

Advisory report regarding the application of NCC 2022 Vol. 1 C2D10 to Velux glass skylights and roof windows when fitted to roof coverings

Advisory Report

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Client: Velux Australia Pty Ltd

Commercial-in-confidence

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1 Introduction

This report confirms the extent the available evidence can be used for the determination of the compliance of Velux glass skylights and roof windows when fitted to roof coverings required to be non-combustible.

2 Proposed Construction

The proposed construction includes Velux skylights fixed and openable with and without solar panel rain sensor attachment. An example of the general configuration is shown in Figure 1:

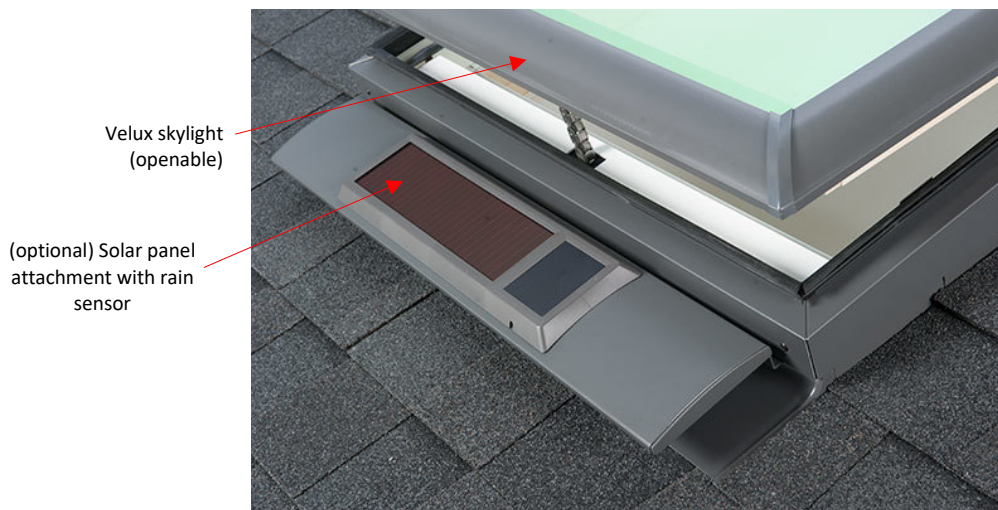


Figure 1. Typical Velux skylight construction with solar panel attachment

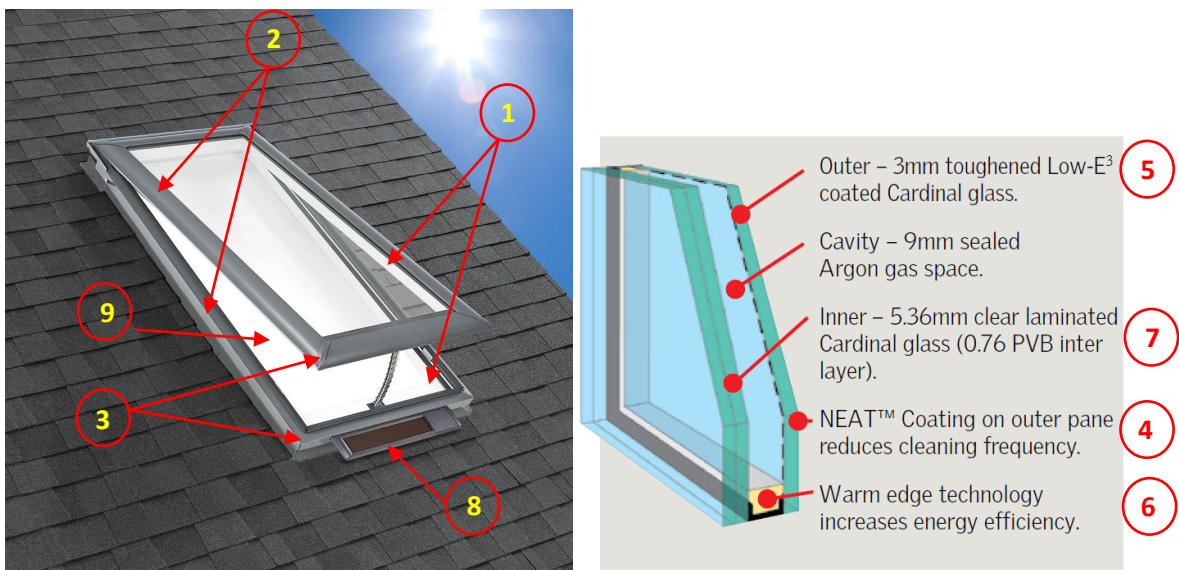


Figure 2. Velux skylight double glazing pane details showing components

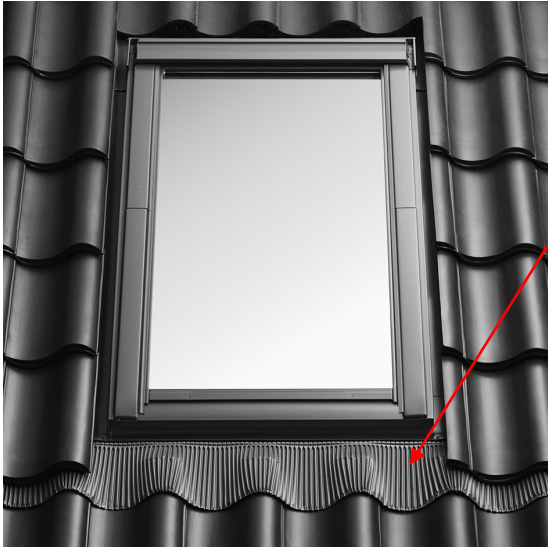


Figure 3. Velux skylight with flashing (EDW)

10

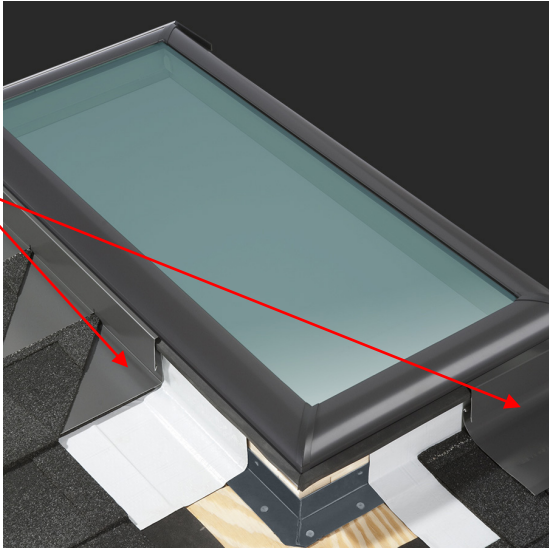


Figure 4. Velux skylight with flashing (EDL)

Table 1. Specifications of components considered in this report

Item No.	Components	Model	Material	The way the material is used in the construction
1	Internal frame	FS, FCM, VS, VSE, VSS, GGL, GPL	Painted Ponderosa pine	Internal trimming and framing. Not part of the external roof covering
		VCM, VCE, VCS	PVC	
2	External frame and cladding	All models	0.65-mm to 1.5-mm thick extruded aluminium paint coated	Pre-finished metal sheeting
3	Injection moulding at corners of external frame	All models	Luran S 778T ASA resin	Gasket
4	Outer coating on the glass	All models	NEAT coating (Silicon dioxide/Titanium dioxide)	Part of glass
5	Outer toughened glass	All models	3-mm thick toughened coated Cardinal glass	Glass
6	Warm edge thermal break	All models	Plastic	Thermal Break associated with the glazing system
7	Inner laminated glass	All models	5.36-mm clear laminated Cardinal glass with 0.76-mm thick PVB inter-layer	Annealed glass
8	Solar panel rain sensor attachment	VSS VCS	Aluminium (tray) and plastic	Attached on top of, not in place of roof covering
9	Optional insect Screen	VS, VSE, VSS, VCM, VCE, VCS	Aluminium frame, plastic cord and screen material	Attached inside the window, and not a part of the roof covering
10	Flashing	All models <u>Flashing designations:</u> EDW – single flashing kit (for tiles or metal roofing) EDL – single flashing kit (for slate roofing) EKW – combination flashing kit EKX – combination flashing kit	<u>Flashing components and materials:</u> <ul style="list-style-type: none"> • Sill flashing – Polyester lacquer-coated 22 Gauge or 0.65-mm Aluminium • Side gutter flashing – Polyester lacquer-coated 23 Gauge or 0.57-mm Aluminium • Saddle flashing – Polyester lacquer-coated 23 Gauge or 0.57-mm Aluminium • Flexible apron on sill flashing – polyester paint coated 0.78-mm pleated Aluminium • Foam gasket – Polyurethane foam on a polyester basis with a fine cell structure. 	Flashing/ Pre-finished metal sheeting Attached around the skylight

Velux skylight products come in a range of models for pitched and flat roofs. The following figures demonstrate how the configuration of the components described above can be arranged in the product range.

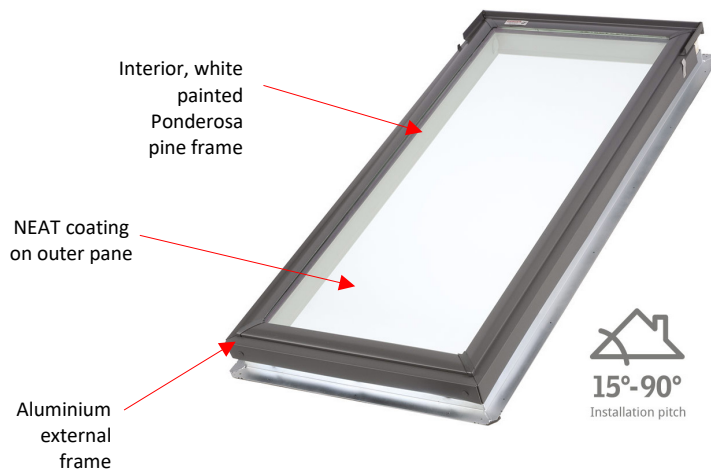


Figure 5. Velux (FS) Fixed Skylight Pitched Roof - fixed



Figure 6. Velux (FCM) Fixed Skylight Flat Roof - fixed

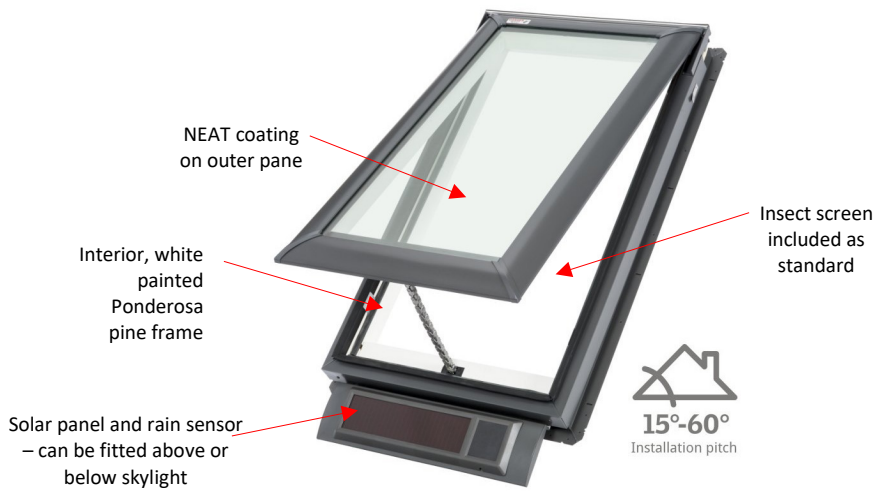


Figure 7. Velux Solar Skylight (VSS) - openable



Figure 8. Velux Electric Skylight (VSE) - openable



Figure 9. Velux Manual Skylight (VS) - openable

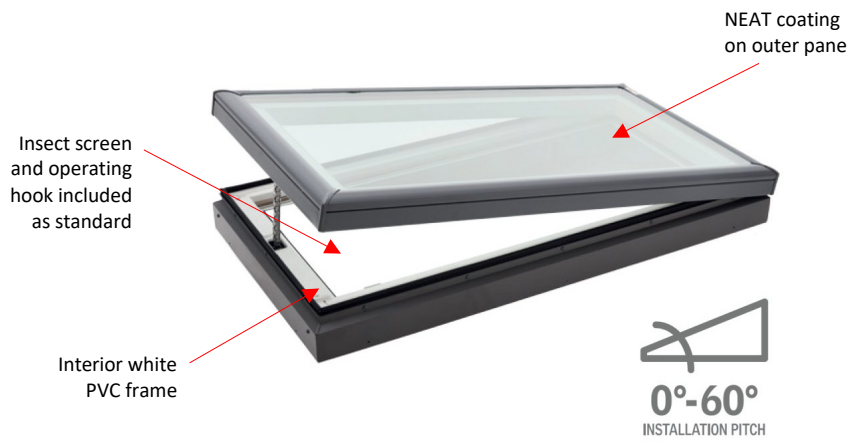


Figure 10. Velux Manual Skylight (VCM) - openable



Figure 11. Velux Solar Powered Skylight (VCS) – openable



Figure 12. Velux Electric Skylight (VCE) – openable

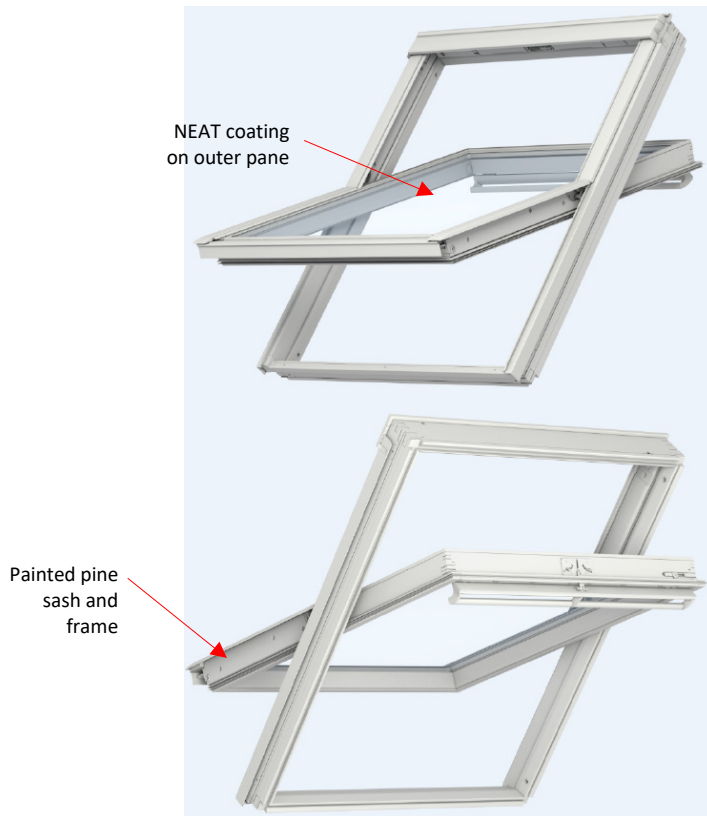


Figure 13. Velux Centre-Pivot Roof Window (GGL)

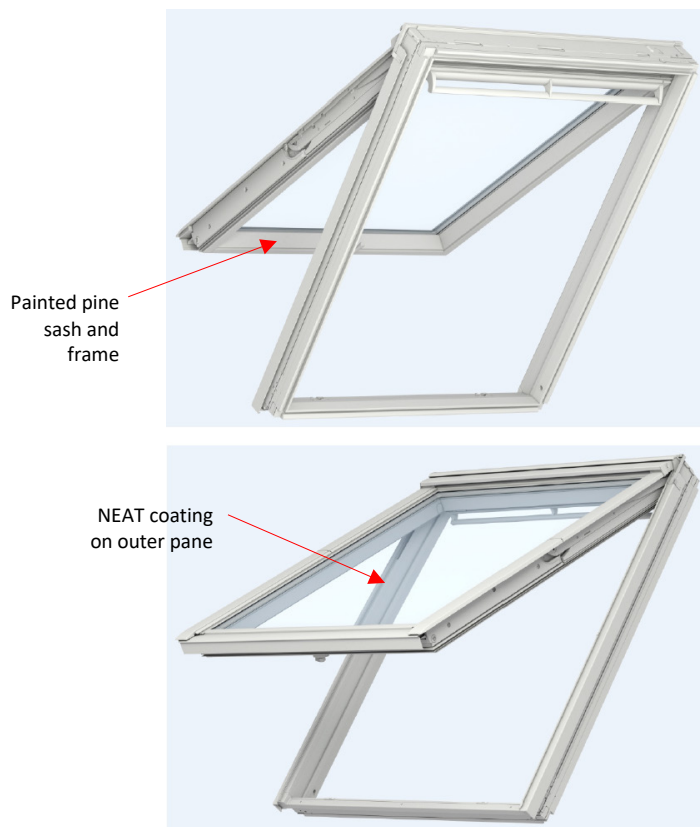


Figure 14. Velux Dual Action Roof Window (GPL)

3 Supporting Data

No test evidence is directly referred to in this report.

4 Analysis of considered components

4.1 NCC 2022 Volume 1 C2D10

For components numbered 4, 5 and 7 in Table 1, the relevant part of this clause is (4) (e)

C2D10 Non-combustible building elements

(4) The requirements of (1) and (2) do not apply to the following:

....

(e) Glass, including laminated glass, and associated adhesives, including tapes.

.....

For components numbered 3 (gasket) in Table 1, the relevant part of this clause is part (4) (a)

C2D10 Non-combustible building elements

(4) The requirements of (1) and (2) do not apply to the following:

(a) Gaskets.

.....

For component numbered 6 in Table 1, the relevant part of this clause is (4) (f)

C2D10 Non-combustible building elements

(4) The requirements of (1) and (2) do not apply to the following:

....

(f) Thermal breaks associated with –

(i) glazing systems;

.....

For components numbered 2 and 10 in Table 1, the relevant part of this clause is (4) (o) and (5) (d)

C2D10 Non-combustible building elements

(4) The following materials may be used wherever a *non-combustible* material is *required*:

....

(o) A paint, lacquer or a similar finish or coating.

.....

(5) The following materials, when entirely composed of itself, are non-combustible and may be used wherever a *non-combustible* material is *required*:

....

(d) Aluminium, including aluminium alloy.

....

5 The relevance of the evidence to the NCC 2022 Volume 1

5.1 Parts of the skylight not part of the roof covering

With reference to Table 1 in Section 2 of this report, the following items are not evaluated as part of the roof covering.

For components 1 and 9, which are internal framing and insect screen respectively, no specific clause appears to be applicable as these items are not a part of the roof covering but rather internal window fitout and framing.

For component 8, the Solar panel rain sensor attachment, it is attached on top of, not in place of or part of the roof covering, and so is not considered as a part of the roof covering in the report. It is understood that compliance for this part of the product would be dealt with by others as appropriate for rooftop solar panels.

5.2 Non-combustible building elements – NCC 2022 C2D10

Concerning Table 1 in Section 2 of this report, the construction specification (refer to Figures 5 to 14) is comprised of various materials. Identified below is each material used to construct the skylights and roof windows and the clause relevant to each part.

Regarding components 3, 4, 5, 6, and 7, these parts are part of the roof covering and are described as glazing, gaskets or thermal breaks associated with glazing. As such they meet the requirements of C2D10 (4) (a), (e) or (f) and the requirements of C2D10 (1) or (2) do not apply to these materials.

Regarding components 2 and 10, which comprise components of the external frame and cladding, and flashing, these parts are part of the roof covering and are described as aluminium, including aluminium alloy with a paint, lacquer or similar finish or coating and as such meet the requirements of C2D10 (4) (o) and (5) (d) and therefore the requirements of C2D10 (1) or (2) do not apply to this material.

6 Conclusion

It is confirmed by CSIRO that for the parts of the Velux skylights constructions detailed in Section 2 that are parts of the roof covering, there is sufficient evidence for the determination of compliance with NCC 2022 Volume 1 C2D10. A summary of the potential for compliance is listed in Section 3 of this report along with any qualifications or requirements.

It is understood by CSIRO that the determination of compliance with the NCC for any specific project is undertaken by the Authority Having Jurisdiction.

7 Term of validity

This report will lapse on 31st May 2027. Should you wish us to re-examine this report with a view to the possible extension of its term of validity, would you please apply to us three to four months before the date of expiry. This Division reserves the right at any time to amend or withdraw this report in the light of new knowledge.

8 Limitations

This Advisory Report is prepared for the Client listed on page 1 and applies to the nominated materials and forms of construction. Any modifications, changes or amendments to the referenced standards or Building Regulations may invalidate the findings of this report.

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