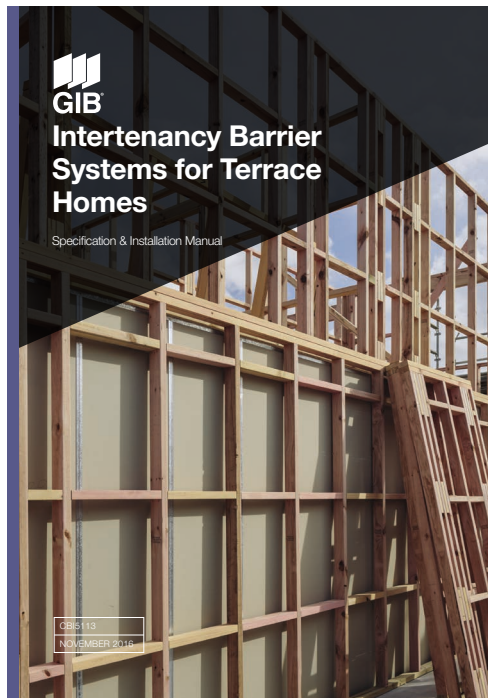




BRANZ Appraised
Appraisal No. 940 [2016]

GIB® INTERTENANCY BARRIER SYSTEMS FOR TERRACE HOMES

Appraisal No. 940 (2016)
Amended 27 January 2017



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



Winstone Wallboards Ltd

P O Box 12 256
Penrose
Auckland 1642
Tel: 09 633 0100
Fax: 09 633 0101
Helpline Tel: 0800 100 442
Helpline Fax: 0800 229 222
Web: www.gib.co.nz
Email: info@gib.co.nz



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 GIB® Intertenancy Barrier Systems for Terrace Homes are a range of fire-rated and sound-insulating intertenancy walls for timber-framed household units, utilising GIB Barrierline®, GIB Fyreline® and other GIB® plasterboards.

Scope

- 2.1 GIB® Intertenancy Barrier Systems for Terrace Homes have been appraised for use as fire-rated and sound-insulation rated walls between household units within the following scope:
 - constructed with timber-framing within the scope of NZS 3604, or to a specific engineering design [refer Paragraph 8.1]; and,
 - with a maximum building height of 10.0 m from the lowest ground level to the highest point of the roof when designed in accordance with NZS 3604; or,
 - with a maximum GIB Barrierline® wall height of 12.0 m when subject to a specific engineering design.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, GIB® Intertenancy Barrier Systems for Terrace Homes, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. GIB® Intertenancy Barrier Systems for Terrace Homes meet the requirements for loads arising from self-weight, imposed gravity loads arising from use, and impact [i.e. B1.3.3 (a), (b) and (j)]. See Paragraphs 8.1 - 8.5.

Clause B2 DURABILITY: Performance B2.3.1 (a) not less than 50 years, B2.3.1 (b) 15 years and B2.3.1 (c) 5 years. GIB® Intertenancy Barrier Systems for Terrace Homes meet these requirements. See Paragraphs 9.1 - 9.3.

Clause C3 FIRE AFFECTING AREAS BEYOND THE FIRE SOURCE: Performance C3.4 (a) and C3.6. GIB® Intertenancy Barrier Systems for Terrace Homes meet the requirements by providing passive fire and smoke protection. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. GIB® Intertenancy Barrier Systems for Terrace Homes meet this requirement and will not present a health hazard to people.

Clause G6 AIRBORNE AND IMPACT SOUND: Performance G6.3.1. GIB® Intertenancy Barrier Systems for Terrace Homes meet this requirement. See Paragraphs 15.1 and 15.2.

- 3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.



Technical Specification

General

- 4.1 GIB® Intertenancy Barrier Systems for Terrace Homes are primarily based on GIB Barrierline® and GIB Fyreline® plasterboard for Fire Resistance Ratings. Other GIB® plasterboards along with acoustic insulation, are used to provide the internal linings to the household units for acoustic performance.
- 4.2 The GIB® plasterboards and accessories used with the GIB® Intertenancy Barrier Systems for Terrace Homes, which are supplied or specified by Winstone Wallboards Ltd, are as follows:

Central Barrier

- GIB Barrierline® plasterboard is a paper-bound gypsum-plaster core sheet lining material. GIB Barrierline® is 25 mm thick, has a panel width of 600 mm and is available in a length of 3.0 m. The panels have a formed square edge on the two long panel edges. The nominal panel weight is 19.8 kg/m². GIB Barrierline® is blue in colour on the front and rear faces.
- GIB Fyreline® plasterboard is a paper-bound gypsum-plaster core sheet lining material. Glass fibre and other additives are added to the core during manufacture. The sheets have a recess on the two long sheet edges. GIB Fyreline® has a thickness of 16 mm with a sheet width of 1200 mm. The standard length of the sheet is 2.4 m. The nominal sheet weight is 13.7 kg/m². GIB Fyreline® face paper is pink in colour.

Plasterboard Internal Linings

- The following GIB® plasterboards may be used to provide the internal linings: 10 mm and 13 mm GIB® Standard, or 10 mm and 13 mm GIB Braceline/Noiseline®. In certain situations, as specified in the Technical Literature, the following permitted alternatives may be used: GIB Aqualine®, GIB Fyreline®, GIB Toughline® and GIB Ultraline®.

Note: The product name is printed on the face and edge of GIB® plasterboards, along with the date and time of manufacture.

Central Barrier Steel Framing

- GIB® H-Stud - 25 mm wide galvanized steel H-Stud, available in a length of 3.0 m.
- GIB® Rondo® 140 Perimeter Channel - 28 mm wide galvanized steel track, available in a length of 3.0 m.
- GIB® Wall Clip - 90 x 40 x 50 mm wide x 2.0 mm thick aluminium unequal angle, with pre-drilled fixing holes.
- GIB® Wall Strap - 110 x 30 x 3.0 mm thick flat aluminium strap, with pre-drilled fixing holes.

Plasterboard Fixings and Adhesives

- GIBFix® One adhesive - Acrylic based adhesive for bonding plasterboard to timber framing.
- GIBFix® All-bond adhesive - Solvent based adhesive for bonding plasterboard to timber framing.
- GIB® Grabber® High Thread Drywall screws - 41 mm x 6 g and 32 mm x 6 g screws.

Jointing Compounds and Tape

- As specified in the Technical Literature.

- 4.3 System components and accessories for GIB® Intertenancy Barrier Systems for Terrace Homes, which are supplied by the building contractor are:

Fixings

- Central barrier steel frame fixing screws - 16 mm x 10 g and 30 mm x 10 g Type 'D' drill-point wafer-head screws.
- Bottom track fixings to concrete - 3.5 mm diameter x 30 mm minimum length, or 4.0 mm diameter x 25 mm minimum length steel shot-fired concrete nails or 6.0 mm diameter x 40 mm concrete screw anchors.
- Laminating Screws - 40 mm x minimum 8 g chipboard screws.
- GIB® Wall Clip and GIB® Wall Strap - 25 mm x 6 g wood screws.



Accessories

- **Damp Proof Course** - DPC complying with AS/NZS 2904: 1995.
- **Acoustic Insulation** - Pink® Batts® R2.2 (90 mm) glass wool wall insulation and Pink® Batts® R2.2 (115 mm) glass wool ceiling insulation.
- **Fire/acoustic sealant** - Proprietary penetration seals and sealants have not been assessed and are outside the scope of this Appraisal.
- **Mineral wool or ceramic fibre cavity insulation packer** - minimum 300 mm wide and thickness to suit cavity. Minimum density of 40 kg/m³.

Handling and Storage

- 5.1 The best results are achieved when GIB® plasterboards are treated as a finishing material and protected from damage. Sheets must be stacked flat and kept dry at all times. For limits on stack heights contact Winstone Wallboards Ltd. Sheets must be carried on edge and not dragged.
- 5.2 GIB Barrierline® must only be handled when dry and must be kept dry prior to installation. Winstone Wallboards Ltd can supply waterproof covers to protect deliveries of GIB Barrierline® and accessories.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for GIB® Intertenancy Barrier Systems for Terrace Homes. The Technical Literature must be read in conjunction with this Appraisal. 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

General

- 7.1 GIB® Intertenancy Barrier Systems for Terrace Homes are based around a central barrier of GIB Barrierline® with insulated timber framed walls either side which are lined with GIB® plasterboards.
- 7.2 GIB® Intertenancy Barrier Systems for Terrace Homes provide a fire resistance rating (FRR) of 60/60/60. Four acoustic rated systems are available using combinations of GIB® plasterboards as the internal linings and acoustic insulation. Refer to the Technical Literature for options.
- 7.3 In order to ensure that the GIB Barrierline® central barrier is not damaged by the collapse of the structure on the fire side, aluminium GIB® Wall Clips and GIB® Wall Straps are utilised to attach the GIB Barrierline® central barrier to the timber frame on both sides. As the clips on the fire side melt, the GIB Barrierline® central barrier is disconnected from the collapsing structure and is supported by the clips and the structure on the protected side for the specified fire rating period.
- 7.4 GIB® plasterboards must not be exposed to temperatures of 52°C or greater for prolonged periods. Refer to appliance and fitting manufacturers for installation details.

Maximum Exposure Period

- 7.5 Exposure of the GIB Barrierline® central barrier to the weather should be kept to a minimum. Once installed and in a vertical orientation, GIB Barrierline® can be exposed to the elements for up to 12 weeks before the building is closed in. GIB Fyreline® can be exposed for a maximum of 4 weeks once installed and in a vertical position. The use of tarpaulins, plastic sheeting and other weather protection is recommended in inclement weather conditions to shed water away from the central barrier. Any tears in the paper surface must be taped with flexible flashing tape to protect the core from moisture damage.

Control Joints

- 7.6 Where control joints are required, the joints must be specifically designed to maintain the integrity of the fire and acoustic rated system. These joints have not been assessed by BRANZ and are outside the scope of this Appraisal.



Structure

Framing

- 8.1 Timber framing must be designed and constructed in accordance with NZS 3604, or be to a specific engineering design using NZS 3603 and AS/NZS 1170. Studs must be at maximum 600 mm centres. The structural design for each specific structure is the responsibility of the building designer.
- 8.2 Mid-floor framing may be run in either direction to suit the building layout. Where floor framing is positioned perpendicular to the central barrier, solid full depth blocking must be fitted between the ends of the floor joists. This is to slow fire spread from the occupied space to the central barrier.

Bracing

- 8.3 The household units will require bracing systems to resist wind and seismic loads, e.g. by provision of GIB EzyBrace® Systems. Refer to BRANZ Appraisal No. 294 [2011] and BRANZ Appraisal No. 928 [2016] for details of GIB EzyBrace® Systems.

Impact Resistance

- 8.4 GIB® plasterboards provide adequate resistance to soft body impact, based upon experience of use in domestic and light commercial applications.

Post Fire Strength

- 8.5 Building designs in accordance with NZS 3604 are considered to satisfy the performance requirements of NZBC Clause B1 Structure for post fire strength.

Durability

- 9.1 GIB® Intertenancy Barrier Systems for Terrace Homes, including linings and their fixings have a serviceable life of at least 50 years. The ability of the systems to remain durable is dependent on them remaining dry in service, and being maintained in accordance with this Appraisal.
- 9.2 The building must be maintained weatherproof and GIB® Intertenancy Barrier Systems for Terrace Homes must be protected from external and internal moisture in accordance with NZBC Clauses E2 and E3 to maintain the FRR for at least 50 years.
- 9.3 Timber framing treatment must comply with NZBC Acceptable Solution B2/AS1.

Maintenance

- 10.1 Internal linings require no ongoing maintenance, apart from decoration and the repair of any damage.
- 10.2 Any cracks or damage which may occur as a result of events such as exposure to excessive moisture or flooding, local outbreak of fire, wind or earthquake, timber shrinkage, or excessive impact, must be repaired immediately. This may require removal of the linings to inspect the integrity of the GIB Barrierline® central barrier. Repair will include the replacement of any damaged sheets, materials or components in accordance with the instructions of Winstone Wallboards Ltd.
- 10.3 The integrity of fire-rated sealants and packing must be maintained.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to GIB® Intertenancy Barrier Systems for Terrace Homes from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 - C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

Fire Affecting Areas Beyond the Fire Source

Internal Surface Finishes

- 12.1 For internal surface finish properties, refer to BRANZ Appraisal No. 289 [2012] GIB® Fire Rated Systems.

Fire Resistance Rating [FRR]

- 12.2 GIB® Intertenancy Barrier Systems for Terrace Homes provide a FRR of 60/60/60 as determined by NZBC Acceptable Solutions C/AS1 - C/AS7 and NZBC Verification Method C/VM2. Refer to the Technical Literature for details of available systems.

Internal Moisture

- 13.1 GIB® plasterboards are intended for use in dry internal situations and must not be used where they are likely to be exposed to liquid water or where extended exposures to humidity above 90% RH can reasonably be expected.

Airborne and Impact Sound

- 14.1 The intertenancy provisions of NZBC Clause G6 for wall elements can be achieved when a GIB® Intertenancy Barrier System with a minimum STC rating of 55 is installed in accordance with the Technical Literature. Refer to the Technical Literature for available options.
- 14.2 To control flanking sound, insulation is fitted to either side of the wall in the ceiling cavity at each storey. Where rigid wall underlays are used, they must be discontinued over the width of the intertenancy wall.

Installation Information

Installation Skill Level Requirement

- 15.1 Installation of GIB® Intertenancy Barrier Systems for Terrace Homes must be completed by, or under the supervision of a Licensed Building Practitioner with the relevant Licence Class, in accordance with the Technical Literature and this Appraisal.

General

- 16.1 GIB® Intertenancy Barrier Systems for Terrace Homes must be installed in accordance with the Technical Literature.
- 16.2 Temporary support of the timber wall framing must be provided during installation as the GIB Barrierline® panels may attract high wind forces.
- 16.3 GIB Barrierline® and GIB Fyrelines® must only be handled when dry and must be kept dry prior to installation. Once installed and in a vertical orientation, exposure to the elements is permitted. Refer to Paragraph 7.5 for maximum exposure periods and weather protection measures.

Wall Framing

- 17.1 Construction details for the framing, in particular type, dimensions and spacings, must be strictly in accordance with the specifications outlined in the Technical Literature and the specific design documentation for the building project.
- 17.2 All framing must be plumb, level and in true alignment.
- 17.3 Winstone Wallboards Ltd specifies timber framing with a moisture content less than 18% at the time interior linings are installed. The use of kiln-dried timber is recommended.



Central Barrier Installation

- 18.1 After the timber framing on one side has been erected, the GIB Barrierline® panels and central barrier steel frame are installed 25 to 40 mm away from the timber frame.
- 18.2 The GIB® Rondo® 140 Perimeter Channel for the GIB Barrierline® panels must be fixed to a concrete floor foundation 50 mm maximum from both ends and at 600 mm maximum centres along its length. The GIB® Rondo® 140 Perimeter Channel ends at joints must be spaced 5 mm apart to allow for drainage of construction water. A continuous bead of fire/acoustic sealant is applied at the perimeter channel/floor junction on one side.
- 18.3 GIB Barrierline® panels and GIB® H-Studs are installed progressively. To enable later fixing of GIB® Wall Clips, cut the GIB Barrierline® panel to width so that its edge is offset at least 100 mm horizontally from a timber stud. The first horizontal joint may be situated above first floor level. A GIB® Wall Clip is fastened to each GIB® H-Stud at maximum 3.0 m centres vertically on the completed side of the timber framing before the other timber framing side is installed. GIB® Wall Clips must be fixed no more than 600 mm below the top of GIB® H-Studs.
- 18.4 GIB® Wall Clips must be fixed to GIB® H-Studs with two 16 mm x 10 g drill point wafer head screws, and to wall plates or noggings with two 25 mm x 6 g wood screws.
- 18.5 The vertical ends of GIB Barrierline® walls must be capped with GIB® Rondo® 140 Perimeter Channel which is screw fixed to the base and top channels with 16 mm x 10 g drill point wafer head screws. The end perimeter channel must be fixed back to the timber framing on both sides of the central barrier with either GIB® Wall Clips or GIB® Wall Straps. These are fixed to the end perimeter channel with two 16 mm x 10 g drill point wafer head screws and to the timber frame with two 25 mm x 6 g wood screws.
- 18.6 At mid-floors, floor joists which run perpendicular to the central barrier require solid full depth timber blocking between the ends of the joists.
- 18.7 After the second wall of timber framing is constructed, a GIB® Wall Clip must be fastened from the timber frame to every GIB® H-Stud. The GIB® Wall Clips are fastened to each GIB® H-Stud at maximum 3.0 m centres vertically. No more than two GIB® Wall Clips [one each side] shall be fastened to each GIB® H-Stud.
- 18.8 Upper storey GIB Barrierline® panels are installed by first fixing a section of GIB® Rondo® 140 Perimeter Channel, back-to-back with the top channel of the lower storey central barrier. GIB® Rondo® 140 Perimeter Channels must be fastened together using 16 mm x 10 g drill point wafer head screws 150 mm maximum centres from each end and 600 mm maximum centres along its length.
- 18.9 Upper storey GIB® H-Studs must align with the lower storey GIB® H-Studs.
- 18.10 GIB Barrierline® panels are continued into the roof space, with the panels shaped to fit the roof profile and GIB® H-Studs studs fixed to roof framing. Allowance must be made for framing member shrinkage and roof deflection. The GIB Barrierline® panels are capped with GIB® Rondo® 140 Perimeter Channel which must be fastened with one 16 mm x 10 g drill point screw into every GIB® H-Stud.
- 18.11 To maintain the fire rating in the roof space, a single layer of 16 mm GIB Fyreline® must be shaped to the roof profile and extend down the central barrier to a minimum of 200 mm below the finished ceiling line. The 16 mm GIB Fyreline® must be fixed to one side of the GIB Barrierline® panels at 400 mm centres horizontally and vertically. GIB® Wall Clips must be fixed from the timber framing to the GIB® H-Studs through the 16 mm GIB Fyreline® with two 30 mm x 10 g Type 'D' drill point wafer head screws.
- 18.12 Particular attention must be paid to ensure all voids at wall perimeters are sealed with mineral wool or ceramic fibre cavity insulation packer, or treated timber cavity battens.



Internal Linings

- 19.1 Prior to installation of the internal linings, Pink® Batts® R2.2 (90 mm) insulation is fitted to the timber framed cavities as specified in the Technical Literature to achieve the desired acoustic rating. To control flanking sound, Pink® Batts® R2.2 (115 mm) insulation is fitted to the ceiling cavity at each storey and must extend 1200 mm minimum on each side of the wall.
- 19.2 GIB® plasterboard linings are fitted to the framing either side of the central barrier in conventional fashion. All joints in single or outer layers of multiple layer linings must be paper-tape reinforced. A minimum of two layers of bedding compound are required to achieve the stated fire resistance rating (FRR). Inner sheet joints of multiple layer linings do not require stopping.

Health and Safety

- 20.1 Dust resulting from the sanding of boards, jointing or finishing compounds may be a respiratory irritant, therefore the use of a suitable face mask is recommended. Where sealants, insulation and other materials are used, the instructions of the manufacturer must be followed.

Basis of Appraisal

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

Tests

- 21.1 Testing to determine the FRR of GIB® Intertenancy Barrier Systems for Terrace Homes and penetrations has been completed by BRANZ and Warrington Fire Research (Aust) Pty Ltd in accordance with AS 1530.4.
- 21.2 Airborne sound tests according to ISO 10140-2 were conducted by the University of Auckland Acoustics Testing Service and reviewed by Marshall Day Acoustics Limited.
- 21.3 The properties of GIB® Barrierline™ and 16 mm GIB Fyrelite® have been assessed by BRANZ before and after natural weather exposure and found to be satisfactory.

Investigations

- 22.1 Opinions on the fire resistance of variations to systems tested in accordance with AS 1530.4 were given by BRANZ experts.
- 22.2 The GIB® Intertenancy Barrier Systems for Terrace Homes Technical Literature has been examined by BRANZ and found to be satisfactory.
- 22.3 Site visits were carried out by BRANZ to assess the practicability of the installation of the systems, and to view completed installations.
- 22.4 An assessment was made of the durability of the systems by BRANZ technical experts and found to be satisfactory.
- 22.5 The properties of GIB® plasterboards have been assessed for the following properties: MOR, MOE, paper tensile strength, paper shear strength, nail pull resistance, Hunter hardness, inspection for fungal spores, hard and soft body impact tests.



Quality

- 23.1 The manufacture of GIB Barrierline® has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory. BRANZ also undertakes an ongoing review of product quality on an inwards goods basis.
- 23.2 Winstone Wallboards Ltd's manufacturing process and details of the quality and composition of the materials, have been examined by BRANZ and found to be satisfactory.
- 23.3 The quality management systems of Winstone Wallboards Ltd have been assessed and registered by TELARC as meeting the requirements of ISO 9001, Registration No. 581.
- 23.4 Winstone Wallboards Ltd is responsible for the quality of the product supplied.
- 23.5 The quality of the application and finish on site is the responsibility of the installation and stopping contractors.
- 23.6 Designers are responsible for the design of buildings.
- 23.7 Building owners are responsible for maintenance in accordance with the instructions of Winstone Wallboards Ltd.

Sources of Information

- AS 1530: 2005 Part 4 Fire resistance tests on elements of construction.
- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 2588: 1998 Gypsum plasterboard.
- ISO 10140-2:2010 Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation.
- NZS 3603: 1993 Timber Structures Standard.
- NZS 3604: 2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- New Zealand Building Code Clauses C1 - C6 Protection from Fire, Department of Building and Housing, 10 April 2012.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 27 January 2017.

This Appraisal has been amended to update the Technical Specification.



BRANZ Appraised
Appraisal No. 940 [2016]

BRANZ Appraisal
Appraisal No. 940 [2016]
14 November 2016

GIB® INTERTENANCY BARRIER
SYSTEMS FOR TERRACE HOMES



In the opinion of BRANZ, **GIB Intertenancy Barrier Systems For Terrace Homes** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Winstone Wallboards Ltd**, 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. **Winstone Wallboards Ltd**:
 - 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 **Winstone Wallboards Ltd**.
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 **Winstone Wallboards Ltd** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

14 November 2016