Engineering Advice Notice – Topglass® GC Ultra Safe Roof Cladding

1. Executive Summary

The following advice notice is intended as supporting documentation for Topglass® GC Ultra Safe in assisting to meet the requirements of Australian Building Codes Board (ABCB) National Construction Code 2025 (NCC2025) and New Zealand Building Code (NZBC).

For NCC2025 compliance, this advice notice is issued by a Chartered Professional Engineer (CPEng), for use under the Deemed-to-Satisfy Provisions of NCC 2025.

For NZBC, a Chartered Professional Engineer (CPEng) statement supports the Alternative Solution compliance pathway, comparing wholly or partly, from an Acceptable Solution or Verification Method.

2. Purpose

2.1 NZBC

This document outlines a pathway to NZBC compliance through an Engineering Advice Notice covering:

Satisfied on reasonable grounds: Under the Building Act 2004, Building Consent Authorities must be satisfied on reasonable grounds that a design complies before granting consent. A signed statement from a CPEng provides technical assurance for this purpose.

Competence and registration: Although engineers may belong to professional bodies, only a registered CPEng holds the legally protected title confirming assessed New Zealand-specific technical competence and ongoing mandatory reassessment.

Building materials: Some materials do not fit standard compliance pathways. A CPEng may use technical expertise to guide materials through the primary compliance pathways recognised by the Ministry of Business, Innovation and Employment (MBIE).

Building professionals: Designers, architects, engineers, and other building professionals must ensure plans and proposals comply with the Building Code. They, together with tradespeople, must also ensure building work follows consented plans, including approved variations, and meets Building Code requirements whether or not consent is required.

Building product manufacturers: Manufacturers and suppliers must ensure their products are fit for purpose and suitable for the New Zealand market.

The scope of the NZBC compliance is restricted to:

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Signature
Date: 20/08/2026

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1. B1 Structure
2. B2 Durability
3. E2 External Moisture
4. F2 Hazardous Building Materials

2.2 NCC2025

This document also outlines a pathway to NCC2025 compliance through an Engineering Advice Notice covering:

The scope of this compliance is limited to NCC 2025 Clause B1 (Structure), together with the relevant building classifications and applicable state variations. It does not assess compliance with Clause C (Fire Resistance), Section J (Energy Efficiency), or other NCC provisions outside this scope. Where assessment of those matters is required, additional advice should be obtained from a certified professional engineer or another appropriately qualified person.

3. Product Description

3.1 Product Overview

Topglass® GC Ultra Safe is a premium Glass Reinforced Polymer (GRP) translucent roof and wall cladding system manufactured by Alsynite One NZ Ltd in Hamilton, New Zealand.

The product has been manufactured in New Zealand for approximately 30 years and has been widely used throughout New Zealand and Australia across industrial, commercial, agricultural and educational buildings.

The product incorporates continuous glass fibre reinforcement encapsulated within a thermosetting polyester resin matrix and is protected by a premium UV-resistant gel coat designed to provide long-term weatherability, durability and light transmission.

The product is manufactured in accordance with AS 4256.3 and is produced under independently certified manufacturing quality systems.

The product is a Glass Reinforced Polymer (GRP) material manufactured by Alsynite NZ Ltd. It is available as translucent sheeting or heavy-duty solid-coloured cladding. The product uses an Alkyd one GRP roofing system with premium gelcoat weather-surface protection and is supported by a 20-year structured weather-surface warranty.

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3.2 Typical Applications

The engineering assessment and supporting test evidence demonstrate the structural performance of Topglass® GC Ultra-Safe within the scope of this advice notice, including its suitability for roof cladding applications and restricted roof-access conditions addressed by the assessment.

Topglass® GC Ultra-Safe is suitable for a range of environments, including:

- Commercial roofing
- Industrial buildings
- Warehouses
- Agricultural buildings
- Educational facilities
- Sports and recreation buildings
- Corrosive environments
- Roof and wall daylighting applications

3.3 Product Variants

Topglass® GC Ultra Safe is available in a range of profiles, colours and light transmission options. Selection should be based on project-specific loading, support spacing and environmental exposure.

Based on the information provided and the tests completed, the author believes that the Topglass® GC Ultra Safe is suitable for use in restricted access applications, as stated and covered in the manufacturer's technical literature.

3.4 Technical Specifications and Testing Regime

Topglass® GC Ultra-Safe has been tested by certified laboratories and has the following technical properties.

Property	Standard	Requirement	Result
Thickness	ASTM D792-08	n/a	2.5 mm
Weight	n/a	n/a	3600 gsm
Impact Resistance	AS/NZS 4257.6:1994 AS/NZS 4256.3	n/a	Pass
Shear Strength	ASTM D732-10	n/a	81.3 MPa
Compressive Strength	ISO 604-2003	n/a	166 MPa
Flexural Strength	ASTM D790-10	n/a	289 MPa
Flexural Strength Modulus	ASTM D792-08	n/a	7.7 GPa
Specific Gravity	ASTM D792-08	n/a	1.44
Tensile Strength	ISO 527-1 & ISO 527-2		137 MPa
Coefficient of Linear Expansion	ASTM D696-98	n/a	32.6×10^{-6}°C
Thermal Conductivity	C518-10	n/a	0.055 W/mK
ULS Load Span Capability	Test & Simulation results	n/a	*3.0 kPa (span ≤2500 mm)
ULS Concentrated Load capacity	Test & Simulation results	1.65 kN	*2.4 kN (span ≤3000 mm)
SLS deflection	AS/NZS1170.1	Span/120	*Pass

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			(span ≤2500 mm)

Table 1: Technical Specifications (*based on profile Trapezoidal profile and current Alsynite One® technical data sheets)

4. Engineering Assessment Framework.

4.1 NCC2025

Topglass® GC Ultra-Safe roof cladding system that complies with the following BCA provisions and state or territorial variations.

A1G1 Scope of NCC Volume One: NCC Volume One contains the requirements for—

(a) Class 2 to 9 buildings; and

(b) access requirements for people with a disability in Class 1b and 10a buildings; and

(c) certain Class 10b structures including access requirements for people with a disability in Class 10b swimming pools.

A1G2 Scope of NCC Volume Two: NCC Volume Two contains the requirements for—

(a) Class 1 and 10a buildings (other than access requirements for people with a disability in Class 1b and 10a buildings); and

(b) certain Class 10b structures (other than access requirements for people with a disability in Class 10b swimming pools); and

(c) Class 10c private bushfire shelters.

A2G2 Performance Solution:

(1) Subject to (5), a Performance Solution is achieved by demonstrating—

(a) compliance with all relevant Performance Requirements; or

(b) the solution is at least equivalent to the Deemed-to-Satisfy Provisions.

(2) Subject to (5), a Performance Solution must be shown to comply with the relevant Performance Requirements through one or a combination of the following Assessment Methods:

(a) Evidence of suitability in accordance with Part A5 that shows the use of a material, product, plumbing and drainage product, form of construction or design meets the relevant Performance Requirements.

(b) A Verification Method including the following: Page 80 NCC 2025 Volume One - Building Code of Australia Governing Requirements (i) (ii)

(c) The Verification Methods provided in the NCC. Other Verification Methods, accepted by the appropriate authority that show compliance with the relevant Performance Requirements. Expert Judgement.

(d) Comparison with the Deemed-to-Satisfy Provisions.

A2G3 Deemed-to-Satisfy Solution:

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(1) A solution that complies with the Deemed-to-Satisfy Provisions is deemed to have met the Performance Requirements.

(2) A Deemed-to-Satisfy Solution can show compliance with the Deemed-to-Satisfy Provisions through one or more of the following Assessment Methods:

(a) Evidence of suitability in accordance with Part A5 that shows the use of a material, product, plumbing and drainage product, form of construction or design meets a Deemed-to-Satisfy Provision.

(b) Expert Judgement.

A5G1 Suitability:

(1) A building and plumbing or drainage installation must be constructed using materials, products, plumbing products, forms of construction and designs fit for their intended purpose to achieve the relevant requirements of the NCC.

(2) For the purposes of (1), a material, product, plumbing product, form of construction or design is fit for purpose if it is—

(a) supported by evidence of suitability in accordance with A5G2, A5G3 or A5G4 as appropriate; and

(b) constructed or installed in an appropriate manner.

A5G3 Evidence of suitability:

(1) Subject to A5G5, A5G6, A5G7 and A5G9, evidence to support that the use of a material, product, form of construction or design meets a Performance Requirement, or a Deemed-to-Satisfy Provision may be in the form of any one, or any combination of the following:

(a) A current CodeMark Australia or CodeMark Certificate of Conformity.

(b) A current Certificate of Accreditation.

(c) A current certificate, other than a certificate described in (a) and (b), issued by a certification body stating that the properties and performance of a material, product, form of construction or design fulfil specific requirements of the BCA.

(d) A report issued by an Accredited Testing Laboratory that—

(i) demonstrates that a material, product or form of construction fulfils specific requirements of the BCA; and

(ii) sets out the tests the material, product or form of construction has been subjected to and the results of those tests and any other relevant information that has been relied upon to demonstrate it fulfils specific requirements of the BCA.

(e) A certificate or report from a professional engineer or other appropriately qualified person that—

(i) certifies that a material, product, form of construction or design fulfils specific requirements of the BCA; and

(ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon to demonstrate it fulfils specific requirements of the BCA.

(f) Another form of documentary evidence, such as but not limited to a Product Technical Statement, that—

(i) demonstrates that a material, product, form of construction or design fulfils specific requirements of the BCA; and

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(ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon to demonstrate it fulfils specific requirements of the BCA.

(2) Evidence to support that a calculation method complies with an ABCB protocol may be in the form of any one or any combination of the following:

(a) A certificate from a professional engineer or other appropriately qualified person that—

(i) certifies that the calculation method complies with a relevant ABCB protocol; and

(ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice and other publications have been relied upon.

(b) Another form of documentary evidence that correctly describes how the calculation method complies with a relevant ABCB protocol.

4.2 NZBC

The testing and expert judgement show that Topglass® GC Ultra Safe contributes to meeting the compliance pathways of the following NZBC clauses:

1. B1 Structure B1.3.1, B1.3.2, B1.3.3(a, b, c, f, h, j, q), B1.3.4 (contributes to). By analysis and comparison with Verification Method B1/VM1

2.B2 Durability B2.3.1(b) (contributes to). By analysis and comparison with Verification Method B2/VM1 and Acceptable Solutions B2/AS1

3. E2 External Moisture Performance Clauses E2.3.2 (contributes to), E2.3.5 (contributes to), E2.3.7 - By testing and comparison with Verification Method E2/VM1 and Acceptable Solutions E2/AS1

4. F2 Hazardous Building Materials F2.3 (contributes to). By comparison with Building Code performance requirement F2.3.1

5. Engineering Evidence

The conclusions in this advice notice are underpinned by a combination of physical testing, analytical assessment, supporting material property data and professional engineering judgement. The key engineering evidence considered includes:

a) Concentrated load testing undertaken with reference to AS/NZS 4040.1 to demonstrate point-load performance and roof-access capability within the assessed span and installation conditions.

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b) Finite element analysis and engineering calculations used to assess structural response, load distribution, deflection behaviour and ultimate limit state performance.
c) Supporting mechanical test data for relevant GRP material properties, including flexural strength, tensile strength, compressive strength, shear strength and modulus values.
d) Independent laboratory and manufacturer-supplied test reports, including BRANZ, VIPAC, NZMRM and current Alsynite One® technical literature.
e) Engineering assessment by a Chartered Professional Engineer, drawing on the test evidence, analysis, product documentation, applicable standards and the stated limitations of this advice notice.

The evidence supporting compliance and engineering judgement has been reviewed and considered with the relevant NCC2025 and NZBC clauses.

6. Engineering Opinion

This report, compiled and authorised by a Chartered Engineer, constitutes the compliance requirements of NCC 2025 clauses A2G3(b), A5G3(1)(e), and A5G3(2)(a)(ii).

The testing and expert judgement show that Topglass® GC Ultra Safe contributes to meeting the compliance pathways of the following NZBC clauses B1, B2, E2 and F2.

7. Supporting Documents

The following documents support the stated NZBC clauses and ABCB NCC 2025 provisions:

1. Topglass® GC Ultra-Safe meets the impact strength tests of AS 4256.3 clause 11.3, AS 4040.1, and AS 1562 alleviating the need for safety mesh, rather than just a roof lighting product.
2. NZMRM test report data - Point Load testing of Alsynite One Topglass® GC Ultra-Safe (15/05/2026)
3. BRANZ Report DC 103065 001 (28/01/2021)
4. Point Load testing of Alsynite One Topglass® GC Ultra-Safe
5. Vipac Engineering Report 30B-13-0122-TRP-822248-0(14/08/2014)
6. Topglass Catalogue GC Ultra-Safe (201)
7. Compliance with AS 4256.3:2006 – Plastic roof and wall cladding materials, Part 3: Glass fibre reinforced polyester (GRP).
8. Testing against impact strength standards such as AS/NZS 4040.4 and compliance with general requirements of AS 4256.3.
9. Requirements for safety mesh, specifically adhering to AS/NZS 4389.
10. AS/NZS 1170 (e.g., AS/NZS 1170.0 & AS/NZS 1170.1)
11. Expert Judgement by Chartered Professional Engineer.

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1. 8. Scope and Limitations

This engineering advice notice relates to the structural performance of Topglass® GC Ultra Safe as a roof and wall cladding product within the specific scope of assessment described in this document. The advice is based on the engineering evidence identified, including testing, finite element analysis, supporting mechanical test data, manufacturer technical literature and professional engineering assessment.

This advice does not replace project-specific structural engineering design, fixing design, support framing design, wind load assessment, site-specific durability assessment, or any other design verification where these are required for a particular project, building, location, exposure condition or authority approval process.

Use of Topglass® GC Ultra Safe remains subject to the manufacturer's current installation instructions, technical literature, stated span and loading limits, compatible fixing requirements, and any additional project-specific requirements imposed by the designer, engineer, consent authority, certifier or relevant regulator.

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