows, skylights, vents
at bottom & top of house

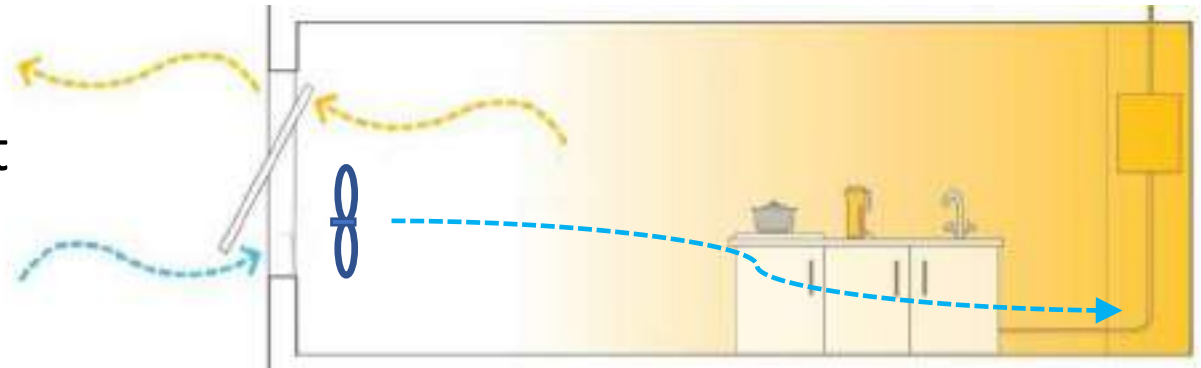
Or, if it's single-storey:

across your home



for a single-aspect flat

a fan helps



Security for Night Cooling

Secure:



Look for Secured By Design

Ventlock for Sash windows



Do you have a ventilation problem with external noise, pollution, etc? **Poll**

Poll

Insulation

Lofts, Roofs, Walls

Slate roof surface
at 74.4°C

Hot pipes, tanks



Multifoil
insulation



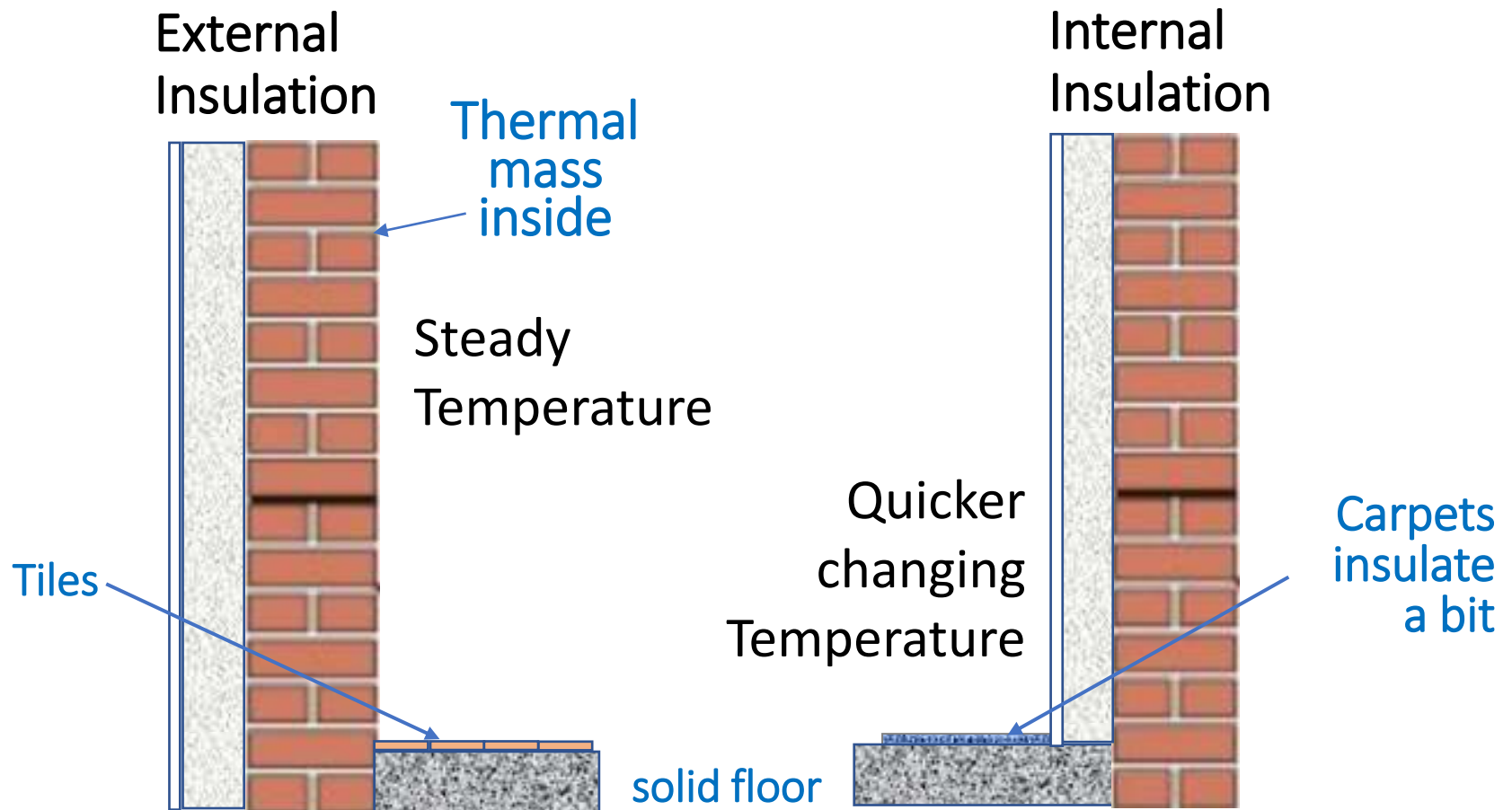
Thermal mass

eg: Brick, stone, concrete

Steadies indoor temperatures

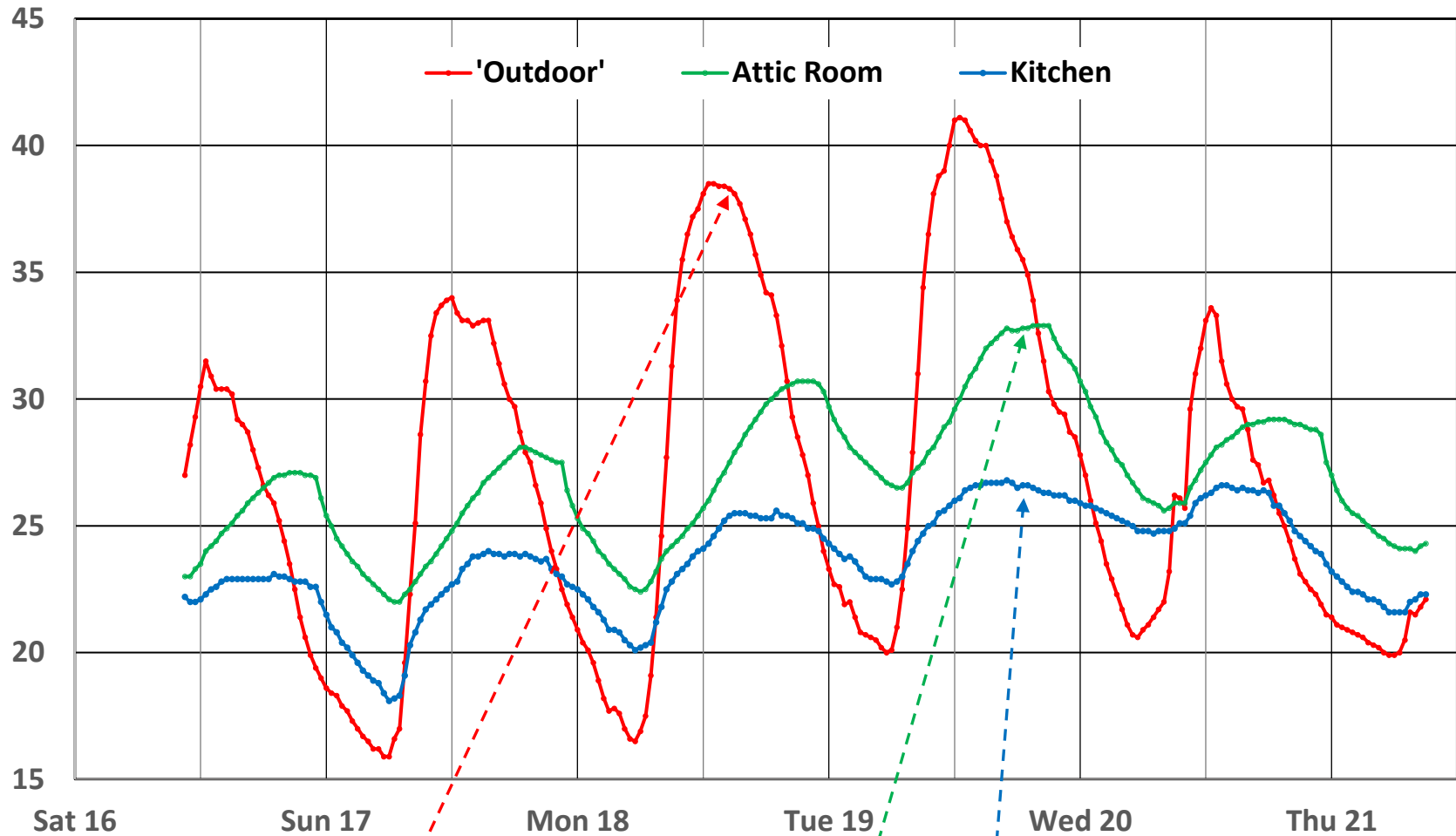


Solid Wall Insulation



°C

July 2022 Heatwave - Tom's House



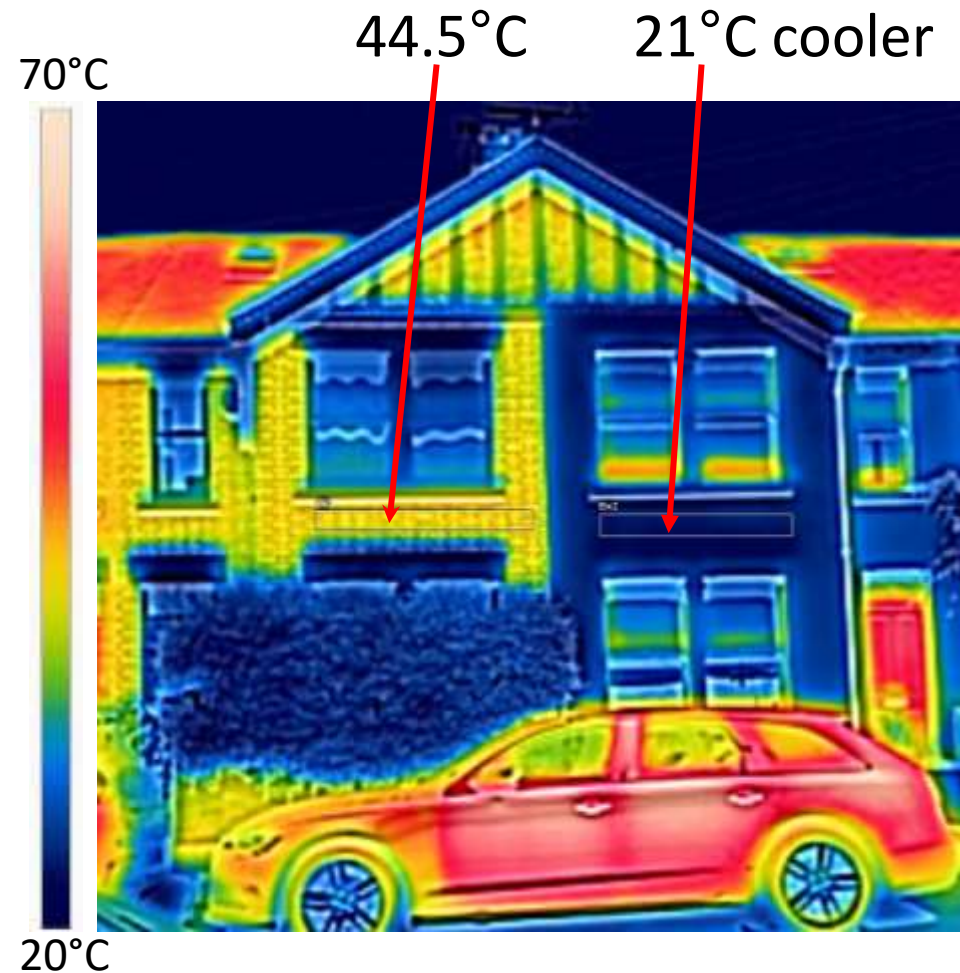
Rising outdoor temperature

Attic uncomfortable at 33°C

Kitchen comfortable at 27°C

External Surfaces

Bright colours are cooler



White Paint reflects much more of the sun's heat than plain brick



Normal in the
Mediterranean

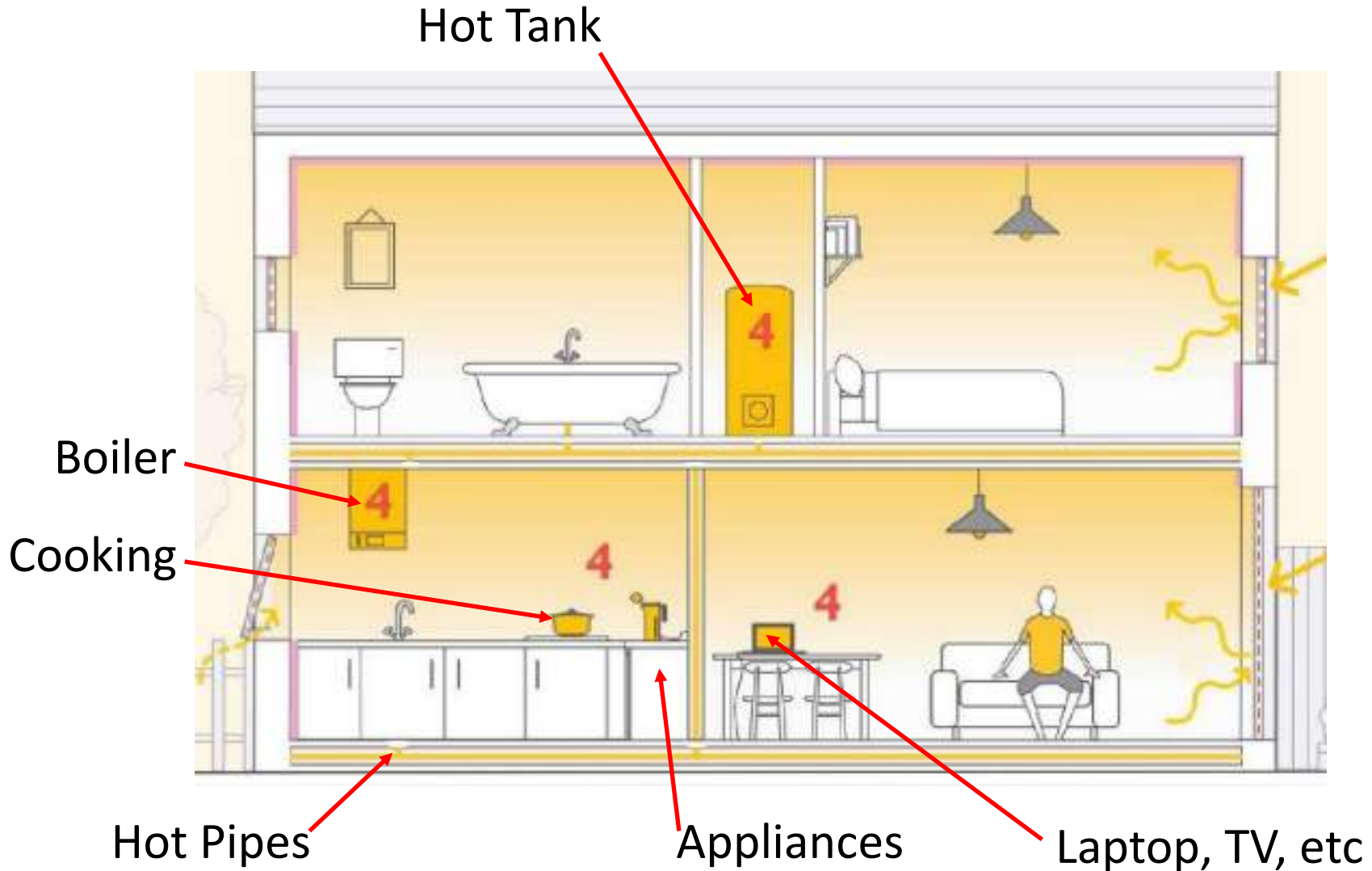


Not much in
Cambridge yet



Blog: [White Walls are Cooler in a Heatwave](#)

Accidental Heating

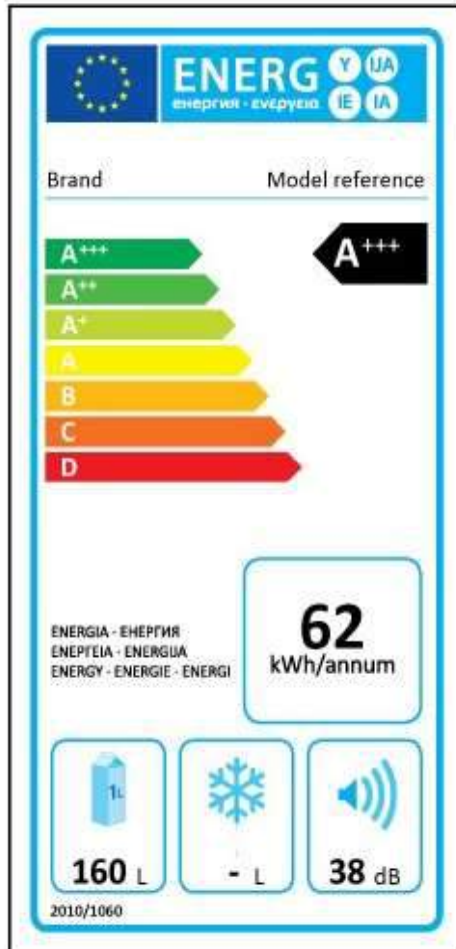


Efficient appliances & Tech

Energy Labels:

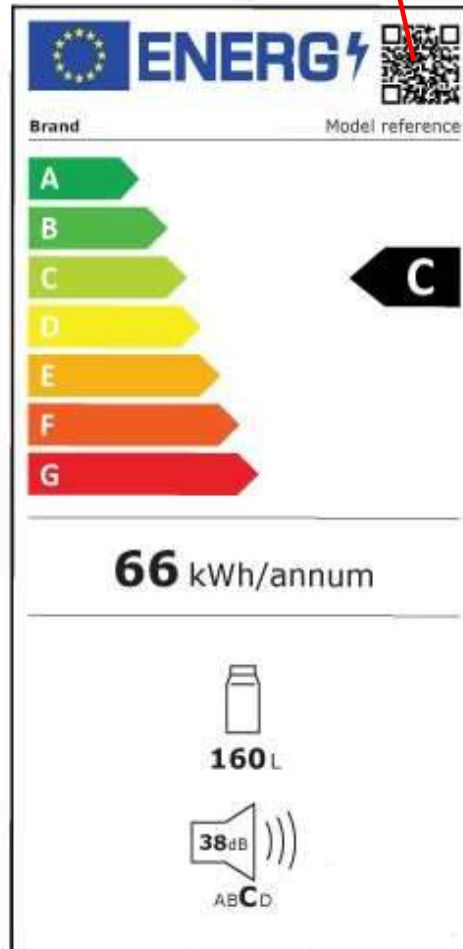


Old



New

QR Code



and switch them off when not in use....

Find efficient appliances & Tech with [Sust-it](#)



Same Fridge: Old & New labels

Personal Cooling



- drinks, cool showers, fans, spray
- loose, light clothes & wide hats
- 'hot' water-bottle in the freezer
- consider sleeping where it's cooler
- avoid going out or exertion around midday
- beware [heat exhaustion/ heatstroke](#)
- look out for your neighbours:
old, young, vulnerable [NHS Advice](#)



Cool Home in a Heat Wave



Evaporating
Water creates

COOLTH

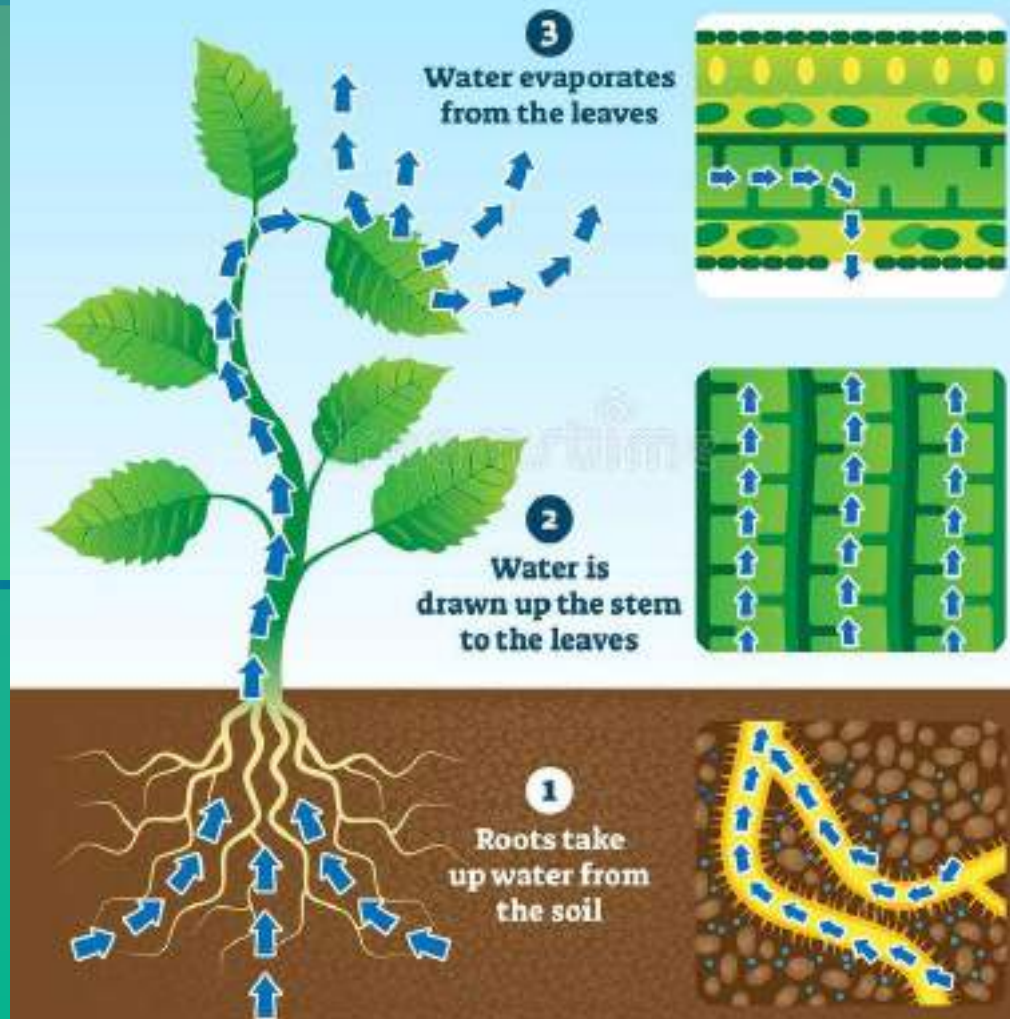


Leaf transpiration
Creates COOLTH

So:

- Soak garden
- Lots of leaves,
on four levels
- Hold moisture

TRANSPIRATION



Cool Home in a Heat Wave



Evaporating
Water creates

COOLTH



Leaf transpiration
Creates COOLTH

So:

- Soak garden
 - Lots of shade-tolerant leaves, on four levels
 - Hold moisture
- Collect rainwater



Cool Home in a Heat Wave



Water every day

- 1) Washing up**
- 2) Bath syphon**
- 3) RW from butt**



Cool Home in a Heat Wave

- ➔ Garden:
- Composting
- 1) Tumbler
 - 2) Mulch holds moisture



Any Questions?

[Keeping Cool in a Heatwave](#)
PDF with more details

[Look out for neighbours](#)



Coming Soon



REPAIR Cafés

Marmalade Lane, Orchard Park

Histon & Impington Eco Fest

Burwell

Edge Café, Mill Rd, Cambridge

St Ives

Trumpington Meadows

Cottenham

+ [more](#)

Sat 10 June, 10-2

Sat 10 June, 12-4

Sat 10 June, 2-5

Sat 17 June, 11-2

Sat 17 June, 1-4

Sun 18 June, 2-5

Sat 24 June, 10-2



14 Sept - 20 Oct:

10 Homes, in-person/online

4 more talks

[Details & Booking mid-Aug](#)



Enjoy the hot weather



[Feedback please](#): 3 questions about this talk

[Donations please](#): help CCF do more

Tonight's Team: Tom Bragg
Margaret Reynolds
Fran Sutton

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