BRANZ Appraised
Appraisal No. 695 [2023]

WATERGATE PLUS WALL UNDERLAY

Appraisal No. 695 (2023)

This Appraisal replaces BRANZ Appraisal No. 695 (2017)

Amended 01 July 2025

BRANZ Appraisals

Technical Assessments of products for building and construction.

Kingspan Thermakraft

Kingspan Insulation NZ Limited
11 Turin Place
Otara
Auckland 2013
Free phone: 0800 806 595
Email: info@kingspaninsulation.co.nz
Web: www.thermakraft.co.nz

BRANZ

BRANZ
1222 Moonshine Rd,
RD1, Porirua 5381
Private Bag 50 908
Porirua 5240,
New Zealand
Tel: 04 237 1170
branz.co.nz

Product

1.1 Watergate Plus is a fire-retardant, flexible synthetic wall underlay for use under direct-fixed and non-direct fixed wall claddings.

Scope

Flexible Wall Underlay

2.1 Watergate Plus has been appraised for use as a flexible wall underlay for lined buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 for timber-framed buildings; or,
- the scope limitations of NASH Building Envelope Solutions, Paragraph 1.1 for steel-framed buildings; and,
- with direct-fixed absorbent and non-absorbent wall claddings; or,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; or,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber-framed buildings or to NASH Building Envelope Solutions for steel-framed buildings; and,
- situated in NZS 3604 Wind Zones up to, and including, Very High.

Use over Rigid Wall Underlay

2.2 Watergate Plus has been appraised for use as a flexible wall underlay over rigid wall underlays on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 for timber-framed buildings; or,
- the scope limitations of NASH Building Envelope Solutions Paragraph 1.1 for steel-framed buildings; and,
- with direct-fixed absorbent and non-absorbent wall claddings [limited to NZS 3604 and NASH Standard Part 2 Wind Zones up to, and including, Very High]; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber-framed buildings or NASH Building Envelope Solutions for steel-framed buildings; and,
- situated in NZS 3604 and NASH Standard Part 2 Wind Zones up to, and including, Extra High.

Specific Design

2.3 Watergate Plus has also been appraised for use on lined buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Watergate Plus into their design in accordance with the declared properties and the instructions of Kingspan Insulation NZ Limited.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Watergate Plus Wall Underlay, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:**

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.2. Watergate Plus Wall Underlay meets these requirements. See Paragraphs 9.1 and 9.2.

Clause C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE: Performance C3.4 (c). Watergate Plus Wall Underlay meets this requirement. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Watergate Plus Wall Underlay will contribute to meeting this requirement. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Watergate Plus Wall Underlay meets this requirement.

Technical Specification

4.1 Watergate Plus is a white, 105 g/m^2 non-woven, microporous polyolefin fabric underlay.

4.2 The product is supplied in various sizes, refer to Table 1. The product is printed with the Watergate Plus logo repeated along the length of the roll and can also be co-branded with custom printing. The rolls are wrapped in clear polythene film.

Table 1: Roll Dimensions

Width (mm)	Length (m)	Coverage (m^2)
1,370	18.5	25
1,370	37	50
1,370	73	100
2,740	18.5	50
2,740	36.5	100

Accessories

4.3 Accessories used with Watergate Plus, which are supplied by the installer are:

- **Fixings** - 6-8 mm staples, large head clouts minimum 20 mm long, self-drilling screws, proprietary underlay fixings, double-sided tape (for steel framing) or other temporary fixings to attach the wall underlay to the framing.
- **Wall underlay restraint (timber frame)** - polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to restrain the wall underlay in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.
- **Wall underlay restraint (steel frame)** - polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to restrain the wall underlay in accordance with NASH Building Envelope Solutions, Paragraph 9.1.9.5. Thermal break sheathing installed in accordance with NASH Building Envelope Solutions Paragraph 11.4.3.2.

Handling and Storage

5.1 Handling and storage of the product, whether on-site or off-site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Product Data Sheet Thermakraft® Watergate Plus, Issue 12.0, May 2025.
- Installation Guide Thermakraft® Watergate Plus, Issue 7.0, May 2025.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

7.1 Watergate Plus is intended for use as an alternative to conventional building papers which are fixed over timber or steel-framed walls in order to limit the entry of wind into building cavities, and to act as a secondary barrier to wind-driven rain. Refer to Table 2 for material properties.

Table 2: Material Properties

NZS 2295 Property	Property Performance Requirement	Actual Property Performance
Absorbency	≥ 100 g/m^2	Pass
Vapour Resistance	≤ 7 MN s/g	Pass
Water Resistance	≥ 20 mm	Pass
pH of Extract	≥ 6 and ≤ 9	Pass
Shrinkage	≤ 0.5%	Pass
Mechanical	Edge tear and tensile strength	**Edge tear (Average):** Machine direction = 77 N Cross direction = 56 N **Tensile strength (Average):** Machine direction = 2.5 kN/m Cross direction = 1.8 kN/m
Air Barrier	Air resistance: ≥ 0.1 MN s/m^3	Pass. Watergate Plus can be used as an air barrier.

7.2 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the building weathertight and some wetting of the underlying structure is always possible before the building is closed in. Hence, the building must be closed-in and made weatherproof before moisture sensitive materials such as wall or ceiling linings and insulation materials are installed.

7.3 Watergate Plus must not be exposed to the weather or ultraviolet (UV) light for a total of more than 90 days before being covered by the wall cladding. During use, Watergate Plus must not be exposed to the building interior.

7.4 Watergate Plus must not be used under translucent wall claddings.

7.5 Watergate Plus is suitable for use as an air barrier where walls are not lined, such as attic spaces at gable ends, in accordance with NZBC Acceptable Solution E2/AS1 or NASH Building Envelope Solutions, Paragraph 9.1.4 (c), but must not be exposed to the building interior.

7.6 In cavity installations where the cavity battens are installed at greater than 450 mm centres, the wall underlay must be restrained between the battens to prevent the underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity. Refer to NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5 for timber framing or NASH Building Envelope Solutions, Paragraph 9.1.9.5 for steel framing. Wall underlay restraint options include polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens or thermal break sheathing (steel framing only).

Claddings

7.7 Watergate Plus is suitable for use under wall claddings as a wall underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23 on timber-framed buildings and NASH Building Envelope Solutions, Table 23 on steel-framed buildings, including non-absorbent wall claddings such as vinyl and metal-based weatherboards in direct-fixed situations.

Stucco Plaster

7.8 Watergate Plus is suitable for use as a non-rigid backing material for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.1 for timber framing or NASH Building Envelope Solutions, Paragraph 9.3.5.1 for steel framing. The underlay must be supported with 75 mm galvanised mesh or plastic tape or wire at 150 mm centres run across the cavity battens to limit deflection to a maximum of 5 mm.

7.9 Watergate Plus may also be used as a slip layer over rigid backings for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.3.1 b) for timber framing or NASH Building Envelope Solutions, Paragraph 9.3.3.1 b) for steel framing.

Structure

8.1 Watergate Plus is suitable for use in all Wind Zones of NZS 3604 and NASH Standard Part 2 up to, and including, Very High when used as a stand-alone flexible wall underlay, and all Wind Zones of NZS 3604 up to, and including, Extra High when used as an overlay for rigid wall underlays.

Durability

9.1 Watergate Plus meets code compliance with NZBC Clause B2.3.1 (a) not less than 50 years for wall underlays used where the cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry veneer, and code compliance with NZBC Clause B2.3.1 (b) 15 years for wall underlays used where the cladding durability requirement is 15 years.

Serviceable Life

9.2 Watergate Plus is expected to have a serviceable life equal to that of the cladding. This is provided the cladding is maintained in accordance with the cladding manufacturer's instructions, the cladding remains weather-resistant and the underlay is covered by an internal lining. In addition, the product must not be exposed to the weather or UV light for a total of more than 90 days prior to installation of the wall cladding.

Control of Internal Fire and Smoke Spread

10.1 Watergate Plus has an AS 1530 Part 2 flammability index of not greater than 12 and therefore meets the requirements of NZBC Acceptable Solution C/AS2, Paragraph 4.17.8 a), for the requirements of suspended flexible fabric used as an underlay to exterior cladding that is not exposed to view in occupied spaces. Kingspan Insulation NZ Limited requires that Watergate Plus is covered by an internal lining in all applications.

Prevention of Fire Occurring

11.1 Separation or protection must be provided to Watergate Plus from heat sources such as fireplaces, heating appliances and chimneys. Part 7 of NZBC Acceptable Solution C/AS1 and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

12.1 Watergate Plus must be used behind claddings that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1 or NASH Building Envelope Solutions, or claddings covered by a valid BRANZ Appraisal.

12.2 Watergate Plus, when installed in accordance with the Technical Literature and this Appraisal will assist in the total cladding systems compliance with NZBC Clause E2.

Installation Information

Installation Skill Level Requirement

13.1 All design and building work must be carried out in accordance with the Watergate Plus Wall Underlay Technical Literature and this Appraisal by competent and experienced tradespeople conversant with wall underlays. Where the work involves Restricted Building Work (RBW) this must be completed by, or under the supervision of, a Licensed Building Practitioner (LBP) with the relevant Licence Class.

Underlay Installation

14.1 Watergate Plus must be fixed to all framing members at maximum 300 mm centres with clouts, staples, self-drilling screws or proprietary underlay fixings. For steel framing, double-sided tape may be used which is applied to each stud in continuous strips. The underlay must be pulled taut over the framing before fixing.

14.2 Watergate Plus must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 150 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.

14.3 The wall underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the underlay by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut underlay must be folded inside the opening and stapled to the penetration framing. Excess underlay may be cut off flush with the internal face of the wall frame.

14.4 Watergate Plus can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.10.3 for timber framing or NASH Building Envelope Solutions, Paragraph 9.1.11.3 for steel framing.

14.5 When fixing the product in windy conditions, care must be taken due to the large sail area created by wide roll widths.

14.6 Any damaged areas of Watergate Plus, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

Inspections

14.7 The Technical Literature must be referred to during the inspection of Watergate Plus installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

15.1 The following tests have been carried out on Watergate Plus in accordance with NZBC Acceptable Solution E2/AS1, Table 23: tensile strength, edge-tear resistance and resistance to water vapour transmission in accordance with AS/NZS 4200.1, shrinkage in accordance with AS/NZS 4201.3, resistance to water penetration in accordance with AS/NZS 4201.4, surface water absorbency in accordance with AS/NZS 4201.6, pH of extract in accordance with AS/NZS 1301.421s and air resistance to BS 6538.3. A range of these tests were completed before and after Watergate Plus was exposed to UV light.

15.2 The flammability index of Watergate Plus has been evaluated in accordance with AS/NZS 1530.2.

Other Investigations

16.1 A durability opinion has been given by BRANZ technical experts.

16.2 An evaluation of the expected performance of Watergate Plus in direct contact with metal wall cladding has been completed by BRANZ.

16.3 The practicability of installation of Watergate Plus has been assessed by BRANZ and found to be satisfactory.

16.4 The Technical Literature, including installation instructions, has been examined by BRANZ and found to be satisfactory.

Quality

17.1 The manufacture of Watergate Plus has not been examined by BRANZ, but details of the methods adopted for quality control and the quality of the materials used, have been obtained and found to be satisfactory.

17.2 The quality of supply to the market is the responsibility of Kingspan Insulation NZ Limited.

17.3 Building designers are responsible for the design of the building, and for the incorporation of the wall underlay into their design in accordance with the instructions of Kingspan Insulation NZ Limited.

17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Kingspan Insulation NZ Limited.

Sources of Information

- AS 1530.2:1993 Test for flammability of materials.
- AS/NZS 1301.421s:1998 Determination of the pH value of aqueous extracts of paper, board and pulp - Cold extraction method.
- AS/NZS 4200.1:1994 Pliable building membranes and underlays - Materials.
- AS/NZS 4201.1:1994 Pliable building membranes and underlays - Methods of test – Resistance to dry delamination.
- AS/NZS 4201.2:1994 Pliable building membranes and underlays - Methods of test – Resistance to wet delamination.
- AS/NZS 4201.3:1994 Pliable building membranes and underlays - Methods of test – Shrinkage.
- AS/NZS 4201.4:1994 Pliable building membranes and underlays - Methods of test – Resistance to water penetration.
- AS/NZS 4201.6:1994 Pliable building membranes and underlays - Methods of test – Surface water absorbency.
- BS 6538.3:1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295:2006 Pliable, permeable building underlays.
- NZS 3604:2011 Timber-framed buildings.
- NASH Building Envelope Solutions: 2019 Light steel-framed buildings.

- NASH Standard Part Two: 2019 Light Steel Framed Buildings.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 14 May 2024

This Appraisal has been amended to update the Technical Literature.

Amendment No. 2, dated 01 July 2025

This Appraisal has been amended to update the Technical Literature and to add internal lining requirements.

BRANZ

In the opinion of BRANZ, Watergate Plus Wall Underlay is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to Kingspan Insulation NZ Limited, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. Kingspan Insulation NZ Limited:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by Kingspan Insulation NZ Limited.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to Kingspan Insulation NZ Limited or any third party.

For BRANZ

Chelydra Percy
Chief Executive

Date of Issue:
08 February 2023