

BEYOND THE U-VALUE: A COLLABORATIVE SYSTEMS APPROACH TO PITCHED ROOF DESIGN

Fintan Smyth

MSc AEES, C Build MCABE, MIFireE, RIAI (Arch Tech)

Building Physics Manager

fintan.smyth@saint-gobain.com



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MAKING THE WORLD A BETTER HOME



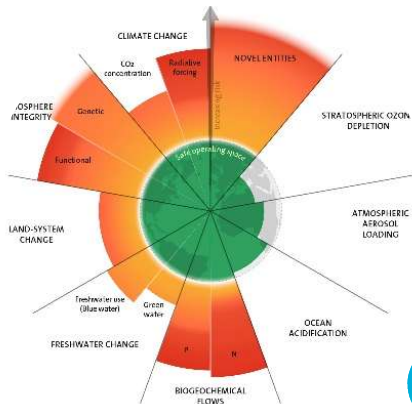


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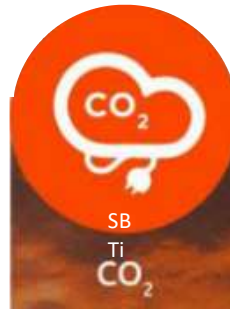
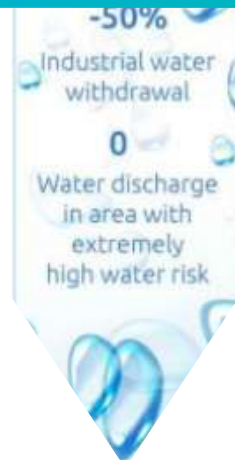


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CLIMATE ACTION PLAN 2023 Changing Ireland for the Better



OUR OBJECTIVES FOR 2030 COMPARED TO 2017



Carbon Disclosure Project

CDP A List (Climate): 2022, 2021, 2019, 2018
CDP (Water) since 2012: 2022 (A-), 2021(A-), 2020 (B), 2019 (B-)
Leadership in environmental transparency and performance
Approx 2-300 out of 13000 companies achieve A.



Science-Based Target initiative (SBTi)

U-VALUE ENQUIRY – TGD L (2022)

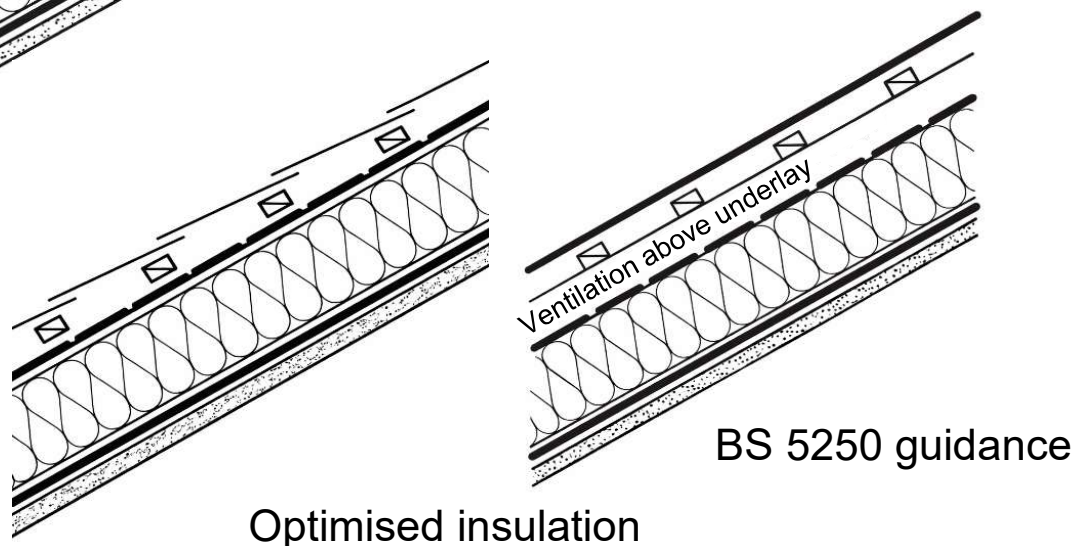
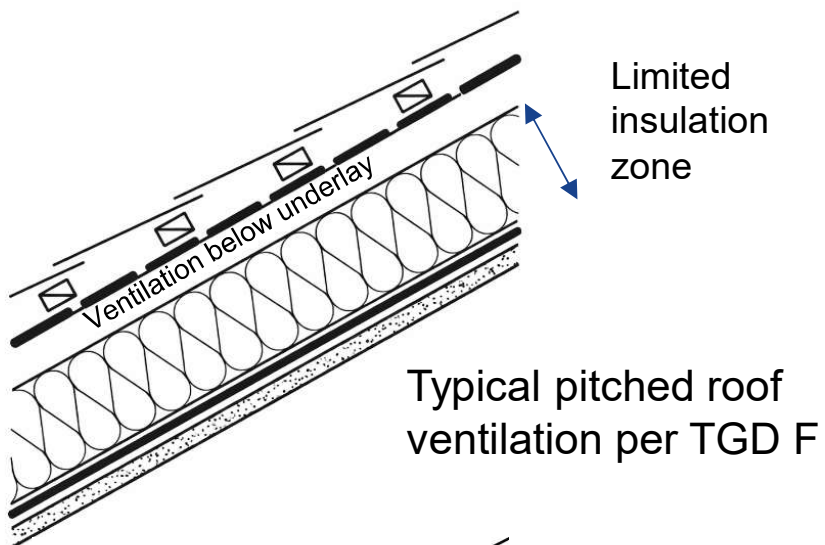
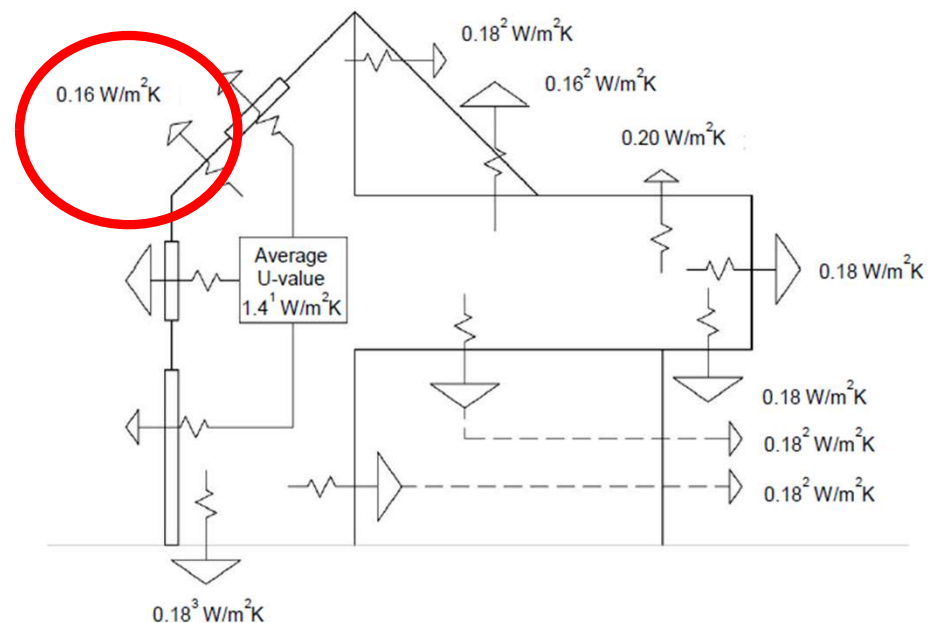


Diagram 1 Average Area Weighted Elemental U-values
(Par. 1.3.2.2)



CHALLENGES IN ACHIEVING COMPLIANCE

DISJOINTED DESIGN RESPONSIBILITY



- Preliminary design by Architect. U-value and fire resistance specified.
Are all of the regulatory elements considered?
- Contractor management / Sub-contractor decisions
Lock-in to non-compliant pathway due to tradition/assumptions
 - Contractor influence
 - LR underlay
 - Impacts of changing insulation pathway based on tradition
 - Change of slate type
 - Omit counterbattens
- Limitations for inspection and clarification of the above

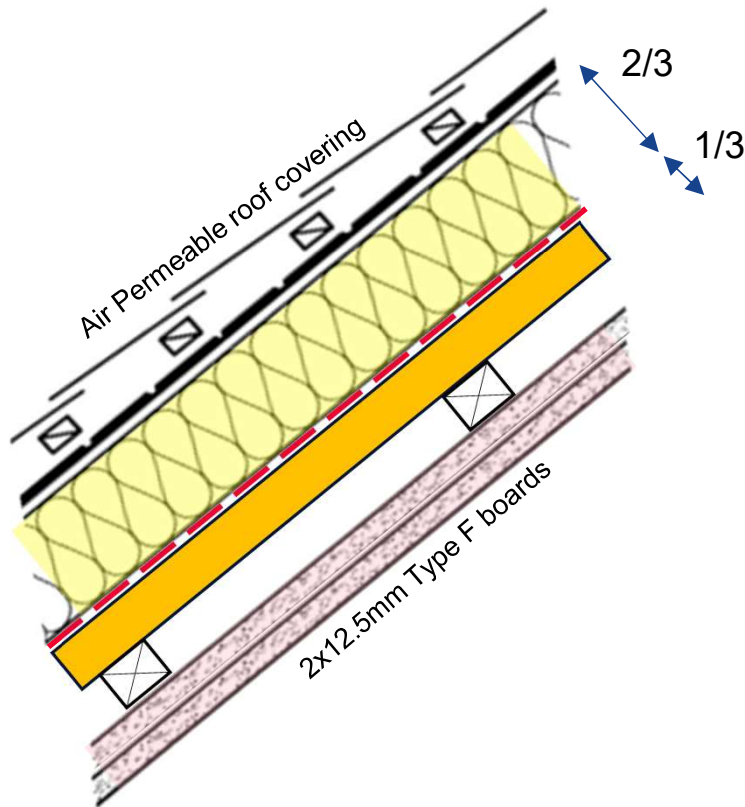
CHALLENGES IN ACHIEVING COMPLIANCE

REGULATORY CONSIDERATIONS



Area	Standard / Guidance	Key Relevance for Inspection & Design
Fire Safety (Dwellings)	TGD B –Supplementary Fire Guidance	Sets fire resistance requirements for dormer truss assemblies.
Energy Performance	TGD L – Conservation of Fuel & Energy	Max U-values (e.g. 0.16 W/m²K); drives thicker insulation. BER drives lower U-values, e.g. 0.13 W/m²K
Ventilation Strategy	TGD F – Ventilation (2019)	Provisions for pitched and hybrid roofs incl eaves & ridge
Condensation Risk	BS 5250 (post-2016 revision)	LR vs HR underlays; well-sealed ceiling; hybrid roof complexity.
Airtightness	BS 9250:2007	Continuous, well-sealed ceiling; central to AVCL location.
Roofing Practice	S.R. 82:2017 (RoI)	Slating and tiling practice; underlay support, fixing requirements, wind uplift resistance and exposure considerations.
Moisture Assessment	DIN 4108-3 – Climatic Moisture Protection	Origin of 1/3 rule.
Underlay Classification	EN 13859-1	Defines W1 water resistance and basic underlay performance (not vapour resistance classification).

CHALLENGING DIMENSIONS



The only publicly available fire test evidence for pitched roofs is mineral wool, i.e. glass or stone wool
Combined with PIR to the underside

The UK/Irish “1/3 rule” is a maritime-climate adaptation of DIN 4108 condensation practice, translated through BRE and industry guidance as a simplified temperature-factor safeguard derived from Glaser-method moisture analysis.

SUPPLEMENTARY GUIDANCE

GYPROC FIRE TEST
1X15mm Gyproc FireLine

VENTILATION – BS 5250



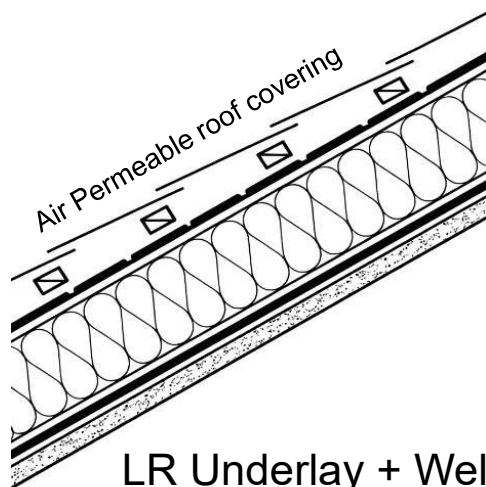
EN 13859 roofing underlay classifications: “*Breather membranes*”

High (HR) or Low Resistance (LR) underlay.

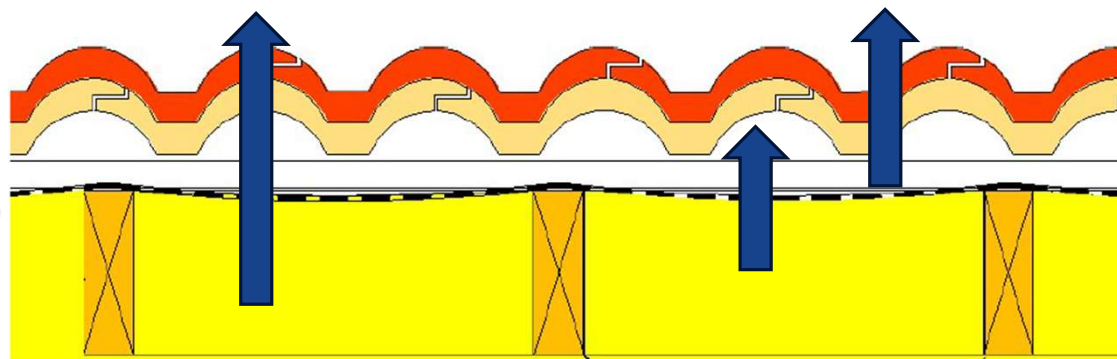
- LR requires Water vapour resistance ≤ 0.25 MNs/g **but also W1**

An air permeable roof covering must have an airflow $> 7.8 A_r$ (in m³/h)

- e.g. natural slates, clay or concrete tiles (**not** fibre cement)



LR Underlay + Well
Sealed ceiling (BS 9250)



Underlays laid horizontally, with temporary fixing to rafters and final restraint by tiling battens. **Counterbattens still recommended where underlays are installed taut or fully supported and manufacturer has not explicitly approved. Mineral wool may compress and therefore exempt. (SR 82 – 4.8.2)**



VENTILATION, INSULATION, AIRTIGHTNESS, FIRE



Hybrid roof requires

- Attics ventilated below underlay
- Pitched roof venting through the roof

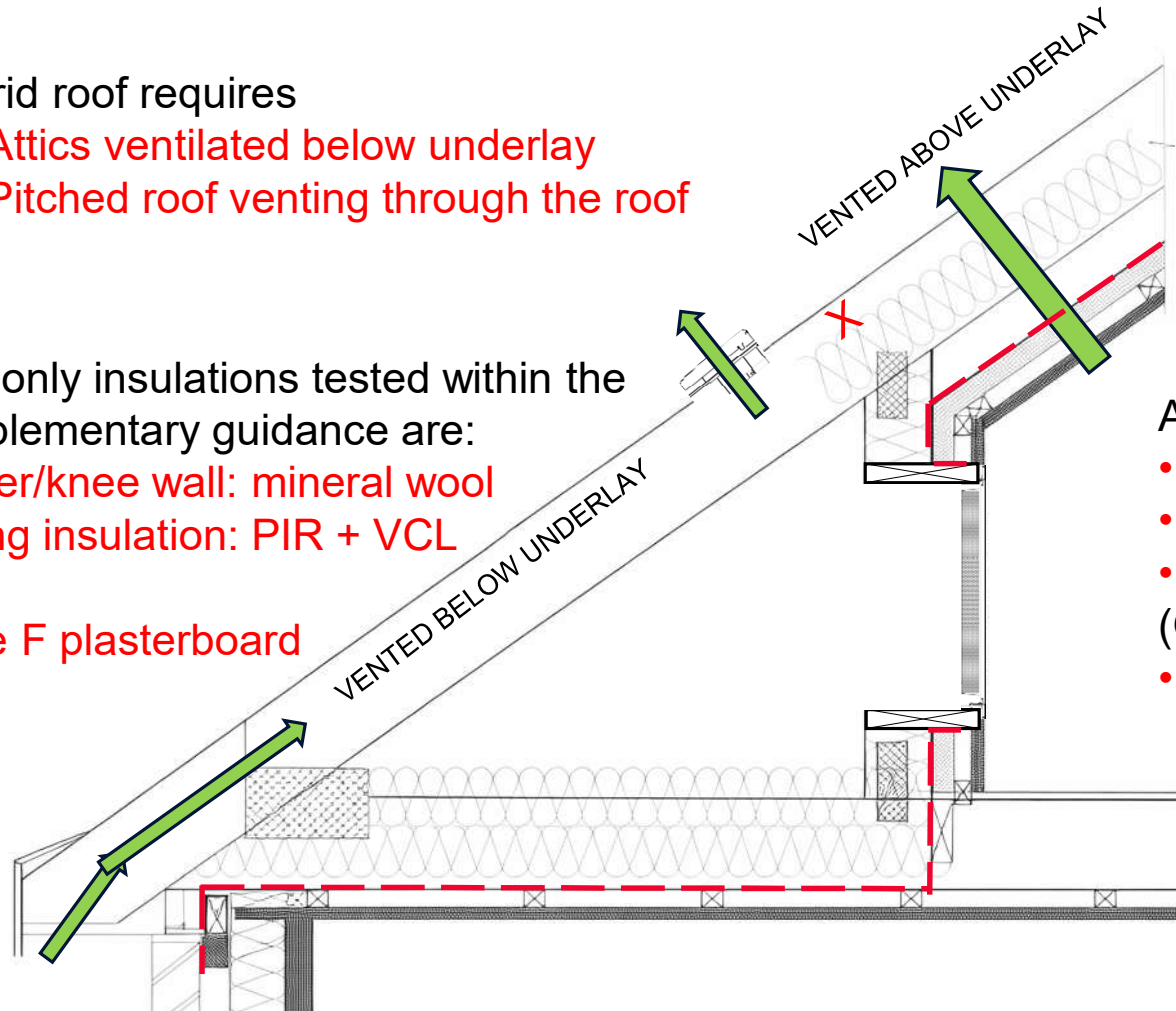
Fire:

The only insulations tested within the supplementary guidance are:

Rafter/knee wall: mineral wool

Lining insulation: PIR + VCL

Type F plasterboard



No fire protection to attic (storage, batteries...)

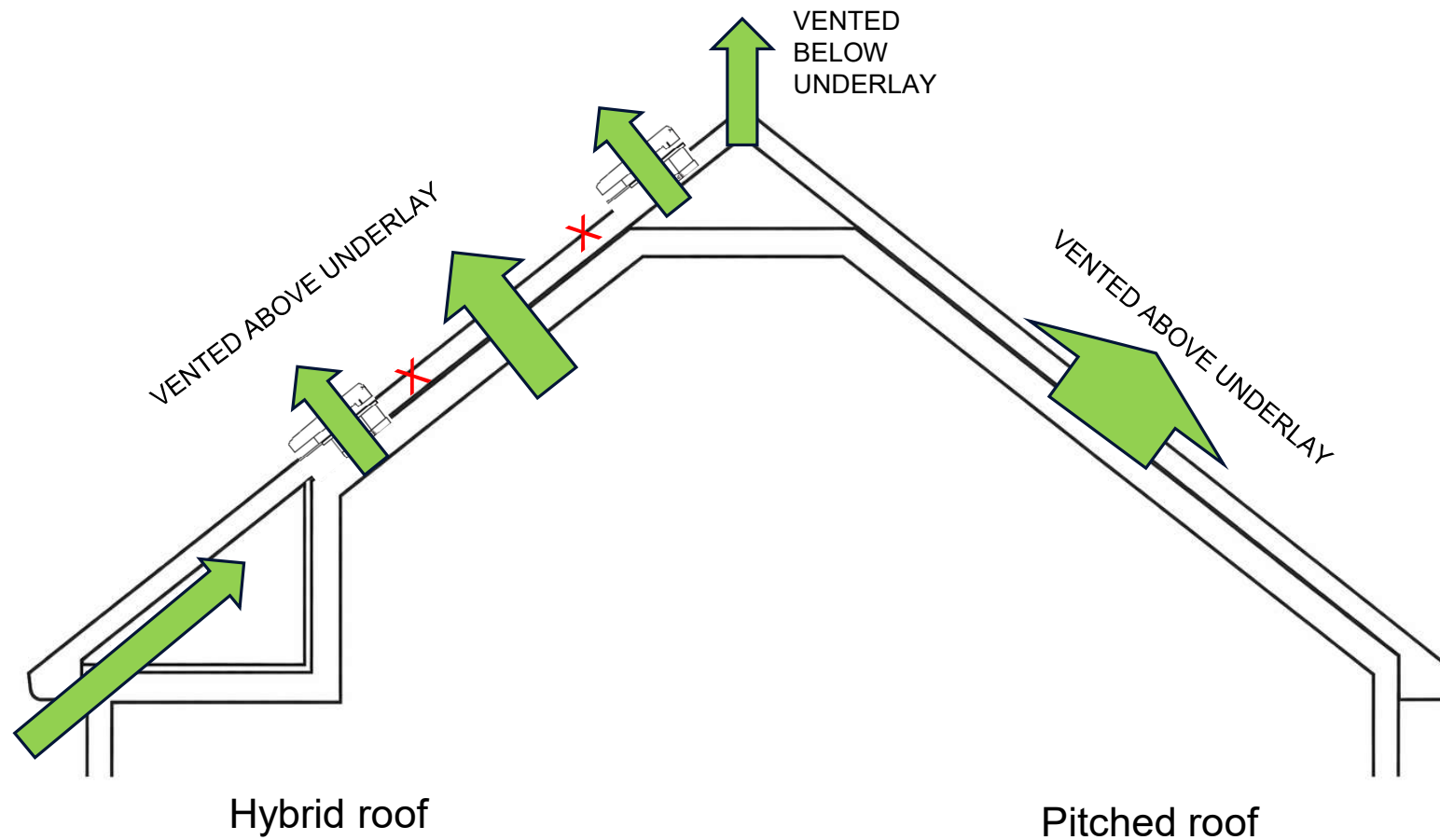
Ventilation strategy compromised

Access hatch challenging

Access hatch:

- Insulated (include in BER)
 - Fire resistant
 - Airtight
- (Glidevale) **AH7 1/2 hr FR Part L**
- Thermal bridge free

TGD F - VENTILATION



FULLY COMPLIANT DORMER ROOF

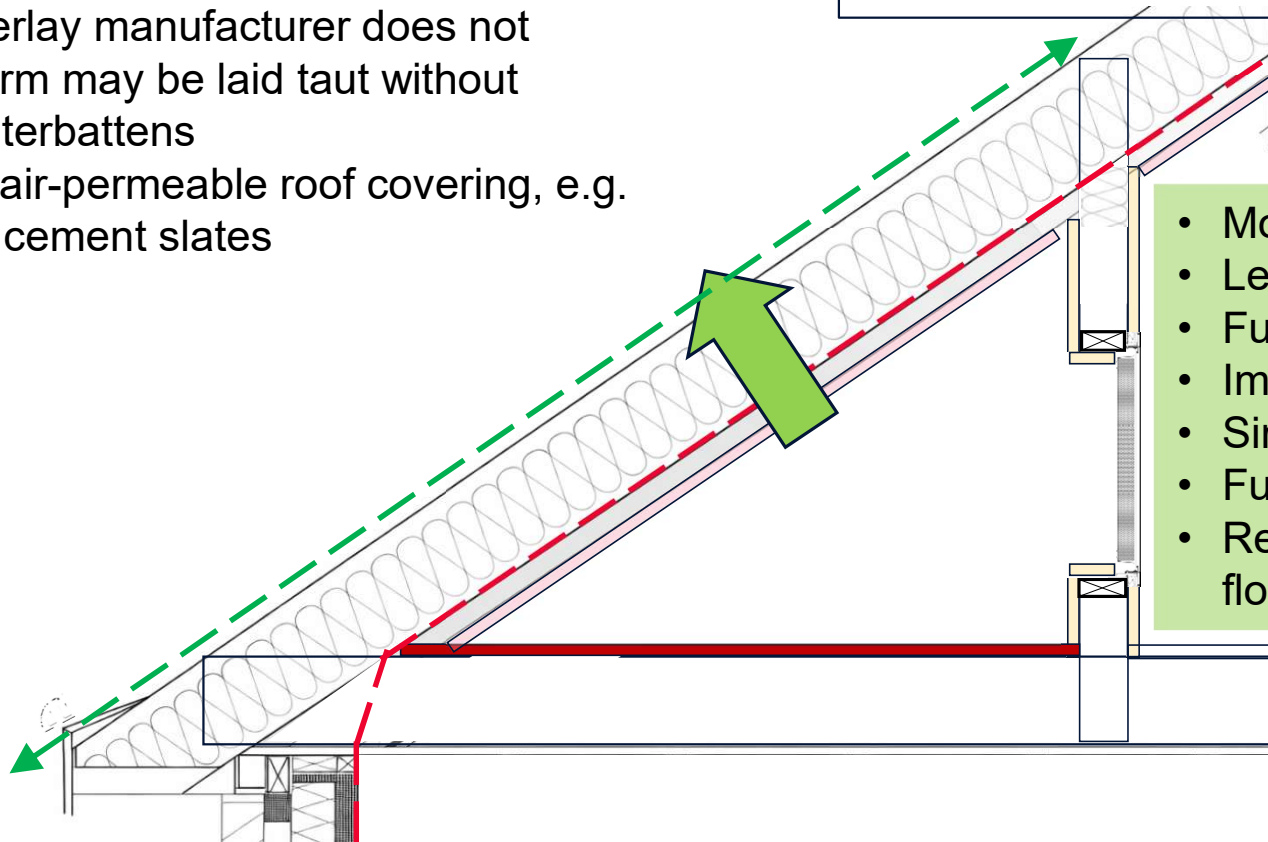


Confirm underlay is Low Resistance (LR)
and

Use Counterbattens where:

- Underlay manufacturer does not confirm may be laid taut without counterbattens
- Non air-permeable roof covering, e.g. fibre cement slates

- Continue floor boards and pitched roof insulation/vcl/plasterboard to eaves
- 15mm WallBoard to both sides of knee wall



- More thermally efficient
- Less insulation
- Full fire resistance to attic area
- Improved airtightness (BS 5250)
- Simplifies Ventilation
- Fully utilisable attic
- Reduced boarding to ceiling in floor below

DEALING WITH UNCERTAINTY

COLLABORATION IS ESSENTIAL

- Early engagement & Risk assessment critical under BCAR
- Coordinated specification and installation, Site benchmarking & Training



- Agree design intent & specification
- Specify type & key performance criteria of insulation, underlay, roof finish, ventilation strategy & fire protection
- Ensure main and subcontractors are fully briefed
- Use of counterbattens to be carefully thought through on a project basis

GUIDANCE AND STANDARDS



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ENHANCING YOUR COMPETENCES IN CONSTRUCTION

BUILDING KNOWLEDGE FOR TOMORROW



E-LEARNING HUB

BUILD HUB

KINGSCOURT (1 hour from the M50)

DUBLIN (10 minutes from M50-N7)

ON SITE, BESPOKE EVENTS & CPD



REGISTRATION



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TO SIGN UP

<https://www.saint-gobain.ie/technical-academy>

COURSES

- Fire Performance
 - Systems
 - Installation
 - Sustainability
 - Thermal
 - Acoustics
-
- CPD
 - Benchmark Review
 - Project discussion

THANK YOU

Fintan Smyth

MSc AEES, C Build MCABE, MIFireE, RIAI (Arch Tech)

Building Physics Manager

fintan.smyth@saint-gobain.com

