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TECHNICAL ASSESSMENT 239 August 1998^{1, 2, 3, 4}

Alterm Termite Barrier System

1. August 2001. Reprinted and updated manuals and references.
2. August 2004. Reprinted. Updated references and test reports.
3. July 2007. Update to BCA references
4. February 2008. Revalidation & update. Valid until 31 August 2009.

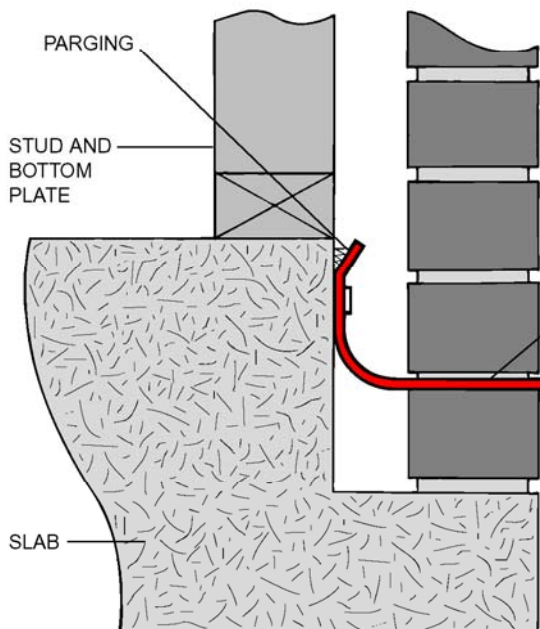
PURPOSE

A physical barrier to deter concealed subterranean termite entry for (perimeter, joints in termite resistant materials, retaining walls and bearer and joist construction).

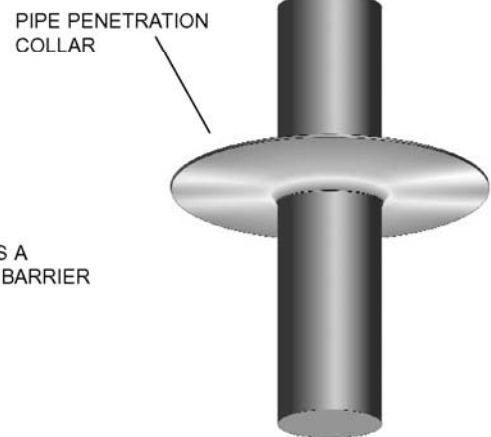
APPLICANT

Alterm Pty Ltd (ABN 31 002 333 039), 75 Lambton Road, Broadmeadow, New South Wales 2292 (Manufacturer)

PERIMETER



PENETRATIONS



ALTERM PENETRATION COLLARS CAN BE PARGED TO THE TOP OF THE CONCRETE SLAB OR FIXED IN THE MATRIX OF THE CONCRETE.

TECHNICAL OPINION

In the opinion of CSIRO Appraisals, the Alterm Termite Barrier System will satisfy the performance requirements of AS 3660.1-2000 'Termite management – New building work' as a suitable physical barrier to deter concealed subterranean termite entry, provided that:

1. The Alterm Termite Barrier System is installed by installers trained and accredited by Alterm Pty Ltd and can be used in the following locations:
 - (a) a continuous perimeter barrier in new construction for concrete slab or raft floors and for new slab on ground construction,
 - (b) a continuous barrier around service penetrations in a new construction where the slab is in accordance with AS 2870-1996 'Residential slabs and footings - Construction',
 - (c) a continuous perimeter barrier across weep holes for new and existing constructions,
 - (d) a cold-joint continuous barrier between existing structure and new slab,
 - (e) a continuous barrier in construction joints
 - (f) as an ant cap for brick piers.
 - (g) Saw cuts.
 - (h) Shrinkage cracks.
 - (i) Slabs poured separately to the footing.
 - (j) Ant cap joining.
 - (k) Cold Joints, Key Joints, Control Joints.
 - (l) as a termite proof render.
 - (m) as a damp proof course

2. The Alterm Termite Barrier System is installed in accordance with section 2 of the Alterm Pty Ltd, 'A physical termite barrier' (Alterm Training Manual November 2007).

Note: These specifications are available on request from Alterm Pty Ltd, 75 Lambton Road, Broadmeadow, New South Wales 2292 (Facsimile 02 4940 8400).

Web site: www.alterm.com.au

3. The barrier is installed to extend above the soil level at the perimeter of the structure and/or into the external leaf of brickwork at least 75 mm above finished external ground level and to the external face of the brickwork.

4. When used as a continuous perimeter barrier in new construction for concrete slab or raft floors and for new slab on ground construction, all penetrations through the raft or slab are sealed in accordance with Alterm specifications.

5. Inspections shall be carried out on an annual basis or more often if required by local conditions or regulations to ensure that no bridging or breaching of the barrier has taken place.

6. A durable notice in accordance with BCA requirements (Clause B1.4 (i)(ii) Volume 1 and Part 3.1.3.2 (b), Volume 2) is attached to the building which states that the Alterm Termite Barrier System is installed.

7. Alterm Termite Resistant Sealant (No More Solder) must form a complete seal between the surfaces it is protecting and may be installed by qualified tradesmen when installed to the specifications as outlined on the cartridge or foil, further information may be found in the Alterm Technical Data Sheets.

8. When Alterm Termite Resistant Sealant is used in conjunction with other termite barriers, the other barriers must comply with AS 3660.1.2000 'Termite management Part 1. New building work'.

9. A building site inspection shall be carried out prior to installation and the following precautions taken in accordance with Clause 3.2 of AS 3660.1 2000
 - Eliminate nests of wood feeding species of subterranean termite found within the property boundaries, up to distance of 50m from the proposed building work;
 - Excavate and remove all tree stumps, roots and logs from the building footprint;
 - All timber off-cuts, debris, removable framework and other waste material should be removed from the area in which the barrier is to be installed.

Notes:

- (i) The Building Code of Australia draws attention to the need for regular inspections.
- (ii) The installation of a termite barrier does not negate the need for regular competent inspections. Any additions, alterations or earth works, including gardening adjacent to the building, may render the barrier ineffective. Such activity should be referred to a contractor for appropriate advice and treatment.
- (iii) Any additional treatment should be done in accordance with the relevant State or Territory regulations.
- (iv) All concrete surfaces shall be free of any oil, dust, concrete curing compounds or loose laitance prior to parging materials being applied to the surface.

BUILDING CODE of AUSTRALIA

In the opinion of CSIRO Appraisals, the systems described in this Technical Assessment and installed under the conditions listed herein will satisfy the Performance Requirements BP1.1, BP1.2 BP1.3 (Volume 1 – Class 2 - 9 buildings), P2.1 and QLD P2.1.1 (Volume 2 – Class 1 and Class 10 buildings Housing Provisions), of the Building Code of Australia (2007).

To meet the requirements of Clause P2.1.1 (relevant to Qld only) (Volume 2 – Class 1 and Class 10 buildings) of the Building Code of Australia (2007), the applicant has provided a declaration of system design life, which is set out in the Durability section of this Technical Assessment. This declaration is only relevant for the system as described in this Technical Assessment and installed under the conditions listed in this Technical Assessment.

Notes:

- (i) The inclusion of this clause with reference to the BCA is aimed at assisting those involved in the design, specifying and building approval/permit process relate the Appraisal to the relevant Performance Requirements of the BCA.
- (ii) Any changes made to the BCA will be reviewed during the term of validity of this Technical Assessment and, where necessary, any amendment required will be published on the CSIRO Appraisals web pages on <http://www.cmit.csiro.au/Appraisals>.
- (iii) AS 3660.1-2000 is referenced by the BCA as a deemed to satisfy solution for the protection against concealed entry by subterranean termites.

RELATED INFORMATION

VALIDITY OF THE OPINION

Condition:

This Technical Assessment applies only to the use of the Alterm Termite Barrier System as described herein.

Withdrawal:

This Technical Assessment will be withdrawn or amended if CSIRO Appraisals considers that a change in design or manufacturing quality renders the basis of appraisal invalid, or if reported field experience convinces CSIRO Appraisals of unsatisfactory quality or performance.

Term of Validity:

This Technical Assessment is valid until 31 August 2009. Technical Assessments may be amended during the term of validity. Users of this Technical Assessment must verify that it remains valid and is the current version by checking on the CSIRO Appraisals website: <http://www.cmmt.csiro.au/services/appraisals/> or by calling CSIRO Enquiries on 1300 363 400.

RELEVANT DOCUMENTS

Alterm Pty Ltd, 'Training Manual for Alterm Products' (November 2007).

Alterm Pty Ltd, 'Termite Proof Silicon Technical Data Sheets. (November 2003)

Standards Australia, AS 2870-1996 'Residential slabs and footings - Construction', (including Amdt's 1-4)

Standards Australia, AS 3660.1-2000 'Termite management – New building work'

Standards Australia, AS 3660.3-2000 'Termite management – Assessment criteria for termite management systems'

Standards Australia, AS 3700-2001 (including Amdt 1) 'Masonry structures'.

Standards Australia, AS/NZS 2904:1995 & Amdt, 1 March 1998 Damp-proof courses and flashings.

APPROVED OPINION EXTRACT

The Alterm Termite Barrier System as manufactured by Alterm Pty Ltd and installed by installers trained and accredited by Alterm Pty Ltd will satisfy the performance requirements of Standards Australia, AS 3660.1-2000 'Termite management – New building work' as a suitable physical barrier to deter concealed subterranean termite entry when the conditions of CSIRO Appraisals Technical Assessment 239 are fulfilled.

APPRAISAL

DESCRIPTION

This appraisal has not assessed the use of Alterm as a damp-proof course. However, it is to be noted that the Alterm barrier complies with AS/NZS 2904:1995 'Damp proof course and flashings' (Amdt 1 March 1998), Section 6.4 Corrosion resistance.

The following description is based on information provided by the applicant.

General:

The periphery barrier of Alterm is 5005 Marine Grade strip aluminium used as a physical barrier to deter concealed subterranean termites entering a structure. The barrier is placed to finish at the external brickwork and sealed into *or onto* the slab. It is positioned to finish not less than 75 mm above finished ground level. The aluminium strip is parged to the brickwork or slab by either an epoxy, cementitious parging mix or termite resistant silicon.

Penetration barriers are either positioned and parged prior to the slab being poured or parged to the top of the slab and penetrating pipes after it is poured. They are held in place prior to pouring by a plastic cable tie and parge / glued to the penetration pipe.

The Alterm Termite Barrier System has been subjected to field trials that satisfy the Assessment Methodology contained in AS 3660.3-2000 'Termite management – Assessment criteria for termite management systems'.

Components:

Materials recommended by the applicant and used/assessed in this appraisal include:

Alterm

The aluminium strip is 0.5 mm thick.

The aluminium is 5005 Series Marine Grade.

The strip is available in 30 metre rolls in widths of 110, 150, 165, 190, 230, 300, 350 and 450 mm. The strip is labelled 'ALTERM'.

Parging Glue

The Alterm system has three parging alternatives.

1. 'Alterm Adhesive' which is a two part epoxy resin specified by Alterm. It has a working time of 1 hour and cure time of 24 hours.
2. Termite resistant cementitious parge (Render).
3. Alterm Termite Proof Silicone.

Clamps

Plastic cable ties are used to retain the Alterm barrier around penetrations until the Alterm parging adhesive has cured.

Concrete Repair Mortar. Cementitious Parge (Termortar Render)

This is a 'Premixed Concrete Repair Mortar' used for making good, honeycombing holes in the vertical slab edge and over brickwork above and below ground level, to allow a straight working surface.

Installation:

The barrier can be used with concrete slab on ground, in cavity walls, on the outside perimeter of cavity walls, as a cold-joint installation between existing structures and new slabs and as an ant cap on brick piers. The material is parged at all joints and folds.

Sealing penetrations through concrete slabs is achieved by drawing a circle slightly larger than the penetration and then cutting across the diameter in at least 16 places. These triangular pieces are folded to allow fitting over the penetration and then clamped and glued in place.

1. Outside perimeter of cavity walls:

The Alterm marine grade aluminium is positioned at the rebate to reach the outside wall (external leaf of the cavity) and parged onto the concrete slab rebate.

2. Cold-joint installation between existing structure and new slab:

The Alterm marine grade aluminium is parged into a groove cut into the existing structure and then sandwiched into the concrete being poured for the new structure. Alternatively the marine grade aluminium is folded at a 90 degree angle and one leaf fixed and sealed to the existing structure the other leaf is sandwiched into the concrete being poured for the new structure.

3. Construction (control) joints:

A 110 mm strip of Alterm barrier is installed with not more than a 15 mm peak at the joint. The barrier is attached by a continuous layer of epoxy or termite resistant silicon, minimum 40 mm wide to the slab.

4. Joining Ant Caps

Where concrete slab and timber bearer and joist flooring are used on the one job, the standard (0.5 mm) zincalume ant caps can be joined with an Alterm parging material. (Alterm Termite Proof Silicon or Alterm Adhesive Epoxy).

5. Ant Capping

Alterm marine grade aluminium may be used as an ant capping in bearer and joist construction.

DESIGN INFORMATION

General:

Alterm Termite Barrier System can be used as a physical barrier to deter concealed subterranean termite entry in the following cases - cavity wall buildings with concrete slab on ground, buildings with typical raft, infill (footing) or formed void slab construction, retaining walls and as an ant cap on brick piers and for joining ant caps on brick piers.

Durability:

CSIRO does not assess the durability of termite barriers.

The applicant, Alterm Pty Ltd, has declared (dated 25 May 2006) under its sole responsibility that:

- The Alterm Physical Termite Barrier System, has been designed to achieve a service life of 50 years during which period the Alterm Physical Termite Barrier, including its constituent components, is expected to maintain efficacy and function as a termite barrier in accordance with AS 3660.1-2000;
- The Alterm Physical Termite Barrier System, has been designed in accordance with a quality management system that incorporates a set of rules for the design, manufacture, installation and maintenance of all elements of the system; and
- The components used in the manufacture of the Alterm Physical Termite Barrier System have been selected for their intended purpose and are expected to operate in accordance with their specification for the duration of the design life of the Alterm Physical Termite Barrier System.

BASIS OF APPRAISAL

CSIRO Appraisals has assessed the following aspects in undertaking this appraisal:

- (a) installation procedures,
- (b) physical properties and
- (c) relationship to Australian Standard AS 3660.1-2000 'Termite management – New building work'
- (d) relationship to Australia Standard AS 3660.3-2000 'Termite management – Assessment criteria for termite management systems

The following documents and inspections were used in carrying out the appraisal.

Manufacturer's and Installation Information:

1. **Alterm Pty Ltd (ABN 31 002 333 039), 75 Lambton Road, Broadmeadow, New South Wales 2292, 'ALTERM Training Manual, A physical termite barrier' (November 2007):**
This provides details of the system, training information, product information, installation and installation diagrams. The manual also outlines procedures used for quality assurance checks. Product specifications included were for the 5005 Series Marine Grade Aluminium and parging mix. It also contained information on suitable concrete levelling screeds. Training procedures and random follow-up inspections are outlined. It should be noted that all installations need to be signed off as satisfactory by the builder.
2. **Alterm Pty Ltd (ABN 31 002 333 039), 75 Lambton Road, Broadmeadow, New South Wales 2292, 'Important Notice to All Installers' (May 2000):**
This outlines installation procedures for joins, overlaps, cuts and adages including the necessity for them to be covered with the Alterm epoxy.
3. **Alterm Pty Ltd (ABN 31 002 333 039), 75 Lambton Road, Broadmeadow, New South Wales 2292, Field trials letter (11th September 2003):**
This outlines the extent of the field trials that had been completed over a three year period.
4. **Lloyds Register Quality Assurance, Certificate of Approval. Certificate Number 402913 (18 July 2001):**
This outlines the Quality Management System of PT. Alumindo Light Metal Industry Susabaya, Java Timur, Indonesia. The Quality Management Systems in place for the manufacture of their various sheet metal products are **ISO 9001:2000, EN ISO 9001:2000 and BS EN ISO 9001:2000.**
5. **Lloyds Register Quality Assurance, Certificate of Approval. Certificate Number MEQ 0402680 (8 January 2003):**
This outlines the Quality Management System of Vivacity Engineering Pty Ltd Thornleigh, New South Wales Australia. The Quality Management Systems in place for the development, manufacture and supply of high technology industrial adhesives, sealants, surface coatings and industrial compounds is **AS/NZS ISO 9001:2000.**
6. **NATA Certification Services International, Certification. Certificate Number 6219 (14/06/02):**
This certifies that Vivacity Engineering Pty Ltd Thornleigh, New South Wales operates a Management Systems that complies with the requirements of **AS/NZS ISO 9001:2000.**
7. **Dow Corning Australia Pty Ltd/Alterm Pty Ltd, 3 Innovation Rd North Ryde NSW 2113 Australia. MSDS, Version 2.1 (22 January 2006):**
MSDS for No More Solder Termite Proof Silicone.
8. **Alterm Pty Ltd (ABN 31 002 333 039), 75 Lambton Road, Broadmeadow, New South Wales 2292. Product Information sheet (3 pages) (undated):**
No More Solder Termite Proof Silicon is a 100% oxime silicone sealant, silica filler system which contains fungicide.
9. **BSI Register Quality Assurance, Certificate of Approval. Certificate Number: EMS 96453 (14 June 2006).**
This outlines the Quality management System of Dow Corning Korea Ltd. Jincheon Plant. The Quality Management Systems complies with the requirements of **UKAS ISO 14001:2004** for the design development and manufacture of silicone related products.

Test Reports

1. **Centre for Entomological Research and Insecticide Technology (CERIT) Unisearch Limited, University of New South Wales 'Assessment of an epoxy glue barrier against the tunnelling activity of subterranean termite' (Cerit Reference Number HBF/01/96) (for H B Fuller) (September 1996):**
'At the conclusion of the test (14 days), there was no visible evidence of termite penetration of the epoxy adhesive barrier'. The epoxy resin was a two part mix supplied by H B Fuller. The report notes that the test did not assess the epoxy on an aged, stressed or damaged barrier.

2. **Building Research Centre, Unisearch Limited, University of New South Wales 'Report on the durability of "Alterm" termite barrier and flashing/DPC barrier system for Alterm Pty Ltd' (March 1997):**
Testing of various joint assemblies after different periods of curing at three different temperatures and two moisture conditions for durations of 4 hours, 24 hours and 7 days showed satisfactory performance of the glues and joining methods.
3. **CSIRO. Termite Group Report No 97/21 for Alterm Pty Ltd, 'The resistance of components of the Alterm barrier system to attack by subterranean termites - laboratory assessment' (Dec 1997):**
Samples of Alterm termite barrier, Alterm parging material and a folded and glued overlap of the Alterm barrier were exposed to two different species of termites (*Mastotermes darwiniensis* (Froggatt) and *Coptotermes acicaciformis* (Froggatt)) for a period of twelve weeks. The parging mix was resistant to the termites used. The bitumen coating on the Alterm barrier was damaged.
4. **CSIRO Building, Construction and Engineering, 'Salt Spray Testing of Aluminium Sheet in Accordance with AS/NZS 2699.2' Confidential BCE Doc. 00/119 (May 2000):**
Samples of the barrier were prepared and exposed in a salt spray test. The test was performed to assess the durability of the barrier. The results were satisfactory and indicate that the barrier should still be serviceable after 50 years.
5. **CSIRO Building, Construction and Engineering, 'Estimated Life Prediction for Alterm Aluminium Termite Barrier' Confidential BCE Doc. 01/374 (M) (October 2001):**
Samples of the barrier were prepared and exposed to various environments to determine the estimated life of the barrier. The results showed that the barrier is likely to have a 50 year service life.
6. **CSIRO. Termite Group Report No 00/8 for Alterm Pty Ltd, 'Effectiveness of an Alterm Barrier in the wall cavity of a simulated slab-on-ground masonry veneer construction in preventing subterranean termites from gaining concealed access to the superstructure – First year of field assessment' (31 March 2000):**
Samples of Alterm termite barrier, Alterm parging material and a folded and glued overlap of the Alterm barrier were exposed to two different species of termites (*Mastotermes darwiniensis* (Froggatt) and *Coptotermes acicaciformis* (Froggatt)). The experiment was installed in an open eucalypt forest near Darwin at the end of November 1998. The first inspection was conducted in August 1999. The results showed that with proper installation and adequate use of the parge the barrier would prevent concealed subterranean termite entry.
7. **CSIRO. Termite Group Report No 01/09 for Alterm Pty Ltd, 'The resistance of cementitious parging material to attack by subterranean termites - laboratory assessment' (30 April 2001):**
Samples of Alterm cementitious parging material were exposed to two different species of termites (*Mastotermes darwiniensis* (Froggatt) and *Coptotermes acicaciformis* (Froggatt)) for a period of twelve weeks. The cementitious parging was found to be completely resistant to the termites used.
8. **CSIRO. Termite Group Report No 01/7 for Alterm Pty Ltd, 'Effectiveness of an Alterm Barrier in the wall cavity of a simulated slab-on-ground masonry veneer construction in preventing subterranean termites from gaining concealed access to the superstructure – Second year of field assessment' (15 February 2001):**
Samples of Alterm termite barrier, Alterm parging material and a folded and glued overlap of the Alterm barrier were exposed to two different species of termites (*Mastotermes darwiniensis* (Froggatt) and *Coptotermes acicaciformis* (Froggatt)). The experiment was installed in an open eucalypt forest near Darwin at the end of November 1998. The second inspection was conducted on 27 November 2000. The results showed that with proper installation and adequate use of the parge the barrier would prevent concealed subterranean termite entry.
9. **CSIRO. Termite Group Report No 02/18 for Alterm Pty Ltd, 'Effectiveness of an Alterm termite barrier with marine-grade aluminium and a cementitious parging material in preventing subterranean termites from gaining concealed access to the super structure – First year of field assessment' (12 September 2002):**
Samples of Alterm marine-grade aluminium and a cementitious parging material were exposed to two different species of termites (*Mastotermes darwiniensis* (Froggatt) and *Coptotermes acicaciformis* (Froggatt)). The experiment was installed in an open eucalypt forest near Darwin at the end of August 2001.

The first inspection was conducted in mid August 2002. The results showed that with proper installation and adequate use of the parge the barrier would deter concealed subterranean termite entry.

10. CSIRO. Termite Group Report No 02/16 for Alterm Pty Ltd, 'Effectiveness of an Alterm Barrier in the wall cavity of a simulated slab-on-ground masonry veneer construction in preventing subterranean termites from gaining concealed access to the superstructure – Third and Fourth year of field assessment' (5 September 2002): Samples of Alterm termite barrier, Alterm parging material and a folded and glued overlap of the Alterm barrier were exposed to two different species of termites (*Mastotermes darwiniensis* (Froggatt) and *Coptotermes acicaciformis* (Froggatt)). The experiment was installed in an open eucalypt forest near Darwin at the end of November 1998. The trial was inspected on 22 August 2001 and 25 July 2002. The results showed that with proper installation and adequate use of the parge the barrier would prevent concealed subterranean termite entry.

11. CSIRO Entomology, Termite Group Report No 2006/11 for Alterm Pty Ltd, 'Laboratory assessment of the termite resistance of parging material No More Solder Silicon (1 June 2006): The experiment commenced in December 2005 to assess in the laboratory the resistance of parging material, No More Solder Silicon, to two different species of termites, *Mastotermes darwiniensis* and *Coptotermes acicaciformis*. No More Solder Silicon displayed a satisfactory resistance to subterranean termite attack.

Inspections:

CSIRO Appraisals has had satisfactory reports on the performance of the system. The system requires careful placement to be installed satisfactorily.



Kenneth KJ Lofhelm
CSIRO Appraisals



CSIRO Appraisals is a project of CSIRO Manufacturing and Infrastructure Technology providing a range of assessment products including:

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- Interim Reports – appraisals of products that have not yet reached the fully developed or manufacturing phase. They aid with product development and may be used as a step towards a subsequent Technical Assessment.
- Certification Assessments – appraisals of products, systems or materials solely against the requirements of the BCA and used for gaining approval from Federal or State authorities.

From 1978, under the auspices of the Australian Building Systems Appraisal Council (ABSAC), CSIRO ran an appraisal service in conjunction with the Australian Institute of Building Surveyors, the Housing Industry Association, the Insurance Council of Australia and the Master Builders Association. In 1999, CSIRO Appraisals was formed to continue the business of ABSAC under the sole patronage of CSIRO. This new scheme retains the committee structure of technical and interstate advisers that operated as ABSAC. All past ABSAC publications and appraisals are being continued and supported by CSIRO Appraisals.

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Technical Assessments are intended to help all those concerned with the approval, specification and use of new products or systems. They are objective

assessments of the fitness for purpose of the product, system or material but are not approvals or endorsements. They may be submitted to approval authorities as part of the justification process required to obtain approval.

Each Technical Assessment has been prepared by CSIRO Appraisals and then reviewed, revised and finally endorsed by the Technical Advisory Committee (TAC), detailed below. CSIRO makes the appraisals on a national basis by obtaining input from regional committees in each State and Territory to take account of variations in local building regulations, practice and local climatic features.

CSIRO Appraisals bases its assessment on the product and information it receives and cannot accept responsibility for deviations in the manufactured quality and performance of the material, product or system. However, Technical Assessments will be withdrawn where adequate quality or performance has not been maintained.

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H. RELATED DOCUMENTS**J. OTHER/OPTIONAL INFORMATION****14. ABSTRACT** *(CSIRO Appraisals Approved Assessment Extract)*

The Alterm Termite Barrier System as manufactured by Alterm Pty Ltd and installed by installers trained and accredited by Alterm Pty Ltd will satisfy the performance requirements of Standards Australia, AS 3660.1-2000 'Termite management – New building work' as a suitable physical barrier to deter concealed subterranean termite entry when the conditions of CSIRO Appraisals Technical Assessment 239 are fulfilled.