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EVALUATION OF THE LONG TERM EFFICACY OF TERMITIUM® IN PREVENTING THE PENETRATION OF TERMITES THROUGH MORTAR JOINTS

ONE STUDY, MANGROVE MOUNTAIN, NSW, AUSTRALIA, 2008/2009/2010

Interim 3 - 2 Year Report

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Reference Project:	ALTERM/08/01, 080790
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1. SUMMARY

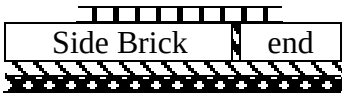
One small plot replicated field trial was conducted during November 2008 to November 2010 to evaluate the efficacy of TERMITIUM® for the prevention of termite penetration through mortar joints over a 3 year period against termites of economic importance in the building industry in Australia. The trial was conducted at Mangrove Mountain in the central coast region of New South Wales Australia. This report contains the experimental methods used and presents the results obtained for the first 2 years of the trial.

The following treatments were evaluated against *Coptotermes acinaciformis*:

Treatment	Dilution Rate per mL/100 L	Application Rate L/m² of Brickwork	Application Timing Days After Bricks Laid	Replicates	Code
1. TERMITIUM®	Nil	1 L per $2m^2$ x 2 coats	7-14 days	5	6-10
2. Untreated control	NA	No treatment	NA	5	1-5

The treatments were applied by paint brush to 4 bricks and associated mortar joints for each replicate as shown below:

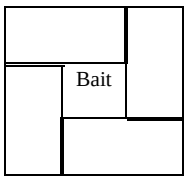
Side View



35.5 cm

	Mortar	1.0-1.2 cm
	Bricks	7.5 cm
	Compressed fibro base	2.0 cm
	Perspex sheet	10 mm

Top View



The Perspex sheet on all replicates of both treatments was fixed in place using Termite Proof Silicone sealant.

The study was set up as a randomised complete block design with five (5) replicates at one level in the soil, 8 cm to 20 cm. Five trenches having dimensions of 134 cm long x 25 cm deep x 45 cm wide were excavated 2 to 3 m out from a tree with a confirmed active healthy termite nest. Each trench was lined with pieces of radiata pine.

At 3 months, 12 months and 2 years after installation the treatments were carefully removed from the trenches, with extreme care taken to avoid damaging them.

Individual treatment replicates were assessed for penetration and the timber (radiata pine) bait inside the bricks and mortar was assessed for damage by recording the percentage timber consumed by the termites. All mortar joints were assessed and any termite damage to the mortar was recorded.

There was no damage to mortar on any of the TERMITIUM® treated mortar joints at 3 months, 12 months and 2 years after installation in termite infested soil.

All the TERMITIUM® treated bricks and mortar were dry compared to the untreated bricks and mortar.

Moisture in the form of condensation under the Perspex in the centre of each of the 5 brick constructions was greater in the untreated constructions compared to the TERMITIUM® treated constructions.

Untreated replicate 2 and replicate 4 had mortar consumed by the termites to a depth of 5-10 mm at one location at 3 months and by 12 months a total of 12 sites of damage to untreated mortar were recorded. At 2 years there were 17 sites of damage to the untreated mortar recorded. The deepest mortar penetration recorded was 78 mm.

There were no termites observed in the bait within the TERMITIUM® treated or the untreated brick and mortar constructions at 3 months, 12 months and 2 years post-installation.

The damage to the radiata timber pieces lining the trenches holding the treatments was significant during the 3 month period of exposure to the natural termite population foraging through the soil. Every piece of lining timber was damaged with greater than 50% of the timber consumed. At 12 months all timber pieces were again damaged by the termites with greater than 95% of the timber consumed. At 2 years all timber pieces were damaged with greater than 95% of the timber consumed.

The treatment of the bricks and mortar with TERMITIUM® increased the level of hardness of the bricks and mortar at 3 months. The hardness of the mortar was tested again at 2 years and the TERMITIUM® treated mortar remained harder than the untreated mortar and maintained classification as an M4 mortar.

2. INTRODUCTION

One small plot replicated field trial was conducted during November 2008 to November 2010 to evaluate the efficacy of TERMITIUM® for the prevention of termite (*Coptotermes acinaciformis*) penetration through mortar joints over a 3 year period against termites of economic importance in the building industry in Australia. The trial was conducted at Mangrove Mountain in the central coast region of New South Wales Australia.

This report contains the experimental methods used and presents the results obtained for the first 2 years of the trial.

The trial was conducted under Agrisearch Project ALTERM/08/01.

3. EXPERIMENTAL DETAILS

3.1 Site Details

Trial site details are presented below:

Co-operator Name	Chris Eastwood
Property Name	Eastwood Nurseries
Location	Mangrove Mountain NSW Australia
Termite Genus and Species	*Coptotermes acinaciformis*
Nest Situation	Tree
Soil Type	Brown sandy loam
Site History	Bushland
Activities in 100 m radius	Sheds, home, shade houses, tanks, dog kennels
Start Date	Treated bricks and mortar on 23 October 2008, installed into ground on 12 November 2008
3 Month Assessment	11 February 2009
12 Month Assessment	11 November 2009
2 Year Assessment	11 November 2010

3.2 Treatment List

The following treatments were evaluated against *Coptotermes acinaciformis*:

Treatment	Dilution Rate per mL/100 L	Application Rate L/m² of Brickwork	Application Timing Days After Bricks Laid	Replicates	Code
1. TERMITIUM®	Nil	1 L per $2m^2$ x 2 coats	7-14 days	5	6-10
2. Untreated control	NA	No treatment	NA	5	1-5

3.3 Formulations

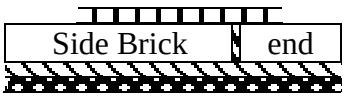
TERMITIUM® – a single part formulation containing Styrene Acrylate Polymer and Siloxane Hydrocarbon Solvent as marketed by Alterm National Pty Limited. The Batch Number was 1A2/21.2/35/06/AUS20350 with a Date of Manufacture of 30/04/07.

3.4 Treatment Method

The treatments were applied by paint brush to 4 bricks and associated mortar joints as shown in figure 1 below:

Figure 1:

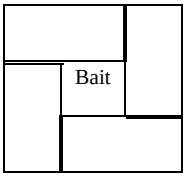
Side View



35.5 cm

	Mortar	1.0-1.2 cm
	Bricks	7.5 cm
	Compressed fibro base	2.0 cm
	Perspex sheet	10 mm

Top View



The bait inside the bricks, mortar, Perspex and compressed fibro structure consisted of a block of radiata pine, a piece of corrugated cardboard and a piece of Styrofoam.

The Perspex sheet on all replicates of both treatment groups was fixed in place using Termite Proof Silicone sealant, grey in colour and Lot# 0005171069 and a use by date of Aug 2009.

3.5 Application Details

Date	23 Oct 08
Time of Day	1505-1630
Temperature	16.5°C
Relative Humidity	57%
Cloud Cover	Indoors
Wind	Indoors

3.6 Trial Design

The study was set up as a randomised complete block design with five (5) replicates at one level in the soil, 8 cm to 20 cm. A trench having dimensions of 134 cm long x 25 cm deep x 45 cm wide was excavated 2 to 3 m out from a tree with a confirmed active healthy termite nest. Five lengths of trench were prepared to house the 2 treatments x 5 replicates and they were positioned equidistant around the nest.

Each treatment replicate was 35.5 cm long x 35.5 cm wide x approximately 12 cm deep as shown in Figure 1. There was a 20 cm spacing left between each replicate as well as at the ends, therefore, each length of trench was 134 cm long.

The 25 cm deep x 45 cm wide trench was lined with pieces of radiata pine having dimensions of, 40 cm long x 1.9 cm deep x 4.2 cm wide.

The gap between each piece of timber was around 0.5 cm so that termites could travel easily through it. A length of soaker hose was placed in the base of the trench under the timber lining for the entire length of the trench.

The end of the soaker hose in the trench was sealed and the other end was positioned above the trench so that it could be fitted to a 20 L plastic drum of water. Trenches were watered if there was a continuous dry period of 8 weeks.

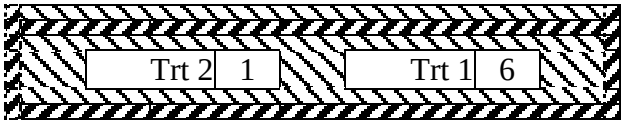
A layer of soil approximately 3 cm deep was placed over the timber lining in the base of the trench and then the treatment replicates were placed on top of the soil, 20 cm apart and 20 cm from each end and 5 cm from each side. Soil was placed into the trench until it covered the block of replicates with approximately 3 cm of soil. Then another layer of radiata pine timber was placed over the top of the soil and another 2-3 cm of soil was placed over the layer of timber to bring it to ground level.

The soil was dampened after it was added to the trench each time using a new watering can and new 20L plastic drums containing potable tap water.

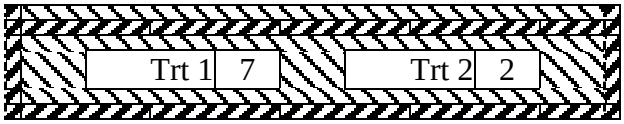
A plastic sheet was placed over each completed block of treatments to help retain moisture. The plastic sheet was completely covered with soil to secure it.

Figure 2:

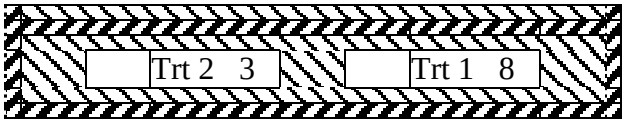
Block 1 – Replicate 1 – Side view



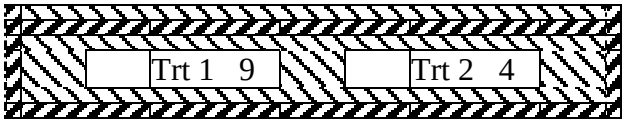
Block 2 – Replicate 2 – Side view



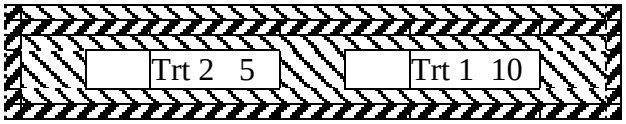
Block 3 – Replicate 3 – Side view

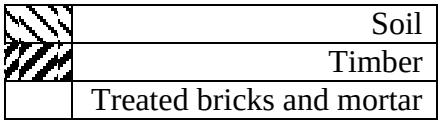


Block 4 – Replicate 4 – Side view



Block 5 – Replicate 5 – Side view





Following the 3 month assessment it was decided to get the timber closer to the bricks and mortar joints to increase the termite activity immediately adjacent to the treated and untreated units. The bottom layer of soil was not included and the treatments sat directly on top of the timber. The timber ends were moved in to be positioned immediately adjacent to the bricks and mortar and a piece of timber was placed along each side of the treated and untreated bricks and mortar units. Therefore, each treated and untreated unit had 8 pieces of timber (40 cm long x 1.9 cm deep x 4.2 cm wide) under them in contact with the compressed fibro base, 2 pieces of timber on each end of the units and 1 piece of timber along each side of the units either touching the bricks and mortar of the units or 1-2 cm away. Soil was place in on the units until it was approximately 2 cm above the Perspex sheet, then 8 pieces of timber were placed on top of each unit.

Therefore, each treated and untreated unit had 22 pieces of timber in close proximity to attract the termites.

3.7 Assessments

3.7.1 Efficacy

Efficacy was assessed at 3 months, 12 months and 2 years after installation. The treatments were carefully removed from the trenches, with extreme care taken to avoid damaging them. Individual treatment replicates were assessed for penetration and the timber bait inside the bricks and mortar was assessed for damage by recording the percentage timber consumed by the termites. All mortar joints were assessed and any termite damage to the mortar was recorded.

Penetrated and damaged untreated replicates had the timber bait replaced, while any penetrated and damaged TERMITIUM® treatments were not replaced.

Pieces of radiata pine timber lining damaged by termites was recorded and replaced.

The trenches were re-installed with the same treatment randomised complete block design as at the start of the study and the same type of radiata timber lining and soil was re-installed as it was at the start of the study.

3.7.2 Hardness of Bricks and Mortar

On the day of the 3 month assessment the hardness of the bricks and mortar of one untreated and one TERMITIUM® treated construction was tested. Hardness testing was conducted using a scratch test meter (MortarCheck). Three replications were tested on both the bricks and mortar for each of the treatments. The hardness test was again conducted on the mortar of one untreated and one TERMITIUM® treated construction at the 2 year assessment.

3.8 Statistical Analysis

Statistical analyses were not required due to no recorded bait damage.

3.9 Building Code of Australia

In the opinion of Agrisearch Services Pty Ltd, the systems described and installed under the conditions listed in this Technical Assessment will satisfy the Performance Requirements BP1.1 and BP1.2 (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 (2009). This declaration is only relevant for the system as described in this Technical Assessment and installed under the conditions listed in this Technical Assessment.

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 (2009), the applicant has provided a declaration of system design life, which is set out in the Durability section of this Technical Assessment (3.11). 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:

(1) 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 to relate the Appraisal to the relevant Performance Requirements of the BCA.
(2) Any changes made to the BCA will be reviewed during the term of this Technical Assessment.
(3) AS 3660.1-2000 is referenced by the BCA as a deemed to satisfy solution for the protection against concealed entry by subterranean termites.

3.10 Relevant Documents

Alterm National Pty Ltd, 'Installation Instructions for Termitium System' (10th October 2009).

Standards Australia, AS 2870-1996 'Residential slabs and footings - Construction' (Amdt 4 May 2003).

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 amendments) 'Masonry structures'.

3.11 Durability

Agrisearch Services Pty Ltd does not assess the durability of termite barriers.

The applicant, Alterm National Pty Ltd, declare under its sole responsibility that:

- The TERMITIUM® Physical Termite Barrier has been designed to achieve a service life of 50 years during which period the TERMITIUM® 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 TERMITIUM® Physical Termite Barrier 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 TERMITIUM® Physical Termite Barrier 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 TERMITIUM® Physical Termite Barrier

4. RESULTS AND DISCUSSION

Results are summarised in Tables 1 to 8 and are given fully in the Appendices.

4.1 Bait, Mortar and Brick Assessment

Table 1 Agrisearch Services Summary of Results – 3 Months
Bait, Mortar and Brick Assessment Records

Treatment	REP	Code	Termites in Bait	% Bait Damaged	Shelter Tube on Mortar	Mortar Damaged	Shelter Tube on Bricks
1	1	6	No	0	No	No	No
TERMITIUM®	2	7	No	0	No	No	Yes
	3	8	No	0	Yes	No	Yes
	4	9	No	0	Yes	No	Yes
	5	10	No	0	Yes	No	Yes
2	1	1	No	0	Yes	No	Yes
Untreated	2	2	No	0	Yes	Yes (1 site)	Yes
	3	3	No	0	Yes	No	Yes
	4	4	No	0	Yes	Yes (1 site)	Yes
	5	5	No	0	Yes	No	Yes

There was no damage to mortar on any of the TERMITIUM® treated mortar joints.

All the TERMITIUM® treated bricks and mortar were dry compared to the untreated bricks and mortar and there was significantly less moisture under the Perspex in the centre of each of the 5 brick constructions.

Untreated replicate 2 had mortar eaten on one bottom corner to a depth of approximately 1 cm. Untreated replicate 4 had a 5 mm deep x 3 mm diameter hole eaten into the mortar under a large shelter tube on the side of the brick construction.

Table 2 Agrisearch Services Summary of Results – 12 Months
Bait, Mortar and Brick Assessment Records

Treatment	REP	Code	Termites in Bait	% Bait Damaged	Shelter Tube on Mortar	Mortar Damaged	Shelter Tube on Bricks
1	1	6	No	0	Yes	No	Yes
TERMITIUM®	2	7	No	0	Yes	No	Yes
	3	8	No	0	Yes	No	Yes
	4	9	No	0	Yes	No	Yes
	5	10	No	0	Yes	No	Yes
2	1	1	No	0	Yes	Yes (2 sites)	Yes
Untreated	2	2	No	0	Yes	Yes (3 sites)	Yes
	3	3	No	0	Yes	No	Yes
	4	4	No	0	Yes	Yes (2 sites)	Yes
	5	5	No	0	Yes	Yes (5 sites)	Yes

There was no damage to mortar on any of the TERMITIUM® treated mortar joints compared to 12 sites on the untreated mortar joints that had visible evidence of termite damage to the mortar. The most damaging was a 78mm deep penetration in the mortar on the right side of the untreated replicate 5 construction.

Table 3 Agrisearch Services Summary of Results – 2 Years
Bait, Mortar and Brick Assessment Records

Treatment	REP	Code	Termites in Bait	% Bait Damaged	Shelter Tube on Mortar	Mortar Damaged	Shelter Tube on Bricks
1	1	6	No	0	Yes	No	Yes
TERMITIUM®	2	7	No	0	Yes	No	Yes
	3	8	No	0	Yes	No	Yes
	4	9	No	0	Yes	No	Yes
	5	10	No	0	Yes	No	Yes
2	1	1	No	0	Yes	Yes (2 sites)	Yes
Untreated	2	2	No	0	Yes	Yes (3 sites)	Yes
	3	3	No	0	Yes	Yes (3 sites)	Yes
	4	4	No	0	Yes	Yes (2 sites)	Yes
	5	5	No	0	Yes	Yes (7 sites)	Yes

There was no damage to mortar on any of the TERMITIUM® treated mortar joints compared to 17 sites on the untreated mortar joints that had visible evidence of termite damage to the mortar. The most damaging was a 78mm deep penetration in the mortar on the right side of the untreated replicate 5 construction.

4.2 Timber Lining Assessment

Table 4 Agrisearch Services Summary of Results – 3 Months
Timber Lining Assessment Records

Treatment	REP	Code	No. Timber Top Damaged	No. Timber Base Damaged	No. Timber Ends Damaged
1	1	6	26/26	26/26	8/8
TERMITIUM®	2	7	26/26	27/27	8/8
	3	8	25/25	25/25	8/8
	4	9	22/22	25/25	8/8
	5	10	25/25	25/25	8/8
2	1	1	26/26	26/26	8/8
Untreated	2	2	26/26	27/27	8/8
	3	3	25/25	25/25	8/8
	4	4	22/22	25/25	8/8
	5	5	25/25	25/25	8/8

The damage to the radiata timber pieces lining the trenches holding the treatments was significant during the 3 month period of exposure to the natural termite population foraging through the soil. Every piece of lining timber was damaged with greater than 50% of the timber consumed.

Table 5 Agrisearch Services Summary of Results – 12 Months
Timber Lining Assessment Records

Treatment	REP	Code	No. Timber Top Damaged	No. Timber Base Damaged	No. Timber Ends Damaged	No. Timber Sides Damaged
1	1	6	8/8	8/8	4/4	2/2
TERMITIUM®	2	7	8/8	8/8	4/4	2/2
	3	8	8/8	8/8	4/4	2/2
	4	9	8/8	8/8	4/4	2/2
	5	10	8/8	8/8	4/4	2/2
2	1	1	8/8	8/8	4/4	2/2
Untreated	2	2	8/8	8/8	4/4	2/2
	3	3	8/8	8/8	4/4	2/2
	4	4	8/8	8/8	4/4	2/2
	5	5	8/8	8/8	4/4	2/2

The damage to the radiata timber pieces around the outside of each treated and untreated replicate structure was significant during the 9 month period of exposure to the natural termite population foraging through the soil since the 3 month assessment time. Every piece of timber was severely structurally damaged with greater than 95% of the timber consumed.

Table 6 Agrisearch Services Summary of Results –2 Years
Timber Lining Assessment Records

Treatment	REP	Code	No. Timber Top Damaged	No. Timber Base Damaged	No. Timber Ends Damaged	No. Timber Sides Damaged
1	1	6	8/8	8/8	4/4	2/2
TERMITIUM®	2	7	8/8	8/8	4/4	2/2
	3	8	8/8	8/8	4/4	2/2
	4	9	8/8	8/8	4/4	2/2
	5	10	8/8	8/8	4/4	2/2
2	1	1	8/8	8/8	4/4	2/2
Untreated	2	2	8/8	8/8	4/4	2/2
	3	3	8/8	8/8	4/4	2/2
	4	4	8/8	8/8	4/4	2/2
	5	5	8/8	8/8	4/4	2/2

The damage to the radiata timber pieces around the outside of each treated and untreated replicate structure was significant during the 12 month period of exposure to the natural termite population foraging through the soil since the 12 month assessment time. Every piece of timber was severely structurally damaged with greater than 95% of the timber consumed.

4.3 Hardness of Bricks and Mortar

Table 7 Agrisearch Services Summary of Results – 3 Months
Hardness Assessment Records for Bricks and Mortar

Treatment	REP	Code	Rep	Mortar (in/mm)	Brick (in/mm)
1	1	6	1	0.001/ 0.03	0.002/ 0.05
TERMITIUM®			2	0.002/ 0.05	0.001/ 0.03
			3	0.002/ 0.05	0.001/ 0.03
			Mean	0.0017/ 0.043	0.0013/ 0.036
			Rep	Mortar (in/mm)	Brick (in/mm)
2	1	1	1	0.010/ 0.25	0.015/ 0.38
Untreated			2	0.004/ 0.10	0.012/ 0.30
			3	0.003/ 0.08	0.006/ 0.15
			Mean	0.0057/ 0.143	0.011/ 0.276

The treatment of the bricks and mortar with TERMITIUM® increased the level of hardness from M3 Mortar (0.143) to an M4 Mortar (0.043), as the lower the reading the harder the surface.

Table 8 Agrisearch Services Summary of Results – 2 Years
Hardness Assessment Records for Bricks and Mortar

Treatment	REP	Code	Rep	Mortar (in/mm)
1	1	6	1	0.004/ 0.10
TERMITIUM®			2	0.003/ 0.08
			3	0.004/ 0.10
			Mean	0.0036/ 0.093
			Rep	Mortar (in/mm)
2	1	1	1	0.026/ 0.66
Untreated			2	0.013/ 0.33
			3	0.012/ 0.30
			Mean	0.017/ 0.43

At 2 years post-treatment the untreated mortar had an average hardness reading of 0.43mm which lies between an M2 (0.5mm) and an M3 (0.3mm) mortar. The TERMITIUM® mortar at 2 years had a hardness reading of 0.093mm and remained an M4 mortar.

5. CONCLUSIONS

There was no damage to mortar on any of the TERMITIUM® treated mortar joints at 3 months, 12 months and 2 years after installation in termite infested soil.

All the TERMITIUM® treated bricks and mortar were dry compared to the untreated bricks and mortar.

Moisture in the form of condensation under the Perspex in the centre of each of the 5 brick constructions was greater in the untreated constructions compared to the TERMITIUM® treated constructions.

Untreated replicate 2 and replicate 4 had mortar consumed by the termites to a depth of 5-10 mm at one location at 3 months and by 12 months a total of 12 sites of damage to untreated mortar were recorded. At 2 years 17 mortar damaged sites were recorded with the deepest mortar penetration being 78 mm.

There were no termites observed in the bait within the TERMITIUM® treated or the untreated brick and mortar constructions at 3 months, 12 months and 2 years post-installation.

The damage to the radiata timber pieces lining the trenches holding the treatments was significant during the 3 month period of exposure to the natural termite population foraging through the soil. Every piece of lining timber was damaged with greater than 50% of the timber consumed. At 12 months and 2 years all timber pieces were again damaged by the termites with greater than 95% of the timber consumed.

The treatment of the bricks and mortar with TERMITIUM® increased the level of hardness of the bricks and mortar at 3 months. The hardness of the mortar was tested again at 2 years and the TERMITIUM® treated mortar remained harder than the untreated mortar and maintained classification as an M4 mortar.

6. APPENDICES

6.1 3 Month Assessment - 11 February 2009

Treatment	REP	Code	Termites in Bait	% Bait Damaged	Shelter Tube on Mortar	Mortar Damaged	Shelter Tube on Bricks	No. Timber Top Damaged	No. Timber Base Damaged	No. Timber Ends Damaged
1 TERMITIUM	1	6	No	0	No	No	No	26/26	26/26	8/8
	2	7	No	0	No	No	Yes	26/26	27/27	8/8
	3	8	No	0	Yes	No	Yes	25/25	25/25	8/8
	4	9	No	0	Yes	No	Yes	22/22	25/25	8/8
	5	10	No	0	Yes	No	Yes	25/25	25/25	8/8
2 Untreated	1	1	No	0	Yes	No	Yes	26/26	26/26	8/8
	2	2	No	0	Yes	Yes	Yes	26/26	27/27	8/8
	3	3	No	0	Yes	No	Yes	25/25	25/25	8/8
	4	4	No	0	Yes	Yes	Yes	22/22	25/25	8/8
	5	5	No	0	Yes	No	Yes	25/25	25/25	8/8

Notes Treatment 1:
No damage to mortar on any of the TERMITIUM treated mortar joints.
All the TERMITIUM treated bricks and mortar were dry compared to the untreated bricks and mortar and there was significantly less moisture under the perspex in the centre of each of the 5 brick constructions.

Notes Treatment 2:
Untreated replicate 2 had mortar eaten in approximately 1 cm on the bottom corner. Untreated replicate 4 had a 5 mm deep x 3 mm diameter hole eaten into the mortar under a large shelter tube on the side of the brick construction.

6.2 12 Month Assessment - 11 November 2009

Treatment	REP	Code	Termites in Bait	% Bait Damaged	Shelter Tube on Mortar	Mortar Damaged	Shelter Tube on Bricks	No. Timber Top Damaged	No. Timber Base Damaged	No. Timber Ends Damaged	No. Timber Sides Damaged
1 TERMITIUM®	1	6	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
	2	7	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
	3	8	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
	4	9	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
	5	10	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
2 Untreated	1	1	No	0	Yes	Yes	Yes	8/8	8/8	4/4	2/2
	2	2	No	0	Yes	Yes	Yes	8/8	8/8	4/4	2/2
	3	3	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
	4	4	No	0	Yes	Yes	Yes	8/8	8/8	4/4	2/2
	5	5	No	0	Yes	Yes	Yes	8/8	8/8	4/4	2/2

Notes Treatment 1 - TERMITIUM®:
There was no damage to the mortar joints treated with the TERMITIUM®.
The bricks and mortar were dry and in good condition.
No termites were observed on the timber, cardboard or Styrofoam in the middle of each structural unit.

Notes Treatment 2 - Untreated:
Rep 1, hole 1 - top left corner, 11mm deep, hole 2 - left side, 9mm deep.
Rep 2, hole 1 - top right side, 15mm deep x 17mm wide, hole 2 - top left side, 19mm wide x 26mm deep, hole 3 - bottom left side, 9mm deep x 15mm wide.
Rep 3, no damage to mortar observed.
Rep 4, hole 1 - top side, 9mm deep x 5 mm wide, hole 2 - bottom right side, 110mm along mortar x 6mm wide at the corner x 1-2mm wide towards the middle of the mortar joint.
Rep 5, hole 1 - top left side, 9mm deep x 24mm wide, hole 2 - top right side, 15mm deep x 22mm wide, hole 3 - right side, 5mm deep x 4mm wide, hole 4 - right side, 78mm deep x
23mm wide, hole 5 - bottom left side, 12mm deep x 25mm wide across the corner.

6.3 2 Year Assessment - 11 November 2010

Treatment	REP	Code	Termites in Bait	% Bait Damaged	Shelter Tube on Mortar	Mortar Damaged	Shelter Tube on Bricks	No. Timber Top Damaged	No. Timber Base Damaged	No. Timber Ends Damaged	No. Timber Sides Damaged
1 TERMITIUM®	1	6	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
	2	7	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
	3	8	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
	4	9	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
	5	10	No	0	Yes	No	Yes	8/8	8/8	4/4	2/2
2 Untreated	1	1	No	0	Yes	Yes	Yes	8/8	8/8	4/4	2/2
	2	2	No	0	Yes	Yes	Yes	8/8	8/8	4/4	2/2
	3	3	No	0	Yes	Yes	Yes	8/8	8/8	4/4	2/2
	4	4	No	0	Yes	Yes	Yes	8/8	8/8	4/4	2/2
	5	5	No	0	Yes	Yes	Yes	8/8	8/8	4/4	2/2

Notes Treatment 1 - TERMITIUM®:
There was no damage to the mortar joints treated with the TERMITIUM®.
The bricks and mortar were dry and in good condition.
No termites were observed on the timber, cardboard or Styrofoam in the middle of each structural unit.
Replicate 4 had a crack in the mortar along the brick edge top surface on the top side.

Notes Treatment 2 - Untreated:
Rep 1, hole 1 - top left corner, 11mm deep, hole 2 - left side, 9mm deep.
Rep 2, hole 1 - top right side, 16mm deep x 17mm wide, hole 2 - top left side, 20mm wide x 26mm deep, hole 3 - bottom left side, 9mm deep x 15mm wide.
Rep 3, hole 1 - right side, 8mm deep, hole 2 - left side, 12mm deep, hole 3 - top side, 5mm deep. Also the top mortar joint on the top surface has a crack along the mortar and mortar eaten down 3mm.
Rep 4, hole 1 - top side, 9mm deep x 5 mm wide, hole 2 - bottom right side, 110mm along mortar x 7mm wide at the corner x 1-2mm wide towards the middle of the mortar joint. On the left side there is a chip out of the left corner. On the right side there is an indent in the mortar but not eaten by the termites. There are cracks in the mortar on the top surface of the structure on the top right and the bottom mortar joints. Considerable white fungal growth was present on the timber, cardboard and bricks in the centre of the structure.
Rep 5, hole 1 - top side left corner, 15mm deep x 20mm wide, hole 2 - top side, 6mm deep x 60mm long, hole 3 - top side right corner, 9mm deep x 25mm long, hole 4 - bottom side left 17mm deep x 25mm long, hole 5 - left side, 24mm deep x 12mm wide on right corner, hole 6 - right side in middle, 25mm wide x 78mm deep, hole 7 - right side on right, 21mm deep x 8mm wide.