TERMITE MANAGEMENT SYSTEMS

ADVISORY NOTES FOR HOMEOWNERS AND BUILDERS

Protection of Buildings Against Subterranean Termites.

DISCLAIMER:

The information provided in this booklet is a guide only to the different systems of termite protection available. The information provided with respect to the effectiveness and durability of the various systems referred to in this booklet may be subject to change by the manufacturer of the system or may vary as a result of local conditions or the manner in which the system is to be implemented.
Any person who wishes to ensure a building is adequately protected against subterranean termites should seek their own independent legal and technical advice.

The State of Queensland shall not be liable to any person under any circumstances whatsoever, arising by virtue of a claim for breach of warranty (express or implied), tort (including negligence), strict liability or otherwise for actual, incidental, contingent, special or consequential damages or lost profits or revenues arising directly or indirectly from or out of (but not restricted to) any claim arising out of the inaccuracy of any information contained in this booklet.

Edition No:2 March 2001

Introduction

Termite infestations cause millions of dollars in damage each year to timber-in-service. Termites (white ants) are a problem in most parts of Australia, but they are particularly active in hot wet areas, such as Coastal Queensland.

The Building Code of Australia requires all new homes to have some form of management against subterranean termite attack and there are many different methods available on the market. Several changes were made to the requirements for Termite Management in Queensland on 1 January 2001. These changes include new licencing requirements and changes to the Building Code of Australia. Australian Standards 3660.1-2000, 3660.2-2000 and 3660.3-2000 are also now available.

Homeowners and contractors must realise newly built homes represent large investments, and the cheapest method of termite management may not be the best or most appropriate method for their specific site requirements.

The primary purpose of this booklet is to inform homeowners, builders, designers, trade contractors and pest controllers of the facts behind the many different types of termite management systems, and to clarify the responsibilities in relation to on-going maintenance requirements.

At the end of the day, homeowners must be proactive in the decision-making process. And most importantly, they must ensure they arrange for appropriately qualified operators to carry out regular inspections. Also, they must make sure they do not break through any barriers, otherwise their warranties and insurance entitlements could be adversely affected.

Industry Changes to Termite Management.

On 1 January 2001 there were several changes to Termite Management in Queensland that have a significant effect on the building industry. These changes are designed to provide for more robust and accountable termite management whilst restoring community confidence.

Industry, Government and Consumer groups have worked closely in formulating these changes.

In summary the changes are:

1. Revised Australian Standard:

- The revised Australian Standard 3660.1-2000 Termite Management - New Buildings is referenced in the Building Code of Australia (BCA). This standard has been under review for some time. It is part of a trilogy of standards including Part 2 that deals with existing buildings and Part 3 that deals with assessment for termite management systems.

- The new standard provides, amongst other things, for chemical barriers to extend down 50mm below the top of a footing.

2. Building Services Authority Changes:

The licensing requirements for Pest Control Operators (Contractors) have been extended to include:

- Attainment of recognition for National competency Standards 8 (Inspect and Report on Timber Pests) and 10 (Control of Timber Pests).

- Professional Indemnity Insurance to a minimum value of $500,000 with a run-off provision which automatically operates for a period of three years.

- This class of licence will be required for the inspection or investigation of and the provision of advice or a report about, a completed building for termite management systems or infestation in addition to pre-slab and perimeter treatment of sites.

It should be noted that this is in addition to the possession of a Government issued (occupational) Pest Control Operator's licence.
In addition to the above changes it is also important to use an Acknowledgment Form, similar to that issued by the Building Services Authority (BSA), before entering into a contract. This form confirms that the licensed contractor has counselled the consumer in the alternative termite management systems and the various cost, durability and ongoing maintenance responsibilities.

3. Changes to the Building Code of Australia (Queensland Provisions)

To enhance the Standard there will be a Queensland Amendment to the BCA to include:

- The ability to replenish a chemical termite management system where the life of the chemical is significantly different to that of the building. In effect this means that the hand spraying of chemical barriers cannot be used unless it can be proven that they will have a life span consistent with the reasonable life span of the building. If this cannot be achieved, it may be necessary for a reticulation system to be provided if chemicals are to be relied upon for termite management from below a concrete slab.

- For chemical perimeter barriers the requirement to excavate trenches, treat the exposed trench with chemical, backfill with suitable material then treat the backfill. On completion install a 300mm wide x 50mm deep concrete protection (mowing strip) layer.

- The definition of 'Primary Building Element' is extended to include door jambs, window frames and reveals, architraves and skirting.

- The installation of two durable notices in prominent locations.

- The performance requirements also take into consideration the accessibility to enable installation, maintenance and inspection of termite management systems. For example hand sprayed chemical perimeter barriers will not be suitable for zero lot line housing.

Consideration will need to be given at the design stage for perhaps the use of termite resistant materials or some other form of termite management.

Regular Competent Inspections

Regardless of the system used, regular inspections by a BSA licensed contractor should be carried out to ensure termites have not crossed (bridged) the barrier.
It is recommended that inspections be at intervals not exceeding 12 months.

From the limited evidence available, it appears the majority of infestations occur at the perimeter of the building and usually result from homeowners being unfamiliar of "good practice". For example, an existing termite barrier can be bridged by building garden beds or placing wood chips up to the house, or by attaching unprotected structures such as carports, pergolas, fences, etc, to the house.

A qualified pest control operator or other competent person should be able to examine the building, provide recommendations to reduce the likelihood of infestation occurring and, if infestation has occurred, recommend the appropriate action needed to remove the problem.

Method of Attack

Attacks on buildings are usually initiated from the nest below the ground from which the termites build galleries over piers or walls to attack wood and wood products in buildings. Usually, the nest is outside the building perimeter but occasionally a nest may be buried in the soil beneath the building. Access can be gained to the inside of the building via wall cavities, cracks in mortar or concrete slabs and voids adjacent to service entry points.

What Does the Building Law Require?

The Building Code of Australia (BCA) contains the minimum technical provisions of the Queensland Building Act related to the control of buildings from damage by subterranean termites. Those requirements are contained in Part B of the BCA. Part B is written in performance terms which means that any methods of control that can be shown to meet the performance requirements, by way of suitable documented evidence, may be used.

For houses and associated sheds, carports, garages, etc, clause 3.1.3 of Volume 2 of the BCA specifies the means of satisfying the performance requirements. In the case of termite control, compliance with any of the systems (or a combination of them) detailed in Australian Standard (AS) 3660.1-2000 Protection of Buildings From Subterranean Termites - Part 1: New Buildings satisfies clause 3.1.3. Australian Standard 3660-1.2000 specifies a range of termite management measures which may be used, including chemical or physical barriers or a combination of any of these.

NOTE: Clause 3.1.3 will need to be read in conjunction with the Queensland Amendment to the BCA.

Chemical Barriers

Chemical barriers are normally used in conjunction with slab-on-ground construction. Traditional chemical treatments incorporate a chemical barrier under the slab and around the perimeter of the building.

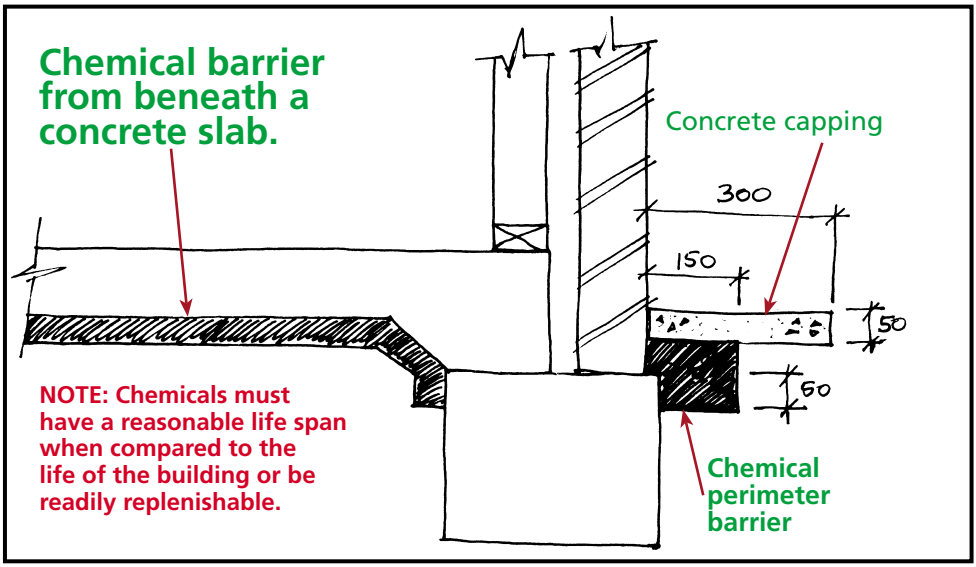
AS3660.1 specifies the procedures to be followed to provide a chemical soil barrier which will impede termites from gaining access to the termite susceptible members in the building. Section 8 does not refer to any specific chemical, instead it will allow any chemical that is registered by The National Registration Authority for Agricultural and Veterinary Chemicals (NRA)[1] to be used. This is to allow for the introduction of any future approved chemical.
Most chemicals used in termite management have a limited life span.

It is recommended that you contact the manufacturers of the products to obtain information regarding the life expectancy of these products and details of the label conditions which must be adhered to when they are being used in termite management systems.

Specific Queensland provisions of the BCA will require proof to be provided that shows hand sprayed chemicals under concrete slabs have a reasonable life span before they can be used.

[1] The NRA is a Commonwealth organisation responsible for the registration of all agricultural and veterinary chemicals.

Chemical Barriers continued



If, during the regular competent inspection of the building (refer to "Regular Inspections") termite infestation is discovered, re-treatment may be necessary to remove the problem and to ensure the building is given protection for a reasonable life expectancy.

A convenient means of re-treating under slabs is by the use of a reticulation system. This system needs to be installed under the slab prior to pouring concrete. A reticulation system will allow periodic re-treatment to be carried out from outside the building.

Before making a final decision as to what method of control is to be used, you should make yourself fully aware. Ask your builder, designer or some other competent person for details about the method of termite control being used, how it is intended to perform as a barrier and what your responsibilities are with regard to the on-going maintenance of the system.

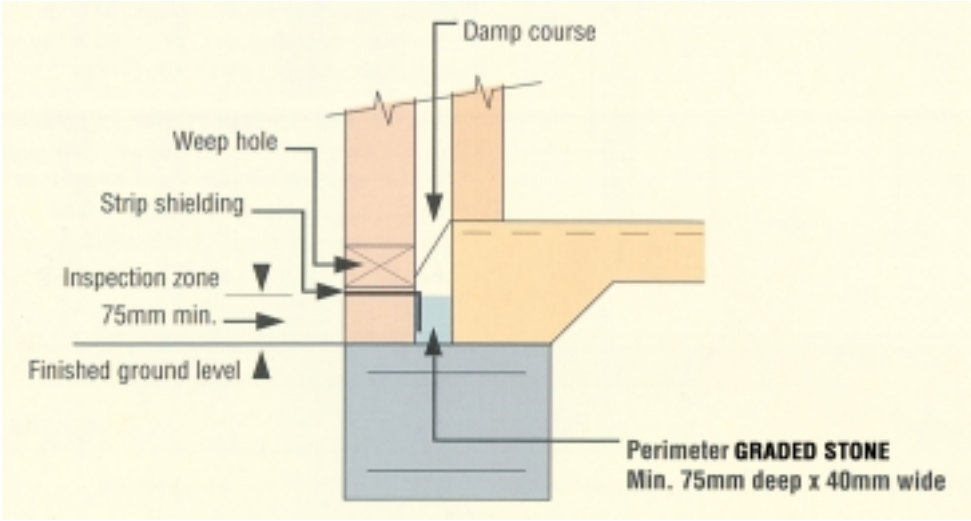
Physical Barriers

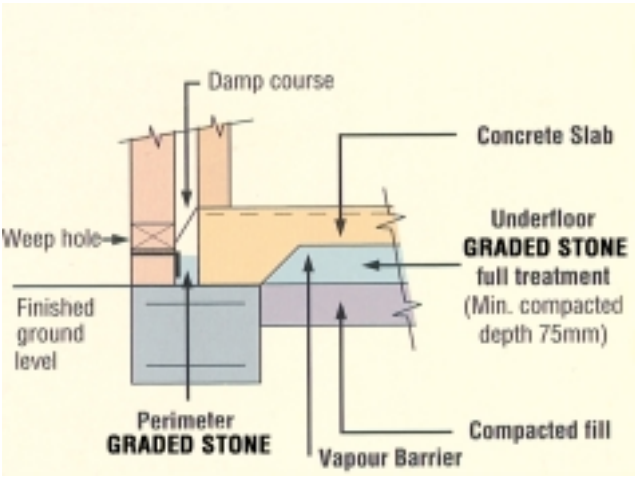
Until recently, physical barriers have been restricted mainly to suspended floor construction (eg houses built on stumps). The traditional physical barrier is the ant cap. Ant caps are used primarily on elevated houses and are placed on the tops of stumps, piers etc.

Ant caps will not prevent termites from getting into the building. They will act as a barrier to encourage the termites into the open where they can be noticed when inspections are carried out.

A number of other physical barriers are available that are suited to slab-on-ground construction.
In many cases they can also be used in elevated houses.

Graded Stone

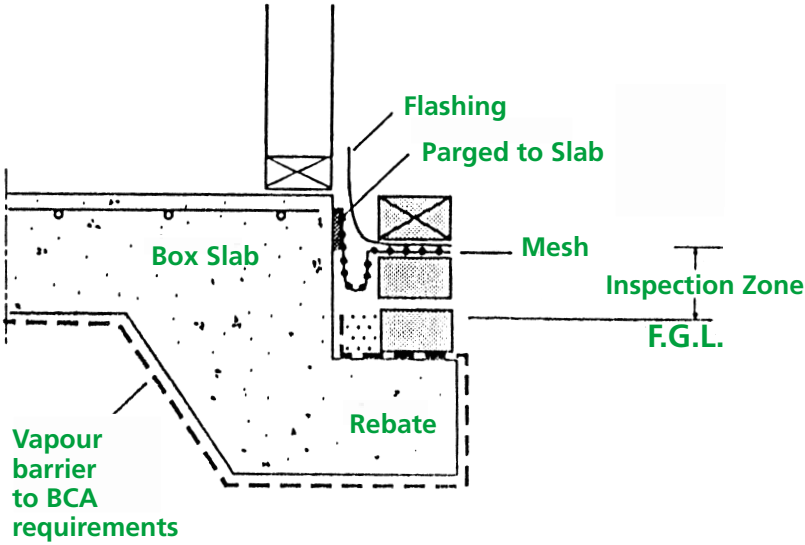




Graded stone barriers incorporate carefully graded and shaped, high quality granite particles which can be placed in a layer under the entire concrete slab area, around the base of stumps in an elevated building, as a partial barrier around the perimeter of the building or around individual penetrations (combinations of physical and chemical barriers may be necessary in some instances).

The system works on the principle that the particles, when placed and compacted, will not allow the termites to find a path through them. The particles are too hard to eat and are too small to allow the movement of termites.

Stainless Steel Mesh

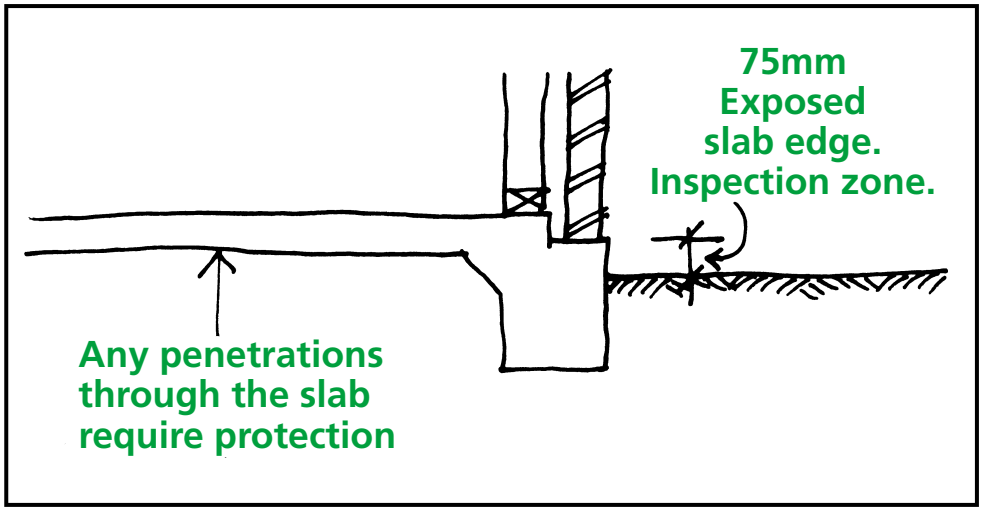


The mesh is parged (bonded) to the side of the rebate, stepped down into the cavity and generally run on the second course of the outside brickwork below the flashing or dampcourse.

Stainless steel mesh barriers incorporate finely woven, marine grade stainless steel mesh which can be used in the same manner as the traditional ant cap, placed under the entire concrete slab area, as a partial barrier around the perimeter of the building or around individual penetrations (combinations of physical and chemical barriers may be necessary in some instances).

The manufacturer promotes the product on the understanding that the grid pattern of the mesh is fine enough to not allow the termites through and is strong enough to prevent them from chewing through it. Being stainless steel, it is unlikely to be affected by the corrosive nature of some concrete and ground conditions.

Using Your Concrete Floor as a Barrier.



From the limited evidence available, it appears the majority of infestations occur at the perimeter of the building. With the introduction of Australian Standards such as AS 2870 - Residential Slabs and Footings Construction and AS 3600 - The Concrete Structures Code, into the Building Act, the likelihood of major cracking in concrete slabs, which could permit the termites to gain access, has been reduced.

The introduction of these Standards supports the use of the concrete slab as a termite barrier. This has been reflected in 3660-1.2000.

Ant caps are effective around the perimeter of some exposed slab-on-ground buildings, but they do not form a barrier to the inner parts of the building - so they must be used in conjunction with other methods of control.

The treatment around the perimeter of the building can utilise any of the physical or chemical barriers previously mentioned. One further cost-effective physical barrier that may be used around the perimeter of the building, utilises an exposed slab edge. The exposed slab edge won't stop the termites from gaining access into the building but it will encourage them out into the open where they can be noticed and appropriate action taken to destroy the nest.

The termites can still gain access via any penetrations, such as plumbing pipes, that pass through the floor and via the perimeter of the building. These areas require additional control using chemical or physical barriers. If chemical treatment is used (to protect penetrations) in conjunction with the concrete floor, the whole of the underslab area must be treated. If physical barriers are used, only the area around the penetrations need be protected.

Termite Resistant Materials

The BCA requires only the primary building elements of a building to be protected against damage by termites.

The definiton of Primary Building Elements has been extended in Queensland to include door jambs, window frames and reveals, architraves and skirting. (This is in addition to the roof structure, loadbearing walls, beams, floor structures etc).

The BCA will allow termite resistant materials to be used to protect the termite susceptible primary building elements.

Some termite resistant materials are:

Steel

This can consist of steel floor, wall and roof framing.

Concrete

A concrete slab on ground can itself form a termite barrier. The slab needs to be constructed as required by Australian Standard 2870 - Residential Slab and Footings.

Timber

Naturally termite resistant in accordance with Appendix C of AS 3660.1.

Timber

Preservative treated in accordance with Appendix D of AS 3660.1
This can consist of Light Organic Solvent Preservative (LOSP) to Hazard Level 2 or 3 (H2 and H3).
Treatments to H4 & H5 levels are required externally where timber is in contact with the ground.
This treatment can also be extended to include window reveals, door jambs, architraves and skirting.

Brick

Load bearing brick walls do not require protection from termite attack.

Fibre Cement Sheet

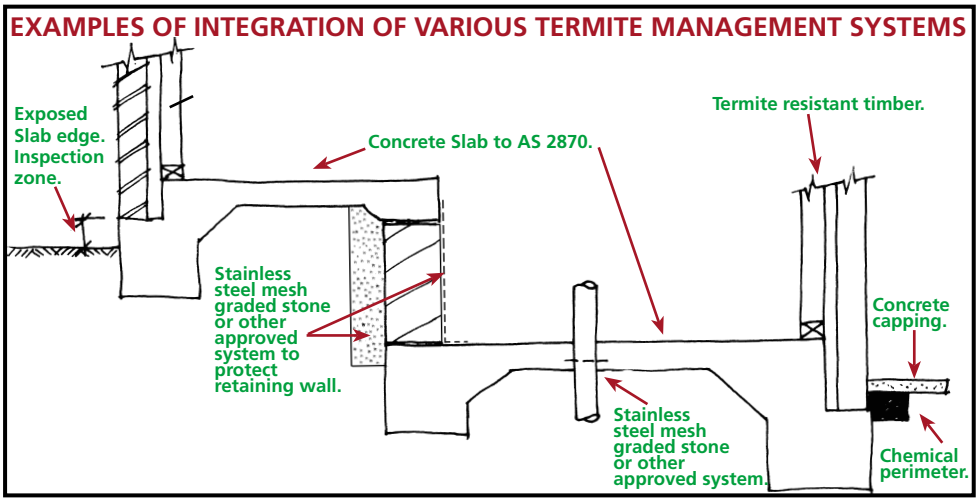
Does not require protection.

Termite Resistant Materials
continued.

If the use of termite resistant materials is the desired method of protection, perimeter treatment is not necessary to satisfy the BCA. The issue for prospective home and building owners to consider is 'whole of building protection'. There are a number of options to consider that should be discussed in detail between the builder and the proprietor for each individual project. The site conditions, building design and consumer requirements all need to be carefully considered prior to committing a project to construction.
An acknowledgement notice, similar to the one printed in this booklet, should be utilised prior to signing a building contract.
This notice confirms that the issue of termite management has been discussed in detail between the builder and consumer prior to signing a contract.

Note: Even though the Building legislation does not require the non-loadbearing elements to be protected, homeowners should be made aware their home may still be subject to termite attack. The likelihood of attack on the non-structural elements of a building can be minimised by the owner ensuring regular inspections are carried out, and the termite management system being used is properly maintained.

Combination of Chemical Barriers, Physical Barriers and Termite Resistant Materials.



Many building designs use construction methods that are not particularly suited to any one form of termite control (eg split-level housing incorporating slab-on-ground and timber stumps). The availability of a mix of alternative methods of control will enable the owner and builder to choose the method, or a combination of methods, that is the most cost-effective and most suited to the building's design. Where a combination of different types of protection are proposed, it is important you discuss the details of any warranties that may apply to the particular systems being used. Some system installers may not be prepared to honour their warranties where a combination of systems are used.

Split-level and zero lot line building are two examples of the need for the incorporation of physical barriers or termite-resistant materials. Chemical barriers alone may not be suitable.

Notices

The BCA requires a termite control notice to be permanently fixed to the building in a prominent location (eg the meter box) indicating:

- the method of protection.
- the date of installation of the termite management system.
- where a chemical barrier is to be used, its life expectancy as listed on the NRA label.
- the installer's or manufacturer's recommendations for the scope and frequency of future inspections for termite activity

From 1 January 2001, two durable notices are required on new houses constructed in Queensland.

Future purchasers should be made aware of the method of termite control used on the building. The onus is on the purchasers to make themselves familiar with the on-going maintenance requirements of the system.

Requirements for Suspended Floors.

Where the building has a suspended floor, cross flow ventilation must be provided under the floor. This is to discourage termite activity and to reduce the likelihood of damage to sub-floor members by fungal attack. The minimum requirement is set out in the Building Code of Australia as a net ventilation area per lineal meter of both internal and external walls. This area varies depending on the region in which the works are being undertaken. Openings must be placed below damp proof courses but above the level of possible entry of surface water.

The area beneath a suspended floor is one of the most susceptible areas of a building to termite activity. To be effective, termite management systems installed in this area rely totally on access for both inspection and post treatment if termite activity is detected.

To ensure access is always available to the sub-floor area, an access door or panel must also be provided.

AS 3660-1.2000 contains specific provisions relevant to sub-floor clearance under suspended floors. A clearance of 400mm between the finished ground level and structural components and any other obstruction (eg bearers, floor joists, plumbing pipes etc) to allow for visual inspection is necessary. While all of the above methods are considered to be reasonable options when used in conjunction with regular, competent inspections, some methods of control are more costly than others and some methods are effective for longer periods of time than others. It is recommended that cost and lifespan comparisons be made, and also find out about details of any warranties being offered with the various systems before deciding the method of control to be adopted.

Selecting a System

BSA recommends that some form of acknowledgement be recorded at or prior to the signing of a building contract that details the termite management system to be incorporated into the works and that alternative systems have been discussed between builder and consumer. An acknowledgement notice, similar to the one printed in this booklet, should be utilised prior to entering into a building contract.

Building Associations and other organisations may also provide some form of acknowledgement recording for this purpose.

Particular attention needs to be given where split level slab on ground or composit slab on ground and suspended floor framing are to be incorporated. It is likely that a combination of barriers will need to be incorporated. The diagram on the previous page illustrates this.

Submitting a Building Application

The method of termite control will need to be detailed on the drawings and specifications accompanying the building application. For " approved" (check with the approving authority - ie, your local council or private certifier - to determine what systems are "approved") systems that utilise stainless steel mesh, granite particles or reticulation systems, the system name is acceptable. Where construction techniques (eg exposed slab edge) or building practices are to be used, specific details are required.

During Construction

The approving authority may require certification from the licensed installer (for the appropriate system) certifying the system has been installed in accordance with AS 3660-1.2000 (refer to AS 3660-1.2000 for details of certification requirements) and, where an "accredited" product has been used, that the system has been installed in accordance with the conditions attached to the Accreditation Certificate.

Where building practices/construction techniques are used, the builder may be required to certify that the building has been constructed in accordance with the requirements of AS 3660.1 and attach documentary evidence (ie timber treatment certification, timber species identification by the supplier and the like).

The certificate should contain the following information:

- Owners name
- Builders name
- Property location
- Real Property description
- Building description
- Details of termite prevention work undertaken, including a diagram where appropriate
- Areas (m2) of the procedures for termite management which may be due to the design of the building or requirements of the owner.

Upon Completion of the Building.

At the completion of the works the builder should provide to the consumer comprehensive information that details the termite management system installed and the ongoing maintenance responsibilities. In the case of chemical systems it may be appropriate for a consumer to enter into a contract with a reputable pest control operator for the ongoing inspection and replenishment as recommended by the label on the product used to form the system.

The owner may be required to provide a declaration to Council upon completion of the building, declaring they are aware of the system of termite control used on the building and subsequent constraints and maintenance provisions of such a system. The declaration should be on a form approved by Council. The declaration should describe the system used and contain details of the competent person who gave the advice on the method of control and its constraints. Generally, advice from the builder and system installer/consultant should be sought.

Termite Management After Moving In.

It is important to understand that properly installed and maintained termite barriers impede and discourage termite entry into buildings. They do not prevent termite attack. Home owners should know or find out what type of termite barrier has been installed in their home - chemical or physical (e.g. concrete slabs, exposed slab edge, metal shielding, stainless steel mesh or graded stone) - or if termite resistant materials have been used. Generally, physical barriers will be designed to last for the lifetime of the building. Chemical barriers, on the other hand, have a limited life and therefore require a higher degree of maintenance and replenishment. Termite protection is required from below and around the perimeter of the building.

How to Reduce the Risks - The DOs and DO NOTs

- Proper, regular maintenance is essential to ensure that the termite management system is maintained to a standard that will minimise the opportunity for termite attack.
- The house should be inspected at least annually by a suitably qualified pest control operator, licensed in Queensland by BSA. More frequent inspections may be required in high risk areas (e.g. where there is a great number of trees or virgin bush nearby).
- Check the operator's licence with BSA before engaging them. In addition to these regular professional inspections owner vigilance, including occasional checks, is important.

Termite Management After Moving In (continued).

Home owners need to be careful not to compromise any chemical barrier or disturb a physical barrier which has been installed in their home. The most frequent cause of termite infestation is where a perimeter barrier has been bridged or breached thus rendering it ineffective. Some common practices which may increase the risk of termite problems include:

- Placing turf, paving, concrete paths, bark and garden beds up against the house wall (such work may necessitate the re-establishment of the termite barrier by a qualified pest control operator)
  NOTE: If a concrete path or a concrete driveway is placed up against a building, it will be necessary to reticulate if a chemical barrier is relied upon.

- Leaving loose timber stacked up or leaning against the house

- The installation of new services involving underground connections to the house (e.g. pay TV) after the original termite protection has been applied.

- The construction of a pergola (75mm clearance is recommended between the finished ground or pavement level and the bottom of the timber posts)

- The construction of fences, carports, or garages attached to the house after the termite protection has been installed (ensure that there is treatment of the soil surrounding any posts or timber members that are in contact with the ground)

- Special care should be taken to protect the 'weep holes' (vertical joints between bricks close to ground level that are left open to allow any moisture to escape outside the house). 100mm clearance is recommended from the bottom of any weep hole to the top of the garden bed, or 75mm clearance in the case of concrete or unit paving.

Site Practices

Trade contractors need to pay particular attention when working in and around new and existing buildings where there is the potential risk of compromising termite management systems.
It is essential to know the type of termite management system that has been utilised and its current status. If there is any ambiguity, clarification should be obtained prior to undertaking any work.
For example, a concreter will need to be aware of the requirement to treat beneath a concrete slab on ground where that slab abuts a building. This can include driveways, carport slabs and footpaths. A landscape contractor installing unit or brick paving, concrete pathways or gardens adjacent to and abutting a building will also need to consider the way in which to manage the termite risk.
Plumbers and drainers need to pay particular attention when installing pipework connections to buildings. The installation of concrete protection blocks over exposed pipework and at inspection points and the like can provide an easy point for concealed entry of termites unless adequate measures are taken. These protection blocks need to be placed in position (in the case of chemical perimeter barriers) after the barrier has been installed, being careful not to disturb the barrier.

This also applies to electrical contractors and to contractors installing any other services connected to a building.

Builders need to be vigilant in supervising this and other aspects of the building process to ensure adequate termite management systems are installed correctly and not compromised as part of the building process. This includes the removal of any debris and mortar slag from footings prior to or as part of site cleaning and the subsequent application of a chemical barrier. All formwork, set out pegs, timber profiles also need to be removed well clear of the area that will be required to form the termite barrier.
Where construction is of a composite nature, where split level slab on ground forms part of the building and where retaining walls form part of the structure, special consideration needs to be given to the type of termite management to be adopted.
It may be that chemical barriers alone will not prove adequate.

It should be remembered that where chemical termite management is to be relied upon, the optimum soil type to receive the chemical is a sandy loam. The use of crusher dust or stone and rubble is not appropriate.

Pest control operators need to check that the soil conditions are conducive to the establishment of an effective barrier prior to applying any chemical.

Further Information

More comprehensive details on the use of any of the above methods of control, can be found in Australian Standard 3660 - Control of Buildings From Subterranean Termites - Part 1: New Buildings.

AS 3660.1 can be purchased at Standards Australia:
232 St Pauls Terrace
Fortitude Valley
Telephone (07) 3216 1355
www.standards.com.au

Further details on the legislative requirements applicable to the control of buildings under construction can be obtained by contacting your local Council, a private building certifier or by writing to or contacting:

BSA
11 Edmondstone Street
South Brisbane QLD 4101
Telephone 3225 2855
Facsimile 3225 2829
PMB 84 Coorparoo DC 4151
www.bsa.qld.gov.au

Building Codes Queensland
PO Box 187 Albert Street
Brisbane 4002
www.dcilgps.qld.gov.au

Australian Environmental Pest Managers Association (AEPMA)
(www.pestworld.org/aepma)
5499 3747

Timber Research & Development Advisory Council (TRADAC)
(www.tradac.org.au)
3358 1400

Queensland Master Builders Association
(www.qmba.asn.au)
3404 6444

Housing Industry Association
(www.buildingonline.com.au)
1902 973 555

Department of Primary Industries
(www.forests.qld.gov.au)
132523

Queensland Health

Building Designers Association of Queensland
www.bdaq.com.au
3889 9119

Insurance Council of Australia
1300 302 549

Note: STD and 1900 phone calls are metered calls.

ACKNOWLEDGEMENT

of the TERMITE PROTECTION SYSTEM for

_____

(description of work. eg. new dwelling / extension)

at _____ Lot No: _____ Plan No: _____

(site address)

Owners / Purchasers

I / We _____

being the owners / purchasers of the above described property acknowledge that I / we have been fully counselled by the licensed contractor named below in relation to:

- **approved alternative termite management systems for the above described building work;**
- **cost variances and durability features of the alternatives**
- **the requirements for an ongoing inspection programme and maintenance responsibilities;**

and that:

the agreed system of protection for this building work is _____

_____

(description / type of system)

I / We have received the following documentation, namely _____

_____

(system data and advisory publications)

Signature/s _____ Date _____

Builder / Contractor

I / We _____

(name of licensed individual or company)

holding Queensland Building Services Authority licence number

confirm having provided the abovenamed with counselling and reference documentation as described herein.

Signature/s _____ Date _____

CAIRNS	4031 6828
TOWNSVILLE	4725 2588
MACKAY	4957 4477
ROCKHAMPTON	4926 1922
SUNSHINE COAST	5479 8500
TOOWOOMBA	4632 9455
GOLD COAST	5592 3377
BRISBANE	3225 2855

www.bsa.qld.gov.au

Queensland Government
Building Codes Queensland