



BRANZ Appraised
Appraisal No. 816 [2016]

AUSTRAL BRICKS Q BLOCK™ WALL SYSTEMS

Appraisal No. 816 [2016]

This Appraisal replaces BRANZ
Appraisal No. 99/014,
dated 26 November 1999.



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 This Appraisal relates to Austral Bricks Q Block™ Wall Systems, which are fired clay bricks bonded together with thin-bed mortar 1 mm thick, to form non-loadbearing, internal walls.

Scope

- 2.1 The product has been appraised for use in the forming of non-loadbearing single leaf internal walls and non-loadbearing infill walls up to a maximum height of 3 m.
- 2.2 Q Blocks™ are General Purpose [GP] grade as defined in AS/NZS 4456.

Building Regulations

National Construction Code Series [NCC] Building Code of Australia [BCA]

- 3.1 In the opinion of BRANZ, Austral Bricks Q Block™ Wall Systems if designed, installed, used and maintained in accordance with the statements and conditions of this Appraisal, will contribute to meeting the following provisions of the BCA:

BCA Volume 1 – Class 2 to Class 9 Buildings

Part B1 – Structural Provisions, Performance Requirement BP1.1. See Paragraphs 8.1 – 8.2.

Section C – Fire resistance, Performance Requirement CP2 [a]. See Paragraph 11.1.

Part F5 – Sound Transmission and Insulation, Performance Requirement FP5.2. See Paragraphs 12.1 – 12.4.

BCA Volume 2 – Class 1 and Class 10 Buildings

Part 2.1 Structure, Performance Requirement P2.1. See Paragraphs 8.1 – 8.2.

Technical Specification

Q Blocks™

- 4.1 Q Blocks™ are extruded, cored, kiln-fired clay bricks, with the horizontal bedding faces precision ground to achieve a consistent height dimension of within ± 0.2 mm. The bricks have shallow tongue and grooved ends to provide horizontal alignment, but the vertical perpendicular joints are not mortared.
- 4.2 The Q Blocks™ are 310 mm long, 90 mm wide and 171 mm high. The module dimension of Q Blocks™ is equivalent to standard bricks as they are manufactured larger to take up the space normally occupied by the 10 mm thick cement mortar.
- 4.3 Q Blocks™ are bonded together on the horizontal surfaces only, with Q Block™ Adhesive, which is a thin-bed mortar. Mortar joints are approximately 1 mm thick.

Adhesive and Accessories

Adhesive

- 4.4 Q Block™ Adhesive is a two-part mortar adhesive system. Q Block™ Powder is a dry pre-mixed bagged mortar. Q Block™ Liquid is mixed with clean water and Q Block™ Powder on site in strict ratios to form Q Block™ Adhesive.

Tracks

- 4.5 Three types of track are used with the Q Block™ System:
 - Base Track – Galvanised steel, 92 x 50 mm C-section with a 0.75 mm base metal thickness.
 - Side Track – Galvanised steel, 92 x 50 mm C-section with either a 0.75 mm or 1.15 mm base metal thickness.
 - Head Track – Galvanised steel, 50 x 50 mm angle with a 0.75 mm base metal thickness.

Lintels

- 4.6 Standard steel lintels can be used in conjunction with this system, using standard cement mortar 10 mm thick. These have not been assessed and are outside of the scope of this Appraisal.

Ties

- 4.7 The following ties are available from Austral Bricks for use with Q Blocks™:
 - Wall to wall ties.
 - Door frame ties.These ties have not been assessed and are outside the scope of this Appraisal.

Fasteners

- 4.8 Specific fasteners are not specified for fixing the steel tracks to the supporting structural frame. Fasteners for use with the Q Block™ system must satisfy the following requirements:
 - they must have suitable corrosion resistance for the environment in which they are to be used; and
 - they must provide more than 0.77 kN/m of shear capacity per fastener.

Packing, Handling and Storage

- 5.1 Q Blocks™ are delivered from the factory in strapped packs. They must be handled and stored to remain dry and comply with the requirements of AS 3700 at the time of laying.
- 5.2 Bags of Q Block™ Powder must be stored in dry conditions, preferably inside, off the ground on timber pallets or the like. Similarly, Q Block™ Liquid must be protected in particular from contamination by dust, rain and the like.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Austral Bricks Q Block™ Wall Systems. 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 Rapid wall construction is possible with Q Blocks™, as Q Block™ Adhesive is applied by 'dipping' the bricks in a tray of the adhesive.
- 7.2 The construction of Q Block™ walls differs from conventional masonry but where Q Block™ walls connect to other elements the construction techniques are largely the same as for conventional brickwork.

Structure

- 8.1 Information is provided in the Q Block™ System Manual for the structural design of Q Block™ walls under lateral loading.
- 8.2 For walls beyond the stated limits of the Technical Literature, a specific structural engineering design in accordance with AS 3700 and AS 1170 is required. The Q Block™ System Manual provides the basic design properties, masonry compressive strength [f'm] and flexural tensile strength [f'mt] for those designs.

Durability

- 9.1 Q Block™ walls are expected to have a service life comparable with conventional fired clay brick and cement mortar walls.
- 9.2 Q Blocks™ are General Purpose [GP] classification as defined by AS/NZS 4456.
- 9.3 The adhesive is considered to have a durability classification equivalent to, or better than M4, as defined in AS 3700.

Heating Appliances, Fireplaces, Chimneys and Flues

- 10.1 Q Blocks™ have not been assessed for construction associated with heating appliances and must not be used as such.

Fire Resistance

- 11.1 Requirements for Fire Resistance Levels [FRLs] are specified in the Building Code of Australia. The Q Block™ wall, as described in the Technical Literature has an FRL of -/120/60.

Sound Transmission and Insulation

- 12.1 Requirements for sound insulation for the separating walls between two or more Class 1 buildings, or for separating walls in Class 2 and 3 buildings between sole-occupancy units, or between a sole-occupancy unit and a plant room, lift shaft, stairway, public corridor, hallway or the like, are given in the relevant sections of the Building Code of Australia. These requirements depend on the type of structure and the location in the building.
- 12.2 A variety of sound insulation systems using Q Block™ walls are available to meet the requirements of NCC/BCA. These systems are described in the Technical Literature. The systems described in the Q Block™ Technical Literature are discontinuous systems as required for impact insulation.
- 12.3 The required sound insulation levels must not be compromised by the incorporation of, or penetration by, pipes chases or other services.
- 12.4 Any gaps between sound insulated walls and adjoining construction must be filled solid or acoustically sealed.

Maintenance

- 13.1 Fire and acoustic seals must be maintained in accordance with the 'seal' manufacturer's instructions to meet ongoing building code requirements.
- 13.2 Interior finishes must be maintained in accordance with the finish manufacturer's instructions to maintain fire and sound ratings.

Installation Information

General

- 14.1 Installation must be in accordance with the Q Block™ System Manual. Reference should also be made to AS 3700. The following is a summary of the main points of installation.
- 14.2 The base track, side tracks and one of the head tracks is laid. Once the base track is installed a cement-based self-levelling compound is poured into the bottom track. The self-levelling compound must have a compressive strength of 10 MPa after 24 hours. It should be about 10 mm thick and cover the heads of the fixings. It must cure before laying the Q Blocks™.
- 14.3 The first course is laid on this mortar. It is important that the first course is correctly aligned and level as construction tolerances of subsequent courses are less than with conventional mortar due to the thin Q Block™ Adhesive.
- 14.4 No Q Block™ Adhesive/mortar is applied to perpend in any brick course.
- 14.5 The Q Block™ Adhesive must be mixed strictly in accordance with the instructions on the bags of Q Block™ powder.
- 14.6 Ties must be installed and spaced as required by the Q Block™ System Manual.
- 14.7 Q Blocks™ may be hand cut by using a bolster and club hammer, however cutting Q Blocks™ using a brick power saw is recommended. Suitable dust control and safety equipment must be used.
- 14.8 Upon completion of laying of the Q Blocks™, separation walls must have a backing rod and fire rated sealer installed along the top of the wall as specified in the Technical Literature. The second head track may then be installed. For walls that have no acoustic or fire resistance requirements installation of the backing rod and sealer is not required, but is recommended.
- 14.9 Any additional linings may be installed once the wall has cured for 48 hours.

Basis of Appraisal

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

Tests

- 15.1 Testing has been carried out on the Q Block™ Systems by various organisations for compressive strength of masonry, flexural strength by bond wrench test, fire resistance, determining dimensions, determining water absorption properties, determining pitting due to lime, determining potential to effloresce, determining initial rate of absorption, determining coefficients of expansion and airborne sound transmission loss.
- 15.2 Results and test methods have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 16.1 The Austral Brick Co. Pty Ltd Q Block™ Technical Manual has been reviewed by BRANZ and found to be satisfactory.

Quality

- 17.1 The manufacture of bricks by Austral Bricks has been examined by BRANZ and details of the quality and composition of the materials used were obtained and found to be satisfactory.
- 17.2 The Austral Brick Co. Pty Ltd is responsible for the quality of product supplied.
- 17.3 Quality on site is the responsibility of the contractor.
- 17.4 The manufacture of the Q Block™ Adhesive has not been examined by BRANZ, but the manufacturer's quality control systems have been assessed and registered as meeting the requirements of ISO 9001: 2008.



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Sources of Information

- AS 3700-2011 Masonry Structures.
- AS/NZS 4456: 2003 Masonry units and segmental pavers – Methods of test.
- National Construction Code Series, Building Code of Australia 2016, Australian Building Codes Board.



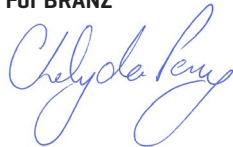
In the opinion of BRANZ, **Austral Bricks Q Block™ Wall Systems** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Austral Brick Co. Pty 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. **Austral Brick Co. Pty 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 **Austral Brick Co. Pty 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 **Austral Brick Co. Pty Ltd** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

27 May 2016