



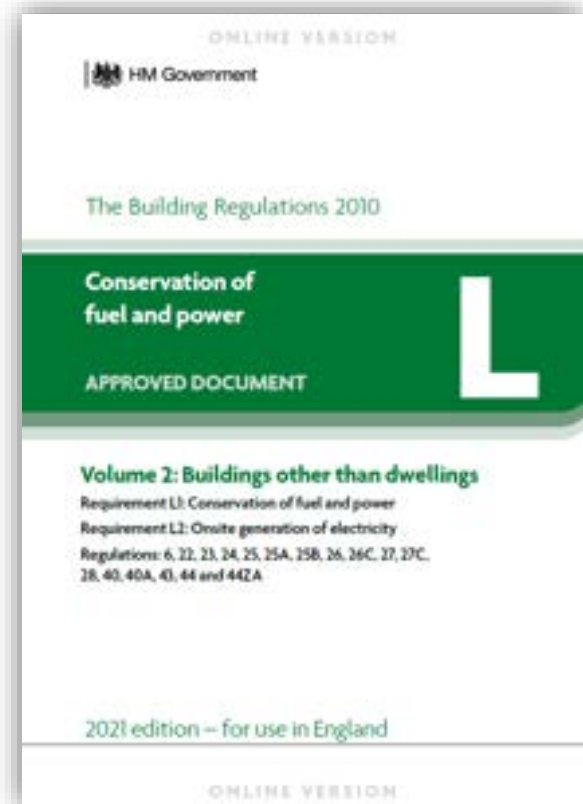
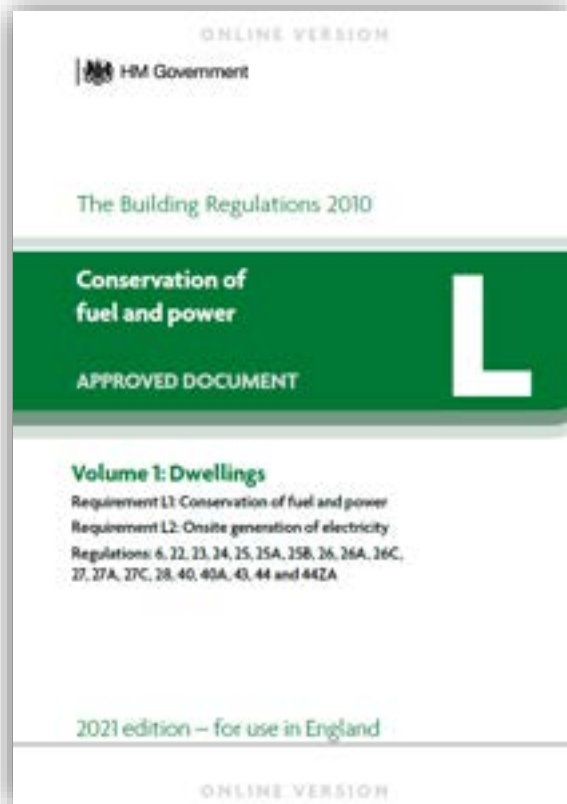
**BAILY
GARNER**



WEBINAR: PART L – WHAT'S NEW?

WEDNESDAY 15 JUNE – 9AM

NEW PART L 2021



FUTURE HOMES STANDARD TIMELINE

Oct 19	Jan 21	Late 21	June 22	2023	2024	2025
Future Homes Standard consultation	Future Homes Standard response			Future Homes Standard technical consultation	Future Homes Standard legislation	Future Homes Standard
Part L1 consultation	Part L1 draft	Part L1 Final	Part L1 in force	Part L1 and Part F1 updates		New part L1 and F1
Part F1 consultation	Part F1 draft	Part F1 Final	Part F1 in force			
	Future Buildings Standard consultation			Part L2 and Part F2 updates		Future Buildings Standard
	Part L2 consultation	Part L2 Final	Part L2 in force			New Part L2 and F2
	Part F2 consultation	Part F2 Final	Part F2 in force			
	Overheating approved document draft		Overheating approved document in force			

FUTURE HOMES STANDARD TIMELINE

June 22	2023	2024	2025
	Future Homes Standard technical consultation	Future Homes Standard legislation	Future Homes Standard
Part L1 in force	Part L1 and Part F1 updates		New part L1 and F1
Part F1 in force			
	Part L2 and Part F2 updates		Future Buildings Standard
Part L2 in force			
Part F2 in force			New Part L2 and F2
Overheating approved document in force			

IMPLEMENTATION DATES

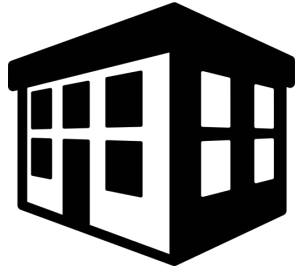
Implementation Dates

- Part L 2021 was published on 15th December 2021 and is coming into force **TODAY 15th June 2022**.
- There are Transitional Provisions available. This permits schemes that have commenced by **15th June 2022** to use the 2013 Part L edition.
- However, work must start on site before **15th June 2023**.

CARBON REDUCTION



31% for Dwellings



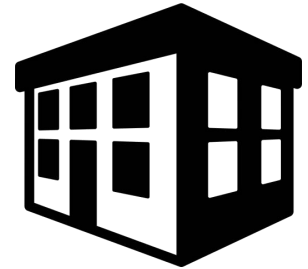
27% for Non-Domestic buildings

Carbon Emission reduction over current
Part L 2013

CRITERIA

Compliance

- Buildings/Dwellings need to meet following criteria:
 - **Fabric Energy Efficiency Rate**
 - **Emission Rate**
 - **Primary Energy Rate**

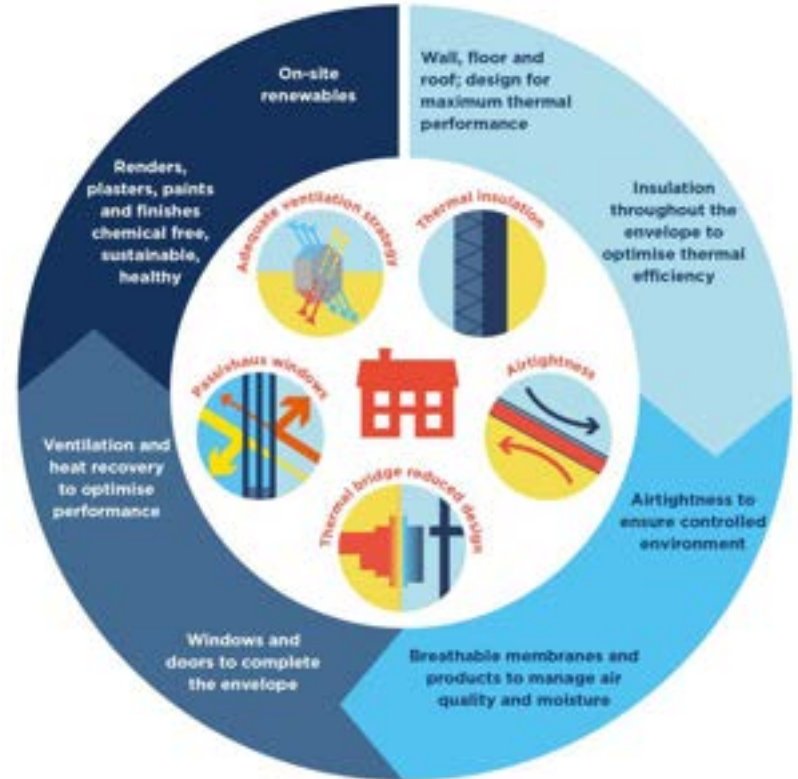
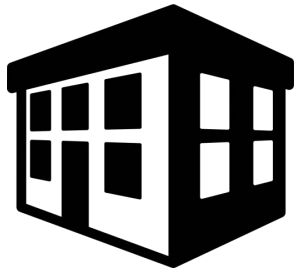


CARBON REDUCTION

Approach



- Fabric First approach
- Low carbon heating
- Renewables

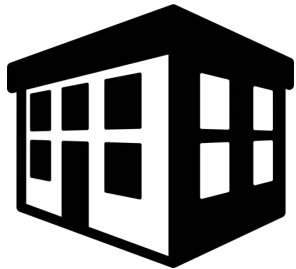


FABRIC

U-value changes



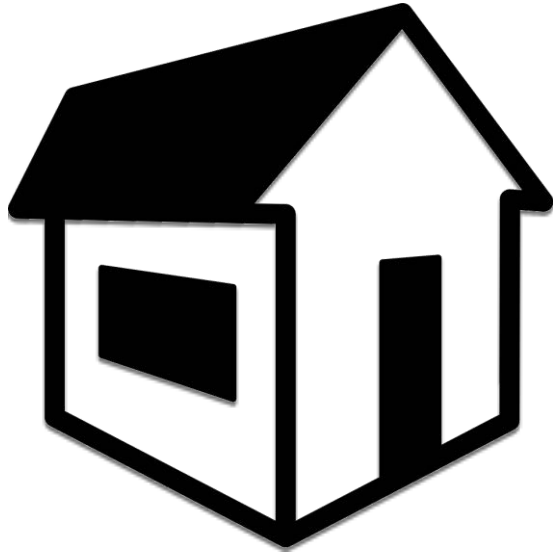
	2021	2013
Elements	Limiting Values	Limiting Values
All roof types	0.16	0.20
Wall	0.26	0.30
Floor	0.18	0.25
Party wall	0.20	0.20
Window	1.60	2.00
Rooflight	2.20	2.00
Doors (including glazed doors)	1.60	2.00
Air permeability	8.00	10.00



	2021	2013
Elements	Limiting Values	Limiting Values
All roof types	0.18	0.25
Wall	0.26	0.35
Floor	0.18	0.25
Window	1.60	2.20
Rooflight	2.20	2.20
Doors (high usage)	3.00	3.50
Vehicle access doors	1.30	1.50
Air permeability	8.00	10.00

CALCULATION TOOL

How is Compliance with Part L calculated?



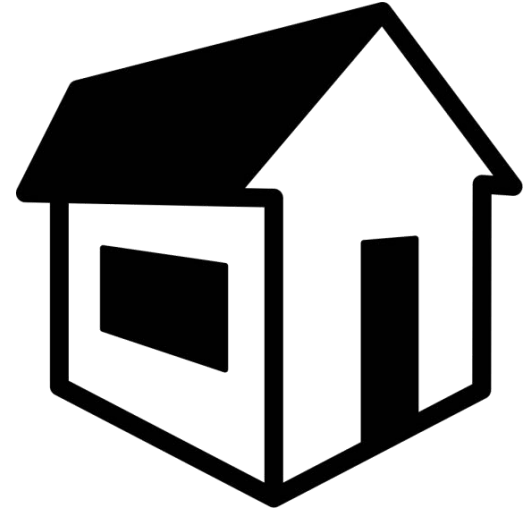
Department for Levelling Up,
Housing & Communities

TARGET

Calculation



Target



Actual

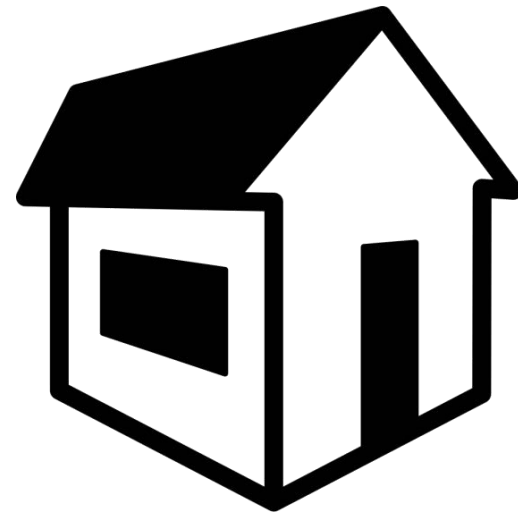
TARGET

Calculation



Target

Elements	Limiting Values
All roof types	0.16
Wall	0.26
Floor	0.18
Party wall	0.2
Window	1.6
Rooflight	2.2
Doors (including glazed doors)	1.6
Air permeability	8



Actual

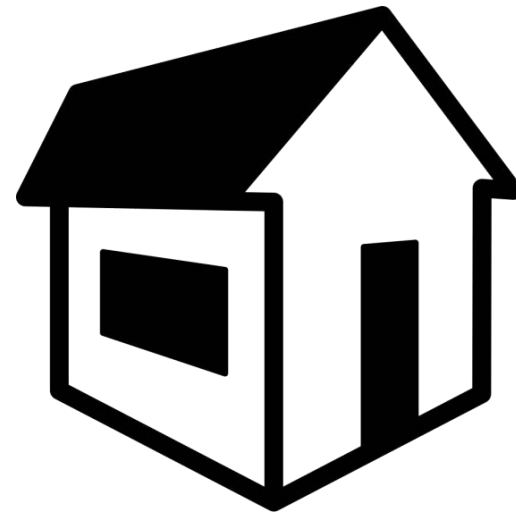
TARGET

Calculation



Target

Elements	Limiting Values	Notional
All roof types	0.16	0.11
Wall	0.26	0.18
Floor	0.18	0.13
Party wall	0.2	0
Window	1.6	1.2
Rooflight	2.2	1.7
Doors (including glazed doors)	1.6	1
Air permeability	8	5



Actual

FABRIC

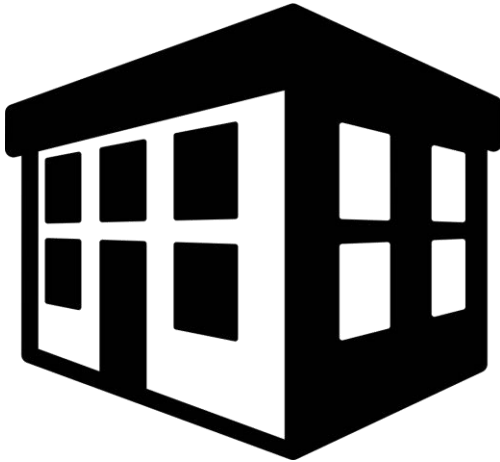
Uplift in Fabric Performance – V1



	2021	2013
Elements	Notional	Notional
All roof types	0.11	0.13
Wall	0.18	0.18
Floor	0.13	0.13
Party wall	0	0
Window	1.2	1.4
Rooflight	1.7	1.4
Doors (including glazed doors)	1	1
Air permeability	5	5

FABRIC

Uplift in Fabric Performance – V2

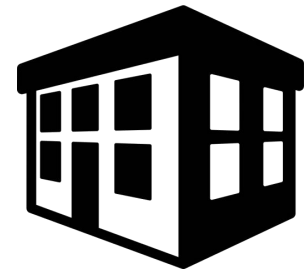


	2021	2013
Elements	Notional	Notional
All roof types	0.15 or 0.18	0.18
Wall	0.18 or 0.26	0.26
Floor	0.15 or 0.22	0.22
Window	1.4	1.6
Rooflight	2.1	1.8
Doors (Pedestrian/high usage)	1.9	2.2
Vehicle access doors	1.3	1.5
Air permeability	3 or 5	3 or 5

FABRIC

Carbon factors

	SAP 2012	SAP10	% Reduction
Mains gas	0.216	0.210	-2.78%
Electricity	0.519	0.233	-55.11%

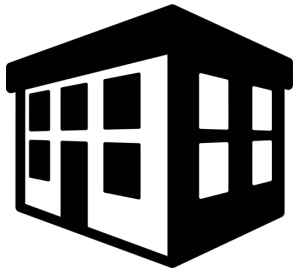


FABRIC

Psi Value/Thermal Bridging junctions

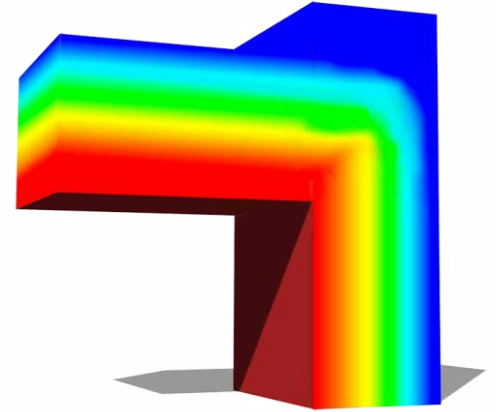


- Previously 3 input methods in SAPs
 - Default
 - ACD or Approved
 - Bespoke



- Part L 2021
 - Default
 - ~~• ACD or Approved~~
 - Bespoke

- New Part L will use worse values than 2013, which means fabric will perform worse. Bespoke calculation will be the way forward to maximise fabric efficiency.



BUILDING SERVICES

Building Services - V1

Notional Dwelling (if main gas is used) has:

- **Flow temperature reduced to 55°C.**
- **WWHR for all showers**
- **PV added**
 - **For Houses: 40% of ground floor area, including unheated spaces / 6.5**
 - **For flats: 40% of dwelling floor area / (6.5 x number of storeys in block)**

Hot water cylinder	If cylinder, declared loss factor = $0.85 \times (0.2 + 0.051 V^{1/3})$ kWh/day where V is the volume of the cylinder in litres
Lighting	Fixed lighting capacity (lm) = $185 \times$ total floor area Efficacy of all fixed lighting = 80 lm/W
Air conditioning	None
Photovoltaic (PV) system	None

BUILDING SERVICES

Building Services – V2

Table 7 Space heating system SCoP and fuel type in the Notional building

Notional Building has:

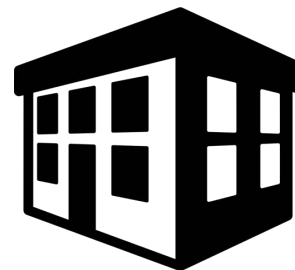
- If air conditioned the SEER is at 4.4.
- Lighting: 95 lumens/circuit watt.
- PV added to notional
- New climate weather data sets TRY2016

Electricity (direct)	planned time of use in a single location ≤ 2 years	
	134% - in all other buildings	Grid electricity (heat pump/direct electric hybrid system)
*Where a top-lit zone in the Actual building only receives heating (i.e., if there is mechanical ventilation, it does not provide heating and/or cooling), then the equivalent zone in the Notional Building will be modelled with direct-fired multi-burner radiant heating, where the thermal efficiency is 86%, and 65% of the thermal output is radiant (i.e., radiant component of 0.65). Zones with top-lit activities tend to be large/tall spaces where direct radiant heating allows a lower air temperature for a given level of thermal comfort, and this reduces ventilation losses. The SBEM Technical Manual ⁶ provides the method used by SBEM to account for the benefit of radiant heating, and DSM software should model the radiant effect of this type of heating system to at least an equivalent level of detail as SBEM. Note that direct-fired radiant heating systems do not incur auxiliary energy for pumps or fans.		

REPORTING EVIDENCE OF COMPLIANCE

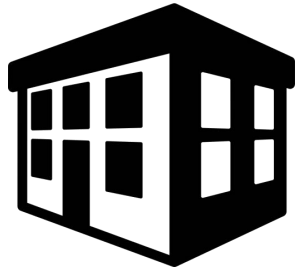
Quality

- At completion of the work, the **Building Regulations England Part L (BREL)** report AND photographic evidence should be provided.
- The **as-built report** should include construction specification and detail any changes made since **design stage** report.
- This allows Building Control to review changes.
- The as built report should be signed by **SAP Assessor** & the **Builder/ developer** to confirm the dwelling has been construction according to the specification.
- This increases / intended to increase the accountability and liability of the people involved / if as-built performance does not meet the design performance.



REPORTING EVIDENCE OF COMPLIANCE

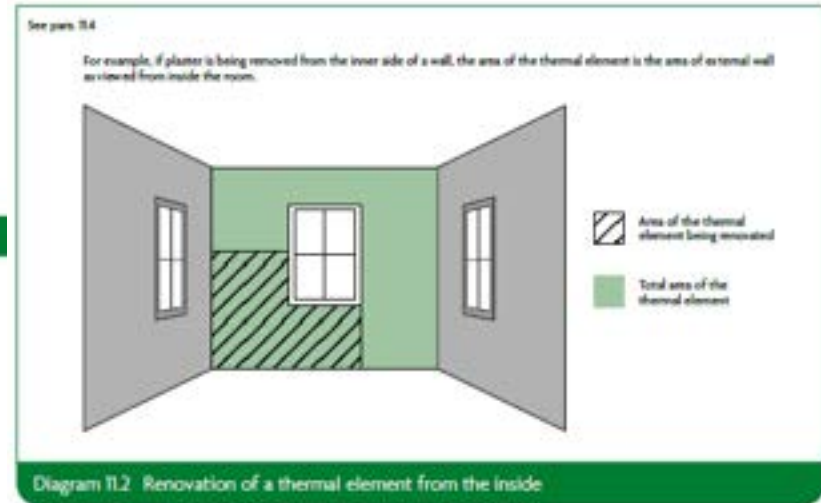
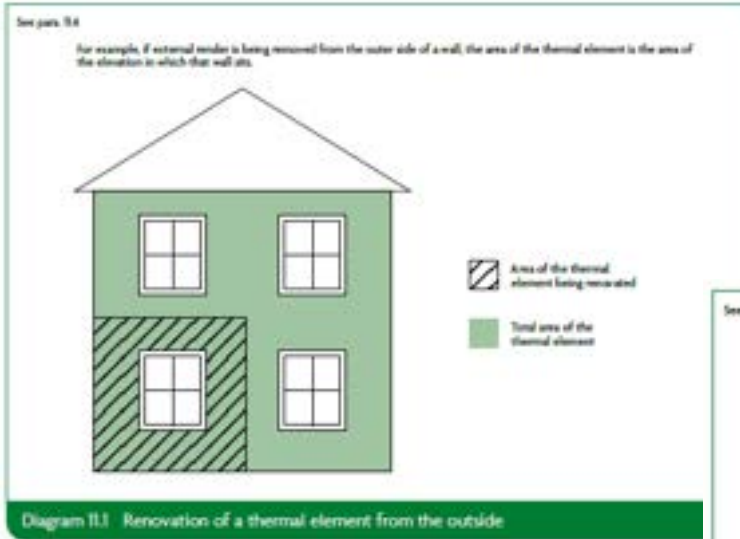
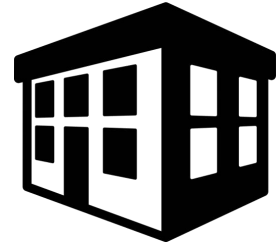
Quality



- The on-site audit is a photographic log of each dwelling that should be provided to the SAP assessor and building Control at completion of the work
- Log should include photos taken at appropriate stages of main details
- Air permeability test would need to be carried out on all dwellings/buildings. Sample testing not allowed.
- In new and existing insulation needs to be continuous across newly built elements.
- Increase air tightness in existing building to avoid heat loss.

FABRIC

Existing



FABRIC

Existing - New fabric elements

- New fabric elements in existing dwellings should meet the limiting standards in Table 4.2 for dwellings (V1) and Table 4.1 for non-domestic buildings (V2).
- The U-value of a replacement fabric element in an existing dwelling should both:
 - be no worse than that of the element being replaced
 - meet the limiting standards.
- Elements that should meet the standards include both of the following.
 - Elements in extensions to existing dwellings.
 - New or replacement elements in existing dwellings.



FABRIC

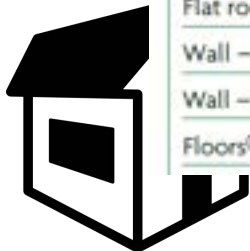
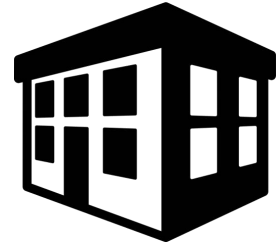
Re

Table 4.3 Limiting U-values for existing elements in existing dwellings

Element	U-value ⁽¹⁾ W/(m ² K)	
	(a) Threshold	(b) Improved
Roof ⁽²⁾⁽³⁾⁽⁴⁾	0.35	0.16
Wall – cavity insulation ⁽²⁾⁽³⁾	0.70	0.55
Wall – internal or external insulation ⁽²⁾⁽³⁾	0.70	0.30
Floor ⁽²⁾⁽³⁾	0.70	0.25

Table 4.2 Limiting U-values for existing elements in existing buildings

Element	U-value ⁽¹⁾ W/(m ² K)	
	(a) Threshold	(b) Improved
Pitched roof – insulation at ceiling level ⁽²⁾	0.35	0.16
Pitched roof – insulation at rafter level ⁽²⁾⁽³⁾	0.35	0.18
Flat roof or roof with integral insulation ⁽²⁾⁽⁴⁾	0.35	0.18
Wall – cavity insulation ⁽²⁾⁽³⁾	0.70	0.55
Wall – external or internal insulation ⁽²⁾⁽³⁾	0.70	0.30
Floors ⁽²⁾⁽³⁾	0.70	0.25



FABRIC

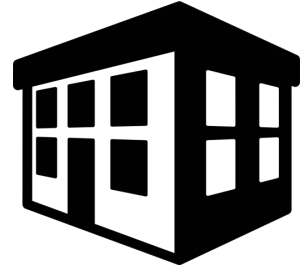
Part O - Overheating Mitigation



- Limit unwanted solar gains in summer
- Provide an adequate means to remove heat from the indoor environment

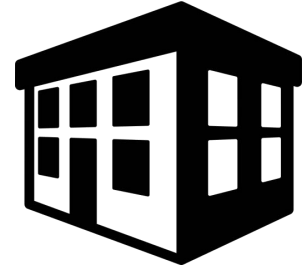
Two methods:

- The Simplified Method, as set out within Section 1 of the Approved Document O.
- The Dynamic Thermal Modelling Method, as set out within Section 2 of the Approved Document O.



FABRIC

Part O - Overheating Mitigation



- Simplified method



Table 1.1 Limiting solar gains for buildings or parts of buildings with cross-ventilation¹⁾

Largest glazed facade orientation	High risk location		Moderate risk location	
	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)
North	15	37	18	37
East	18	37	18	37
South	15	22	15	22
West	18	37	11	37

NOTE:
1. Floor area and floor area of room are as defined in Appendix A.

Table 1.2 Limiting solar gains for buildings or parts of buildings without cross-ventilation¹⁾

Largest glazed facade orientation	High risk location		Moderate risk location	
	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)
North	15	26	15	26
East	11	18	18	26
South	11	11	15	15
West	11	18	18	11

Table 1.4 Minimum free areas for buildings or parts of buildings without cross-ventilation

Total minimum free area ¹⁾	High risk location	Moderate risk location
	The greater of the following: a. 10% of the floor area ²⁾ b. 90% of the glazing area ³⁾	The greater of the following: a. 12% of the floor area ²⁾ b. 80% of the glazing area ³⁾
Bedroom minimum free area	11% of the floor area of the room ⁴⁾	4% of the floor area of the room ⁴⁾

NOTES:
1. The total minimum free area is the free area for the whole dwellinghouse, residential unit, shared communal room or common space, including any bedrooms.
2. 'Floor area' is a key term. See Appendix A.
3. 'Glazing area' is a key term. See Appendix A.
4. 'Floor area of the room' is a key term. See Appendix A.

Table 1.3 Minimum free areas for buildings or parts of buildings with cross-ventilation

Total minimum free area ¹⁾	High risk location	Moderate risk location
	The greater of the following: a. 4% of the floor area ²⁾ b. 70% of the glazing area ³⁾	The greater of the following: a. 8% of the floor area ²⁾ b. 50% of the glazing area ³⁾
Bedroom minimum free area	11% of the floor area of the room ⁴⁾	4% of the floor area of the room ⁴⁾

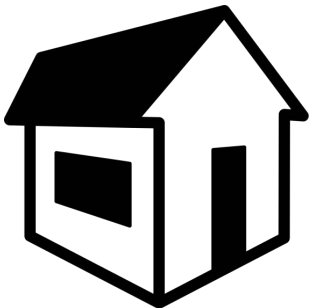
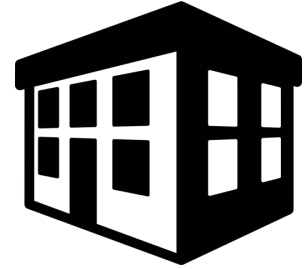
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FABRIC

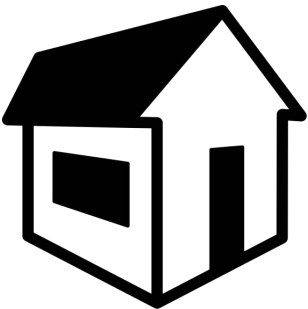
Part O - Overheating Mitigation

- The Dynamic Thermal Modelling Method

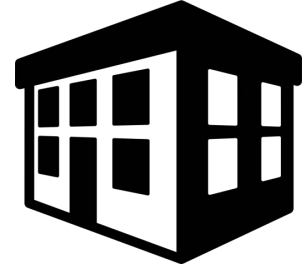


FABRIC

Part S



Approved Document S applies to the following types of building work.



- a. New residential buildings.
- b. New non-residential buildings.
- c. Buildings undergoing material change of use.
- d. Residential buildings undergoing major renovation.
- e. Non-residential buildings undergoing major renovation.
- f. Mixed-use buildings undergoing relevant building work

- all new builds and buildings undergoing a change of use or major renovation will require an EV charger
- The cost of installation is capped by Part S at an average of £3,600 per point (or no more than 7% of the developments budget) is perhaps the most significant consideration.
- To install the EV chargers, checks will be needed to see whether the capabilities of the local grid are adequate, or if upgrades are needed.

SUMMARY



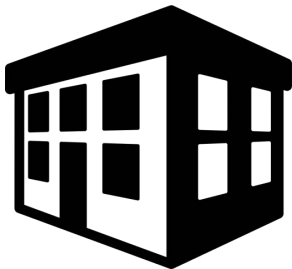
- 2021 revision to focus performance gap.
- Uplift in fabric insulation standards for all buildings. Minimal uplift in notional performance criteria.
- Increased efficiency standards for heating, hot water and ventilation systems for all buildings.
- Improved Carbon factors.
- Thermal junctions would need to be investigated (Psi Value) to maximise fabric performance.
- All new dwellings to require air permeability testing – sample testing on larger developments no longer permitted.
- An on-site audit (BREL report) of building details & thermal elements will be required during construction and at completion for Building Regulation approval.
- Existing dwellings/building have uplift in replacement or new fabric elements
- Better air tightness in existing buildings

WHAT DOES THIS MEAN FOR DEVELOPMENT? A DESIGN PERSPECTIVE



VIABILITY

1. Layout and orientation
2. Unit sizes
3. Density changes
4. Impact on cost



THE SITE

- What could change?
- Construction types
- Technology



SPACE

- Internal spaces
- Footprint
- Equipment storage
- Service cupboards
- Ventilation



APPEARANCE

- What can change?
- Materials
- Building widths
- Heights
- Windows / façade ratios
- Solar shading



PART L

COMMERCIAL IMPLICATIONS

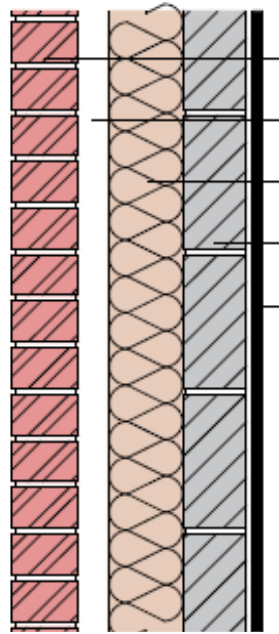
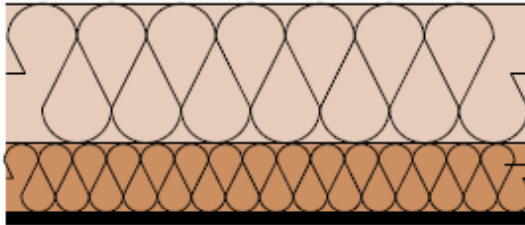
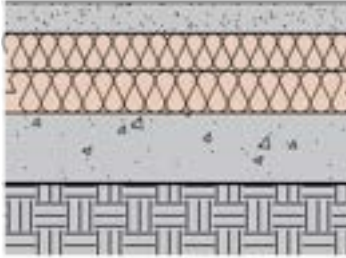


IMPACT OF RECENT CHANGES?

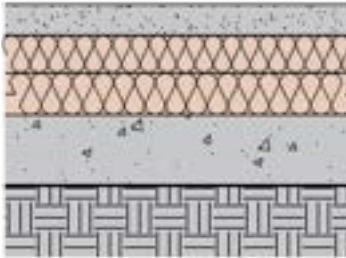
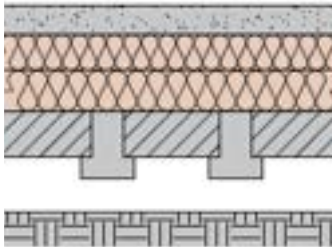
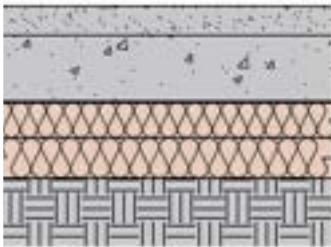
Capital
Costs

Whole
Life
Costs

FABRIC COST - CAPITAL


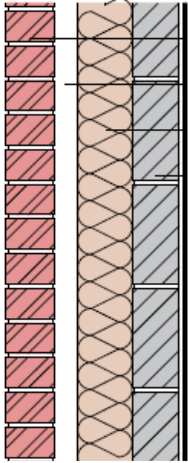
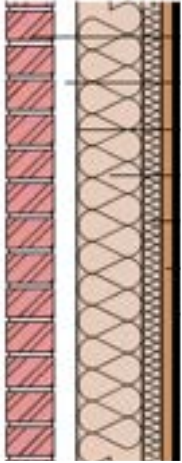
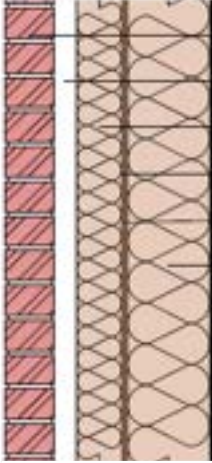
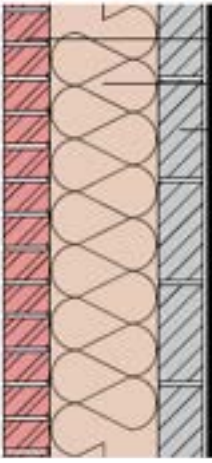


FABRIC COST - CAPITAL

FLOOR		
<p>Option 1 PIR insulation below screed</p> 	<p>Option 2 PIR beam and block</p> 	<p>Option 3 PIR insulation below slab</p> 
£	£	£
+11%	+4%	+11%

FABRIC COST - CAPITAL

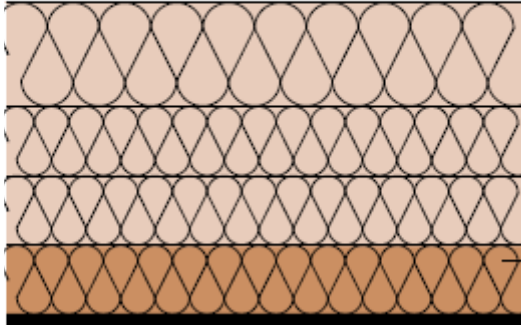
WALL

Option 1 PIR full fill	Option 2 PIR partial fill	Option 3 SIP with PIR infill	Option 4 Mineral wool timber frame	Option 5 Mineral wool masonry
				
£	£	£	£	£
+23%	+23%	+50%	+24%	+33%

FABRIC COST - CAPITAL

ROOF

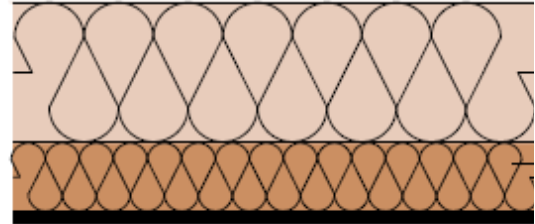
Option 1
Mineral wool roll Insulation



£

+79%

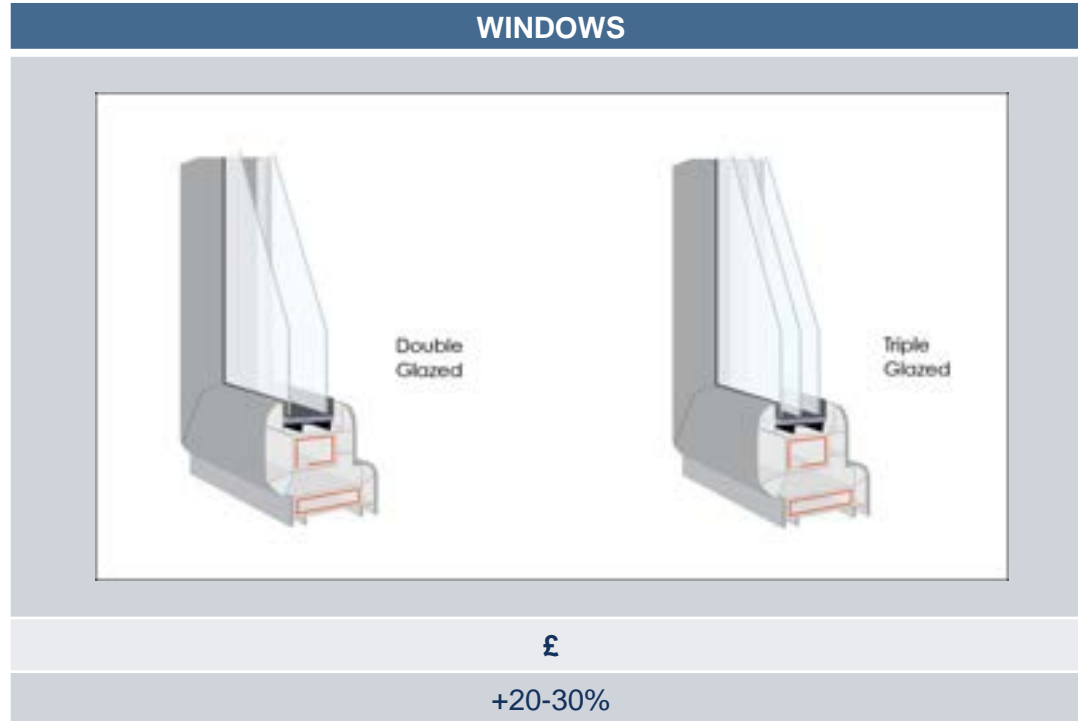
Option 2
PIR Insulation between and over joists



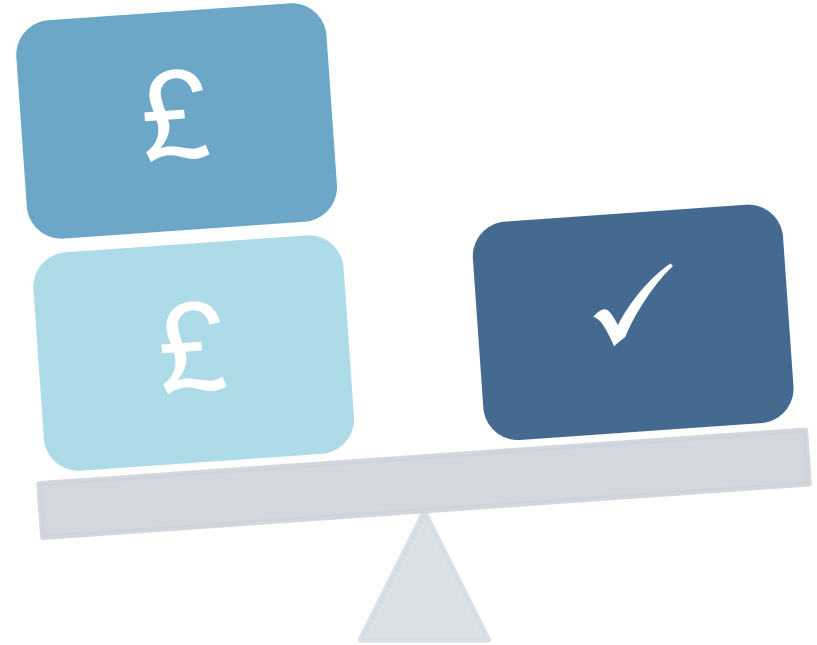
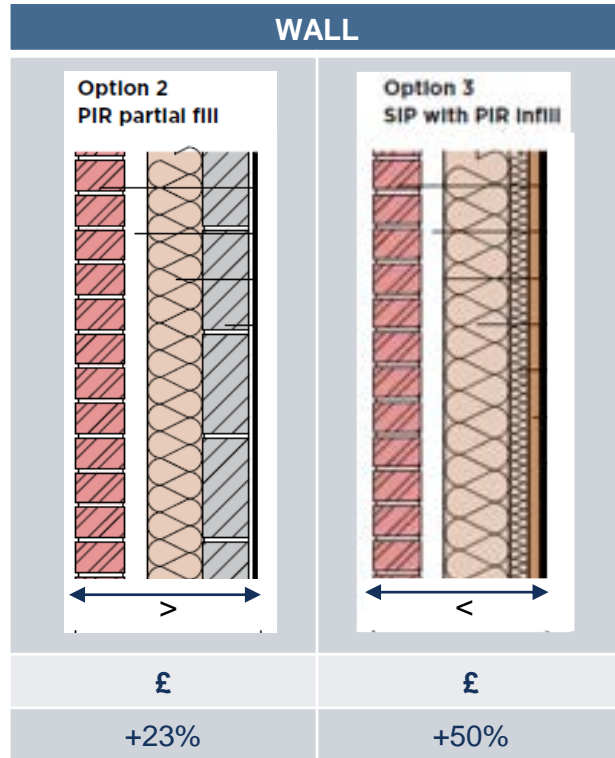
£

+186%

FABRIC COST - CAPITAL



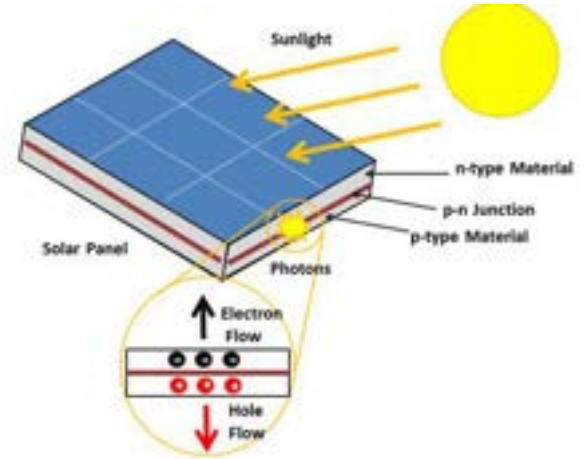
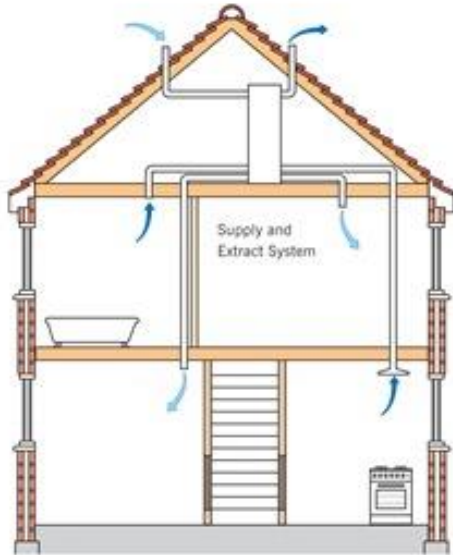
COST BENEFIT



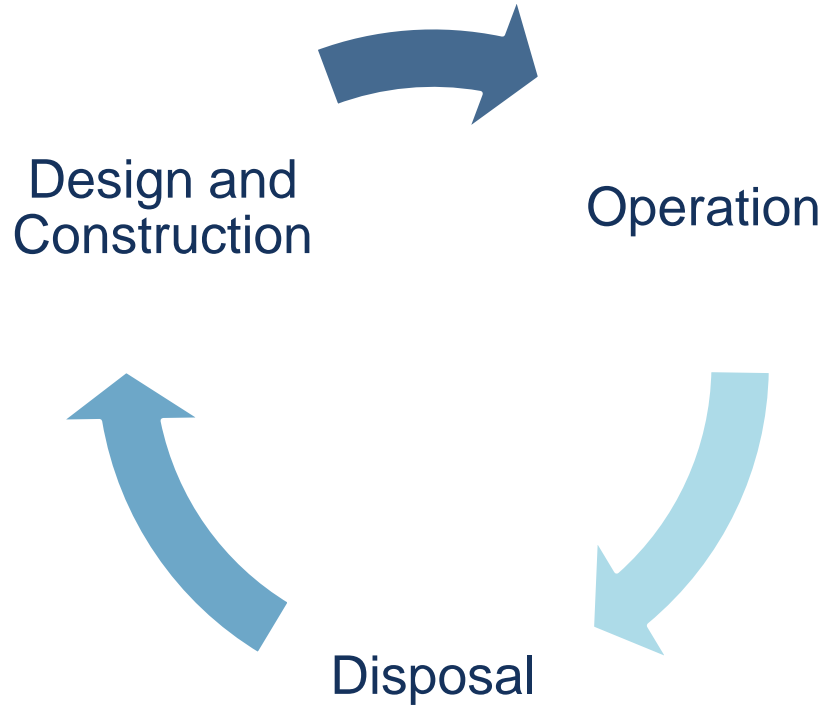
HEAT STRATEGY COSTS - CAPITAL



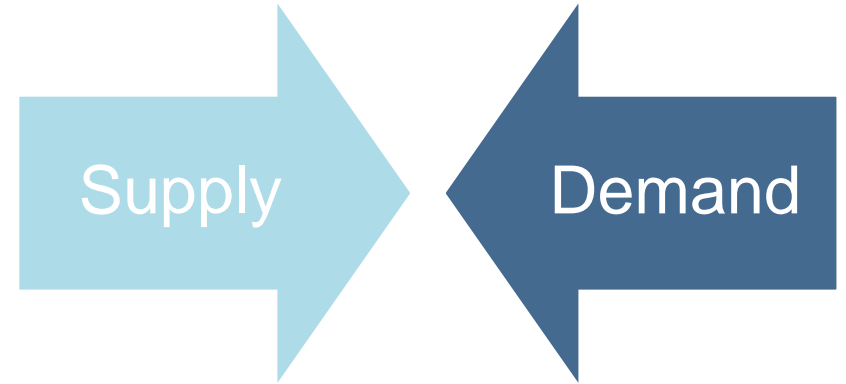
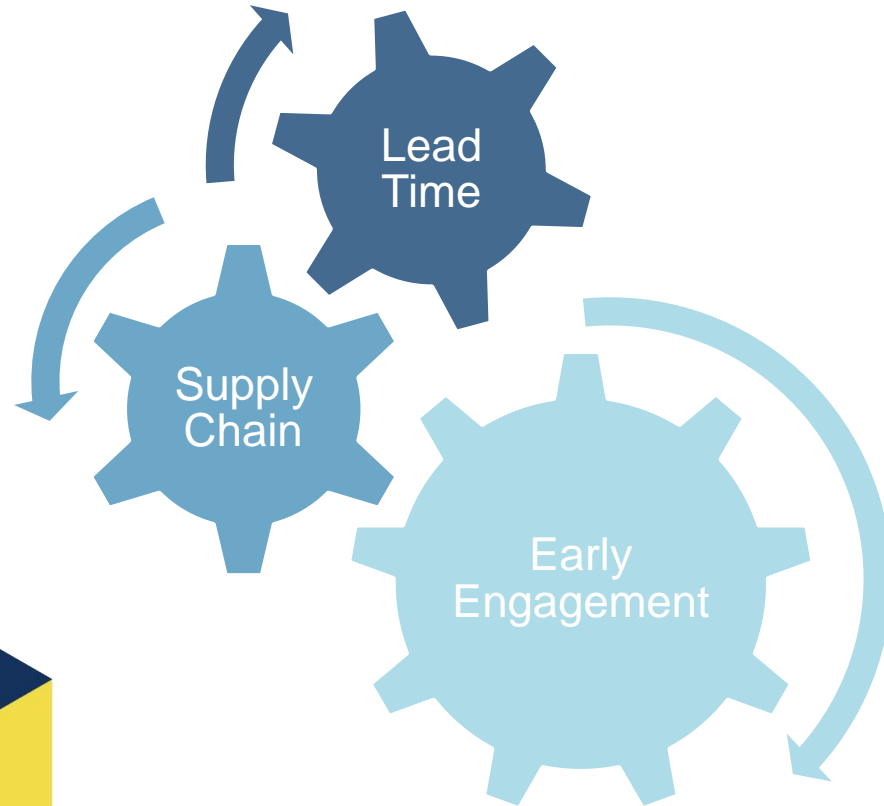
OTHER TECHNOLOGY COSTS - CAPITAL



WHOLE LIFE COSTS



PROCUREMENT



FUNDING





THANK YOU