AEPMA'S INDUSTRY CODE OF BEST PRACTICE FOR SUBTERRANEAN TERMITE MANAGEMENT

2nd Edition

Termite Management

AEPMA's Industry Code of Best Practice for Subterranean Termite Management

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CHAMPIONING INDUSTRY PROFESSIONALISM AND INNOVATION

As the peak national body for the professional pest management industry, the Australian Environmental Pest Managers' Association (AEPMA) is committed to fostering a culture of professionalism and innovation—not only in pest management but also in allied sectors such as building and construction.

This Code of Practice has been developed to encourage greater professionalism and innovation at every level. It recognises the wide range of stakeholders involved in managing termite activity and delivering sustainable systems for the long-term protection of existing buildings and structures.

To support continued improvement, stakeholders are encouraged to review and enhance their practices—seeking smarter, more effective methods to deliver superior outcomes. This includes refining business operations, workforce development, financial planning, project oversight, and the integration of technology.

Technology, particularly digital tools, is reshaping pest management and construction practices. Growth in areas such as electronic documentation, remote task scheduling, data sharing, and construction automation is accelerating change across the industry.

Enterprises that adopt and integrate these technologies will enhance their competitiveness.

AEPMA will continue to lead and support the industry through:

- the establishment of a gold standard Code of Ethics
- professional accreditation via PestCert
- improved training and education frameworks
- development of National Competency Standards
- the preparation and promotion of industry Codes of Best Practice
- enhanced communication between industry and stakeholders

AEPMA CODES OF PRACTICE

AEPMA is committed to developing, preparing and promoting definitive 'Codes of Practice', which describe and provide expert guidance on best practice across an increasing range of key pest management areas.

Codes of Practice which have already been published and which, as 'living documents', are continually being reviewed and updated, include:

- ***A Code of Practice for the Control of Bed Bug Infestations in Australia***
- ***A Code of Practice for Pest Management in the Food Industry in Australia and New Zealand***
- ***A Code of Practice for Prior to Purchase Timber Pest Inspections***
- ***AEPMA's Industry Code of Best Practice for Rodent Management***
- ***AEPMA's Industry Code of Best Practice for Subterranean Termite Management***
- ***AEPMA's Industry Code of Best Practice for Termite Management During Constructions***

Other Codes of Practice under development include:

- ***AEPMA's Code of Practice for Training in the Pest Management Industry***

VERSION CURRENCY

A Code of Practice is a living document, subject to updates and revisions. It is essential to ensure that the most current version is consulted and relied upon. If there is any uncertainty, contact AEPMA to confirm that you are referencing the latest edition.

Contents

ACKNOWLEDGEMENTS

AEPMA gratefully acknowledges the contribution and support of people and organisations who have helped prepare this Code of Practice.

WORKING PARTY

Chair

Gary Stephenson – Stephenson Pest Consult & Training

Committee Members

- Patrick Legey – Austrapest
- Gary Stephenson – Stephenson Pest Consult & Training
- John Murray – Flick Anticimex
- Belinda Smith – Rapid Solutions
- Peter Ambrose-Pearce – Syngenta Professional Solutions ANZ
- Stephen Ware – AEPMA National Executive Director
- Rob Boschma – Specialist Termite Control
- Keith Farrow – Keith Farrow Consulting
- Wayne Carrigg – Termitec Pest Control/Trainer and Assessor SMTAFE
- Orla Erasmus and AEPMA Office

DRAFT INPUT

The committee would like to thank the following organisations for providing comment on the first draft document.

- AEPMA NSW
- Austrapest
- Flick Anticimex
- RAPID Solutions
- Rentokil
- Orkin Group
- Stephenson Pest Consult & Training
- Termitrust Pest Management
- WR Gay Pest Control
- Specialist Termite Control

DOCUMENT ADMINISTRATION AND REVIEW

AEPMA's Industry Code of Best Practice for Termite Management (elsewhere referred to as 'this Code', and/or 'this Code of Practice') was initiated on behalf of the professional pest management industry by the Australian Environmental Pest Managers' Association (AEPMA), the peak professional association for timber and other pest management services in Australia.

To develop and prepare the Code of Practice, AEPMA appointed a working party comprising:

- leading pest management professionals
- representatives of companies and organisations responsible for the design, development, manufacture, delivery and installation of termite management systems and technologies
- other relevant stakeholders

This Code of Practice remains the property of AEPMA which publishes this Code of Practice online. The latest version is available from: aepma.com.au/Codes-of-Practice.

Administration

This Code of Practice will be administered by an Administrative Committee comprising:

- The Executive Director of AEPMA who shall also act as Compliance Officer.
- A representative from the insurance industry, a system manufacturer, an APVMA representative, two Member representatives from AEPMA, and a consumer representative (either nominated from Government Departments of Fair Trading or the Consumers Federation of Australia).

Any appointments by AEPMA shall be at the discretion of the AEPMA National Board.

Should any Committee members resign from the Administrative Committee, the AEPMA Board may appoint another person deemed appropriate.

If a Committee member is unavailable to attend a meeting, the AEPMA Board may appoint a temporary replacement."

The Code Administrative Committee is tasked with:

a) The smooth administration of the Code
b) Monitoring and ensuring the complaints mechanism outlined in the Code is being followed
c) Ensuring an external review of the Code and public input into the Code occurs every 5 years
d) Maintaining an effective complaints - handling scheme
e) Taking whatever action is deemed necessary to protect the integrity of the Code
f) Withholding registration to the Code from any individual/firm who, in the opinion of the Committee, is unable to fulfil the obligations of the Code

Data Collection

The Committee shall keep data on a confidential basis on:

a) The number of complaints lodged – by whom and about whom
b) The number found to be in breach of the Code and why
c) The number found not to be in breach of the Code and why
d) The time taken to deal with complaints
e) Details on monitoring activities
f) The number and types of recommended remedial action
g) Amounts of termite damage, if any, reported

Administration and Review

Roles and Responsibilities – Code of Best Practice (CoBP) Chairpersons and Technical Advisory Panel (TAP)

Responsibilities of Each CoBP Chairperson

Each CoBP Chairperson is responsible for initiating an annual 'check-in' of their respective Code of Best Practice to determine whether updates are warranted due to:

- Changes in relevant regulations or standards
- Introduction of new products, technologies or methodologies
- Scientific advancements that may impact or improve best practice

Check-in Outcomes

The check-in process must result in one of the following classifications:

1. No update required – Current content remains valid and up to date.
2. 2. Minor revision – Example: Incorporation of new products or technologies that do not materially change existing best practice (e.g., new formulations such as alphachloralose in rodent control).
3. Major revision – Example: New research findings, significant product/technology innovations, or regulatory changes that substantially alter best practice (e.g., SGAR prohibitions or major legislative reform).

These classifications will serve as the formal CoBP amendment framework.

Update Frequency Guidelines

- Minor updates: As required (not limited by a 3-year cycle)
- Major updates: Ideally within a 5-year cycle

Scope of Chairperson Role

Chairpersons are not expected to independently investigate or survey the full scope of industry, research, and regulatory developments. Instead, their role is to coordinate and assess the relevance of known changes, with the Technical Advisory Panel (TAP) taking a lead role in identifying and communicating broader industry-wide changes.

Responsibilities of the Technical Advisory Panel (TAP)

TAP plays a strategic and coordinating role in supporting the maintenance and relevance of all CoBPs.

This includes:

- Initiating annual check-ins by formally inviting each CoBP Chairperson or their nominated representative at the beginning of each calendar year
- Providing intelligence on new regulations, products, research or technologies relevant to each CoBP to support the chairpersons during the check-in process
- Maintaining consistency in format, structure, and classification across all CoBPs, while allowing for necessary flexibility based on subject matter
- Monitoring CoBP currency and ensuring updates align with the minor/major classification timelines (as needed/as required and 5-year maximum respectively)
- Maintaining the CoBP Administrative Guidelines, which define the format, process and governance framework for all CoBPs. These guidelines must be clearly documented and accessible to all CoBP Chairpersons and contributors

CONSULTATION WITH REGULATORY BODIES

To ensure there is no conflict between this Code of Practice and any policy, legislation, or relevant technical requirements, AEPMA has consulted with the following relevant Australian regulatory bodies:

- The Australian Competition and Consumer Commission (ACCC)
- Licensing bodies in NSW and Victoria
- The Australian Pesticides and Veterinary Medicines Authority (APVMA)

Please note: This Code of Practice aims to establish and recommend industry best practice for termite management. However, all Code Signatories must ensure they have also complied with the minimum standards imposed or required by Local, State or Federal governments or regulatory entities. This Code of Practice is not intended to contradict or override any legislated requirements.

ETHICAL CONSIDERATIONS

The AEPMA ***Code of Ethics*** underpins and provides an ethos for all aspects of professional pest management. In particular, the AEPMA Code of Ethics:

a) Underpins best-practice by pest management professionals and pest management industry ('industry') stakeholders
b) Obliges all industry stakeholders to oppose and call out unethical behaviour by others in the industry
c) Requires all industry stakeholders operating at all levels to adopt ethical principles and practices consistent with the industry's Codes of Best Practice and Australian Standards
d) Requires all industry stakeholders who adopt this Code of Best Practice to deal only with industry parties whose conduct aligns with the standards set by this Code

The AEPMA ***Code of Ethics*** can be viewed on the AEPMA website: www.aepma.com.au.

1. PREFACE

This Code of Best Practice is an initiative of the Australian Environmental Pest Managers Association Ltd (AEPMA) and is intended to document industry best practice by establishing benchmarks for the pest management industry.

Australian Standard AS3660.2-2017 sets a minimum standard for termite management in and around existing buildings and structures as part of Australian Standard's 'Termite Management' group of standards.

In contrast, this Code of Best Practice delivers additional information to both Timber Pest Managers and clients to assist in achieving a positive outcome from a termite related issue. Formal training supports this AEPMA Code of Industry Best Practice and is an integral component of the Code Signatory Certification process.

The Australian Environmental Pest Managers Association (AEPMA) has a longstanding commitment to environmental stewardship, continuously adapting to the ever-evolving advancements in termite management practices.

Since its establishment in 1988, AEPMA has played a pivotal role in advocating for safer alternatives in pest management. In the wake of the phased-out use of Organochlorines from 1990 to 1995, AEPMA recognized the importance of safeguarding structures, the environment, the public, and technicians. Our collective efforts have yielded significant progress in pest management practices.

Since 1995, termite management products have evolved significantly, providing pest control professionals with an extensive array of tools to combat termite infestations effectively. This diverse toolkit includes both repellent and non-repellent chemical products, showcasing innovations in baiting systems, dust applications, foaming agents, chemical and mineral granular beads, as well as chemically infused sheeting, mesh materials, and paint-on solutions.

Throughout the years, research and innovation have driven the development of these various options, empowering pest management professionals with a wide range of tools to address specific termite challenges. Repellent and non-repellent chemicals offer distinct strategies to deter and eliminate termites, while baiting systems have proven highly effective in targeting termite colonies directly.

Dust and foaming agents enable localised application in hard-to-reach areas, ensuring comprehensive treatment. The introduction of chemical and mineral granular beads has enhanced industry versatility, allowing operators to tailor treatments based on specific environmental conditions.

These advancements in termite management products provide operators with the capability to customise their approaches according to the unique needs of each property. Consequently, clients benefit from greater choice, including environmentally friendly, tailored solutions, that effectively combat termite infestations while minimising environmental impact.

With such a wealth of products available, pest management professionals can craft comprehensive strategies to safeguard properties from termite damage effectively.

AEPMA is committed to staying at the forefront of termite management practices, working towards a safer and more sustainable future for both clients and the environment.

2. KEY STAKEHOLDERS

For this Code of Practice, Key Stakeholders include:

- Professional Timber Pest Managers commissioned to manage termites in existing buildings and structures;
- Companies and organisations which develop, manufacture, and/or distribute termite management systems, products and technologies; and
- Building owners and managers.

Code Promotion

- The Committee may periodically publicise the Code and its Complaint Handling provisions. The Committee may produce considerable promotional material for use by Code Signatories. All promotional material used by Code Signatories referring to the Code must be approved by the Committee.
- The Committee shall provide access to a published register of Code Signatories on the AEPMA website in order to help raise consumer awareness and industry awareness of the Code.
- The Committee shall produce and provide brochures, fact sheets or other appropriate promotional material about the Code and its complaints handling provisions.
- "The Committee shall advise Code Signatories on what information should be displayed in their business operation. The Code Signatories who operate a website may provide a link to the Code on their website and must use all reasonable endeavours to promote the Code to their clients.

Consumer Awareness

Consumer awareness of the Code will be increased by:

- Members of AEPMA who are accredited to the Code offering members of the public the right to contract for work under the Code.
- Code Signatories will be required to highlight and promote accreditation of the Code on all Proposed Termite Management Plans
- A Code logo being made available to all signatories of the Code for use on all relevant paperwork, websites, and in promotional materials.
- Promotion of the Code on the AEPMA website and various AEPMA social media sites, including the listing of those accredited to the Code.
- Copies of the Code will be available on the AEPMA website free of charge.
- A Q&A Summary of the Code will also be made available to assist the public in understanding the Code.

3. SCOPE, OBJECTIVES AND PURPOSE

This Code supports the overall objectives of AEPMA by:

a) Setting a best practice standard of behaviour and service delivery for Termite Management in and around existing structures
b) Holding professional Timber Pest Managers to a uniform standard of behaviour
c) Establishing an independent process for assisting consumers and professional Timber Pest Managers to resolve any complaints or disputes that might arise as a result of a termite management service
d) Building the professionalism of the industry into the future

This Code of Practice aims to establish and recommend industry best practice for managing subterranean termites in and around existing buildings and structures.

In response to common complaints and concerns by consumers, AEPMA has prepared this Code of practice to:

a) Assist professional Timber Pest Managers by providing a clear set of operational and business guidelines.

b) Assist clients and other stakeholders by providing guidelines for best practice termite treatment.

c) Assist clients in selecting suitably qualified and equipped Timber Pest Managers.

e) Inform clients and other stakeholders about what to reasonably expect from a professionally conducted termite management service; and in so doing, align client and other stakeholder understanding and expectations with the realities of professional termite (and other pest) management to reduce possible disputes.

Among other things, the Code emphasises:

a) Features, benefits, and limitations of currently registered systems, techniques, products and technologies for managing termites in existing buildings and structures.

b) Best practice (ground rules) governing how such systems, techniques, products and technologies should best be commissioned, applied and/or installed.

The scope of this Code of Practice is limited to subterranean termite management in and around existing buildings and structures.

For termite management commissioned and undertaken during building construction, refer to AEPMA's

Code of Best Practice for Termite Management During Constructions.

People, businesses and organisations who sign up to this Code of Practice commit to following and complying with the Code's objectives, best practice requirements and stipulations.

4. DISPUTE RESOLUTION

AEPMA Codes of Practice set out industry standards of conduct, describe and provide expert guidance on best practice across an increasing range of key pest management areas. They are guidelines for fair dealing between Pest Managers and their customers and they outline what a customer can expect from a pest management company, when he or she agrees to engage its services.

All industry Codes of Practice are now subject to AEPMA's Dispute Resolution Framework, as detailed here under the heading "Dispute Resolution"

The pest management industry has a strong focus on consumer complaint handling and dispute resolution. As a result, we are actively committed to helping resolve any complaints or concerns about the way in which a termite management service has been provided.

Good communication between Timber Pest Managers and their clients is essential in avoiding conflict. Conflicts most often occur when clients' expectations are not met. A complaint is defined as any alleged breach of the Code of which a consumer and Timber Pest Manager are in disagreement, regarding the quality of the work performed, or not performed, under the Code.

To help ensure speedy and fair outcomes to any disputes between stakeholders, all parties who agree to comply with (sign) this Code of Practice also agree to be bound to comply with the Code's dispute resolution procedure.

Specifically, all parties to this Code agree:

- any complaint arising out of works carried out under this Code will be presented in writing in a timely manner; and

- to attempt to reach a consensus over any dispute by sharing their evidence and position using the following escalating pathway.

Types of Complaints accepted:

1. The Code Compliance Manager (AEPMA) and Disciplinary Committee will only accept complaints:
   a) Relating to an incident or issue arising no more than six months before a complaint is referred to AEPMA
   b) that falls within the categories of eligible complaints outlined in the table below.
2. If a complaint is not accepted by the Code Compliance Manager or the Disciplinary Committee, the complainant may consider other avenues such as the consumer appeals tribunal or seek independent legal advice.

(See Categories of Complaints Accepted by AEPMA on next page).

Categories of complaints accepted by AEPMA

ELIGIBLE COMPLAINTS	INELIGIBLE COMPLAINTS
• Alleged breaches of the Code of Practice, for example, relating to: - Issues with products or services provided by a Code Signatory; - Misleading or deceptive conduct; - Refunds; - Documentation; - Information provided by a Code Signatory; - Failure of a Code Signatory to hold required Public Liability & Professional Indemnity insurances; - A new development in a complaint previously accepted by AEPMA for investigation and resolution.	• An incident or issue arising more than six (6) months before escalation. • Where an incident giving rise to the complaint occurred before the commencement of the Code. • Where an incident giving rise to the complaint occurred before the Code Signatory became accredited. • Where identical events and facts as a previous complaint lodged with AEPMA from the same complainant arise. • Where an allegation or finding of: - A criminal offence; - Corruption; - Dishonesty by a Court or Tribunal; - Disqualification of a director under the Corporations Act; - Disciplinary action by a law enforcement agency; - Failure to pay money owing under a Court order or trading while insolvent • Where a matter would be more appropriately dealt with by a law enforcement agency, court or tribunal. • When a matter is already under investigation by a law enforcement agency. • When legal action (including a court or tribunal process) relating to the same matter has already commenced. • The claim is for a non-economic loss. • The claim is frivolous, vexatious, or brought for an improper purpose.

Resolving a Complaint under the Disciplinary Committee

Consumers are not obliged to use this process and may instead lodge a complaint with a relevant consumer protection agency, court or tribunal.

If accepted by the Disciplinary Committee, the matter will be investigated and a notification in writing of the findings will be provided within 45 days of receipt of the complaint.

Once the Disciplinary Committee completes its review, the complaint will be formally closed.

If a complainant is dissatisfied with the outcome of the Disciplinary Committee review, The complainant may then choose to escalate the matter to a relevant consumer protection agency, court or tribunal.

Handling of information

Any information provided may be recorded and used to assist in improving products and services for future customers.

All personal information will be stored in accordance with privacy requirements.

Other options for dispute resolution

The Complainant is not required to use the the Code's complaint handling and dispute resolution process and may choose to lodge a complaint with their state or territory regulatory authorities.

The public and relevant stakeholders will be invited to participate in reviewing the complaints handling system. The Administrative Committee will consider requests by the public or interested parties to make changes to the Code.

5. CODE OF PRACTICE COMPLIANCE

COMPLIANCE

A register of Code Signatory Timber Pest Managers is located on the AEPMA website (www.aepma.com.au) and can be accessed by members of the public. This register is exclusively for Timber Pest Managers who are formal signatories to the Code. To be deemed compliant under this Code, a Timber Pest Manager must become a signatory and meet the Code's requirements for qualifications, insurance, licensing, and training.

In addition, they must have completed the relevant training course supporting this code.

Any Timber Pest Manager found to be non-compliant with this Code will have their details removed from the register on the website.

Election of Disciplinary Committee and Sanctions

Annually, the Administrative Committee will elect a Disciplinary Committee, consisting of a minimum of three and a maximum of five members, who have extensive working knowledge of termite management systems, such as an independent qualified Timber Pest Manager, a suitably qualified termite management system consultant, or a representative from the architecture or building industry.

The Disciplinary Committee shall:

a) Investigate, including requesting information from accredited members of the Code, any disputes or ongoing activities that may bring the Code into disrepute

b) Recommend any orders appropriate to ensuring the ongoing credibility of the Code including:

Sanction	Description
1. Rectification Orders	This requires a Code Signatory to rectify any consequences of their actions in a manner and within a timeframe determined by the Disciplinary Committee. For example, this may require providing a full or partial refund for any services provided.
2. Improvement Notices	This is a written order requiring a Code Signatory to change their behaviour, policies or processes, and to take whatever action may be specified by the Disciplinary Committee within a specific timeframe.
3. Warning Notices	This informs the Code Signatory that their behaviour or actions were unacceptable in the circumstances and that if further breaches are identified, additional sanctions may be imposed.
4. Publication Orders	This requires a Code Signatory to publish (in whatever format the Disciplinary Committee determines) a corrective advertisement.
5. Public Notification	This publicly notifies the general community via the AEPMA website of a Code Signatory's actions and the outcome of the Disciplinary Committee's investigation.
6. Re-training Order and Re-application Fee	This requires a Code Signatory or their staff members to successfully undertake further development or training as specified by the Disciplinary Committee and payment of a new application fee.
7. Suspension or cancellation of Code Accreditation	If appropriate, the Disciplinary Committee may recommend to the Administrative Committee that a Code Signatory's Accreditation be suspended or cancelled, depending on whether the complaint indicates a substantial or significant breach of the Code. Code Signatories can find a description of these types of breaches in the Glossary section of this Code.

c) Provide a report in writing and include results of the Committee's deliberation.

d) Have the power to withdraw accreditation to the Code of any company/firm/individual who they believe brings the Code into disrepute.

An appeal against the decisions of the Disciplinary Committee may be made to the Administrative Committee within 21 days, and will state:

a) The reasons for the appeal based on the facts

b) Why the penalty is considered inappropriate

Decisions of the Disciplinary Committee shall be reviewed annually by the Administrative Committee.

6. LIMITATIONS OF TERMITE MANAGEMENT AND THE IMPORTANCE OF THOROUGH REGULAR INSPECTIONS

A number of factors can limit the ability of Timber Pest Managers and/or termite management systems to achieve desired outcomes. The limitations of termite management systems are intricately tied to their reliance on termite inspections as a critical aspect of effective termite risk management. While these systems are designed to uncover termite activity, their success hinges on the thoroughness and frequency of inspections. Failure to conduct regular and comprehensive termite inspections can result in missed detection of concealed termite colonies or early signs of infestation, leading to insufficient protection against termite damage.

Various factors beyond the control of Timber Pest Managers or termite management systems can also hinder their ability to achieve desired outcomes. These factors may include:

- Constraints imposed by building designs.
- Construction issues and faults.
- Site conditions, especially as affected by soil levels, soil composition and landscaping.
- Limited access to inspect and/or apply treatments to certain areas of buildings.
- The presence of vegetation close to buildings.
- Poor or inadequate ventilation of sub-floor areas.
- Poor or inadequate drainage beneath and around buildings.
- Disturbance to (and, thereby, breaching) termite management systems after they have been installed or established.
- Deliberate or accidental placement of foreign objects over or around termite management systems (bridging), enabling termites to gain unfettered access to buildings.

Additionally, the failure of clients to adhere to Timber Pest Managers' recommendations for ongoing system care and maintenance can further impede the effectiveness of termite management efforts.

7. STAKEHOLDER RESPONSIBILITIES

7.1 PROFESSIONAL TIMBER PEST MANAGERS

Under this Code, Timber Pest Managers who provide and undertake termite management must have a thorough understanding of:

- Termite biology and behaviour
- Termite identification and geographical distribution of termites in Australia
- Termite inspection and detection techniques
- Preventative and curative treatment techniques
- Basic building and construction methods and terminology
- Environmental conditions known to be conducive to termite foraging and incursions into built and/or other environments
- Documentation (purpose, contents and formats) required to be completed and/or prepared and presented for termite management

To gain the above understanding, Timber Pest Managers must have:

1. Attained the required national pest management units of competency for termite management

2. Accumulated 200 hours of combined study (theory) and practical experience in termite management, including participation in
    a) at least 40 timber pest or termite inspections under direct supervision; and
    b) at least 40 post construction termite treatments (both baiting and chemical) consisting of a combination of preventative and active treatment sites.
3. Attained a Timber Pest Manager's license to use pesticides from their relevant state or territory's government (see Appendix D)
4. Accumulated a minimum of two years' experience in pest management, including management of active termites

Timber Pest Managers who comply with this Code of Practice must also:

- comply with all relevant work health and safety and welfare legislation as well as with other standards and associated (relevant) 'Codes of Practice'
- comply with all national and state regulations that apply to pest management
- only handle, use and apply pesticides in accordance with product label directions and industry and government approvals (e.g., APVMA)

7.2 PEST MANAGEMENT BUSINESSES

Under this Code, professional pest management businesses providing and undertaking termite management have a duty of care to minimise risk to themselves, clients, other people, and the environment by:

- ensuring their pest management and other staff and contractors are adequately trained;
- ensuring their Timber Pest Managers have accumulated appropriate experience and hold appropriate, certified qualifications and licenses;
- allocating appropriate time, materials and equipment to all termite management jobs to ensure treatments are completed on time and with no compromise to quality; and
- holding current 'professional indemnity' and 'public liability' insurance.

Trainees should be considered compliant with this code only where they are under the direct supervision of their licensed timber pest supervisor who is a signatory to this code.

7.3 CLIENTS (BUILDING OWNERS AND MANAGERS)

Under this Code, clients should acknowledge that a number of factors may limit the Timber Pest Managers' ability to achieve desired outcomes.

It is imperative that clients carefully follow written recommendations prepared for them by their Timber Pest Managers. Failure to act on recommendations may limit Timber Pest Managers' ability and capacity to achieve successful treatment outcomes and therefore, may transfer at least some responsibility and liability back to clients who fail to heed Timber Pest Managers' professional advice.

Important note: Termite management is often complex and should only be carried out by trained, experienced professionals (Timber Pest Managers who have completed training under the National Competency Training Certificate III in Urban Pest Management including Units 8 and 10 for Timber Pest Management).

It is also prudent for clients to ensure their chosen termite management professional holds the relevant Timber Pest Management Licence in their respective state or territory.

8. COMMUNICATION WITH CLIENTS

Good and effective communication between Timber Pest Managers and their clients is essential to achieving positive treatment outcomes and avoiding conflicts.

This Code accepts that conflicts and misunderstandings can arise when clients' expectations are not met, even if those expectations are unreasonable. The Code, therefore, maintains that, before proceeding to initiate any treatment, Timber Pest Managers have a responsibility to ensure that clients are effectively briefed and helped to understand what expectations and desired outcomes are realistic and reasonable in the light of and in relation to their own individual circumstances.

The Code stipulates that best practice requires Timber Pest Managers to provide their clients with:

- a Termite Inspection Report compliant with this code or as required by the Timber Pest Manager's insurer, clearly showing what, if any, evidence of termites and termite damage has been found and the implications of such findings; and
- a Proposed Termite Management Plan clearly stating what work or treatments are being recommended, why they are being recommended, the costs associated with such recommendations, and the implications for clients, their property and the environment should such proposals be agreed to and commissioned.

Under this Code, when treatments have been completed, Timber Pest Managers are required to provide each client with an approved format 'Certificate of Treatment' and install in an approved and appropriate place, a durable 'Notice of Treatment', for example, in the meter box or other accessible location sheltered from weather and tampering.

Timber Pest Managers who carry out termite management programs must also provide clients with clear guidelines and directions for maintaining the integrity and effectiveness of all treatments, along with clear warnings about limitations to treatment effectiveness brought about by or due to any client failure to follow such directions or other clearly described limitations to treatment effectiveness.

This Code acknowledges the possibility of conflicts and misunderstandings arising when clients' expectations are not fulfilled, even if those expectations seem unreasonable. In recognition of this, the Code emphasizes that Timber Pest Managers hold a responsibility.

Before undertaking any treatment, Timber Pest Managers must ensure thorough communication with clients, assisting them in comprehending what expectations and desired outcomes are both practical and rational, considering the specific context of their individual circumstances.

The following proactive approach aims to align clients' expectations with achievable results and minimize potential conflicts by fostering a clear understanding of what can reasonably be accomplished.

Code Requirements:

- Termite Inspection Report: Compliant with the code or insurer requirements.
- Clearly indicates termite evidence and damage implications.
- Proposed Termite Management Plan: Clearly outlines recommended work/treatments, reasons, costs, and implications for clients, property, and environment upon agreement.
- Eliminate active termites.
- Remedy conducive conditions
- Install or replenish the termite management system.
- Comprehensive termite inspection

Completion Requirements:

- Certificate of Treatment: Issued after treatment completion
- Notice of Treatment: Durable notice placement (e.g., meter box) to inform clients
- Advise on an inspection schedule

Management Programs Requirements:

- Timber Pest Managers to Provide Maintenance Guidelines to ensure treatment integrity
- Warning of Limitations: Inaccessible areas, hindrances to complete treatment and Client non-compliance and responsibilities that may limit the effectiveness of the treatment

9. FOR CLIENTS: CHOOSING A TIMBER PEST MANAGER

Under this Code, clients are strongly recommended to choose Timber Pest Managers who are members of AEPMA, and who therefore are committed to abide by AEPMA's Code of Ethics.

Specifically, clients are advised to:

- Check that prospective Timber Pest Managers hold current and valid licenses to provide and undertake pest management services (see: Appendix D).
- Confirm that prospective Timber Pest Managers have accumulated significant pest management experience (How long has a Timber Pest Manager been involved in the industry, and for how long has the Timber Pest Manager been carrying out termite management?).
- Check prospective Timber Pest Managers' reputations (ask for checkable references and also consider asking family, neighbours and friends for their recommendations).
- Ensure that they are selecting a Timber Pest Manager on more than quoted pricing and as much on qualifications, experience, and reputation.
- Check and ensure that prospective Timber Pest Managers are fully and adequately insured (covered for both professional indemnity and public liability).
- Check Timber Pest Manager websites for extra information (testimonials, AEPMA membership etc.).

10. HEALTH AND SAFETY REQUIREMENTS

All Timber Pest Managers are required, under law, to comply with relevant, current, national and state work health and safety laws when handling, mixing and applying insecticidal products or carrying out any other termite management services.

All termite management chemicals must have Australian Pesticides and Veterinary Medicines Authority (APVMA)-approved labels attached. By law, instructions and directions on these labels must be followed, to the letter.

Included on such labels are directions for product use (dosage and mixing rates, application methods, appropriate and inappropriate situations and application equipment and timing, etc.).

All Timber Pest Managers are required, under law, to comply with the requirements of the Safety Data Sheet applicable to each registered termite management product, including instructions for the wearing of appropriate personal protective equipment, correct storage, transport and disposal procedures and appropriate actions in the event of a chemical spill.

Failure to observe label directions constitutes an offence.

11. TERMITE BIOLOGY AND BEHAVIOUR

Timber Pest Managers who undertake or advise on termite management must have an in-depth knowledge and understanding of termite biology and behaviour because such knowledge and understanding enables them to make properly informed judgements, decisions and recommendations and therefore, carry out only the most appropriate treatments and management strategies.

A background paper on termite biology and behaviour is presented in Appendix A.

12. INSPECTION DETECTION AND REPORTING

Under this Code, written termite inspection reports are a mandatory component of termite management in and around existing buildings. A visual inspection must be completed and reported on prior to the commencement of any treatment. While inspections may be quoted separately or as part of a package, they must be treated as an essential first step in any termite management program.

Many homeowners and property managers are unclear about the different types of termite inspections available. Even among industry professionals, there is sometimes confusion about the appropriate terminology. These differences often arise from the specific purpose of the inspection being conducted. The following outlines the most common and practical types of inspections recognised by this Code.

12.1 STANDARD VISUAL TERMITE / TIMBER PEST INSPECTIONS

Standard Visual Termite Inspections are commonly provided to existing property owners and property managers, where the property titles and ownership are not being exchanged and which specifically relate to termites only.

Commonly done for property owners and property managers, this is the visual inspection of a home or buildings & structures within the boundaries of an average sized building block, or with larger and/or rural properties, all buildings and structures and the surrounding grounds within a 50-metre radius of these buildings and structures.

Commonly conducted annually or twice annually, depending upon the local termite pressure in the area where the property is situated and/or the history regarding termite related issues with the particular property. As a minimum, regular inspections should be conducted at intervals of no more than 12 months. It is commonly done for residential properties but can also apply to commercial or industrial properties.

This is a 'visual' only inspection, but with some tests (moisture meter testing of surfaces, sounding of timbers, splinter testing of fungal decay affected timbers and the optional use of other devices or methods such as thermal imaging cameras, radar movement detection devices and stethoscopes.

The inspection report applicable to this type of inspection would be expected to run into at least 4 pages but commonly entails several more than this.

The results of standard visual termite inspections must be detailed in a written report including and covering, as a minimum:

a) Where practicable, the detection of termite activity and damage
b) Identification or otherwise of conducive conditions.
c) A clear outline and description of all areas of buildings which restricted or limited access to inspection.
d) A clear identification and description of all relevant risk factors which may favour termite incursions or attack, and/or factors which may preclude or limit future inspections.
e) A clear summary of available and recommended treatment options.

f) An assessment of the overall degree of risk of termite ingress

g) Advice and recommendations regarding ongoing inspections and preventative measures.

Tools and equipment

Following is a recommended tool and equipment kit to conduct visual termite inspections:

- Moisture meter
- powerful torch
- long handled probe or screwdriver
- ladder (minimum 2.1m opening up to 3.6 m where deemed safe to do so)
- sharp knife (for splinter test)
- digital camera
- Appropriate PPE and P3 respirator
- Sounder tool (donger)
- Measuring tape
- Pliers
- Binoculars
- Hand lens
- Tweezers
- Specimen container

Optional but non-essential items include:

- a compass (to determine orientation of building so location of information can be accurately reported);
- a magnifying glass or hand lens (x 10 magnification);
- Termite radar
- Termite detection dog or equivalent
- Thermal imaging camera
- Binoculars

A Standard Visual Timber Pest Inspection is similar to a Standard Visual Termite Inspection in both scope and purpose, covering inspection methods and reporting on the risk of subterranean and dampwood termites. However, it also includes additional provisions for timber pests such as borers and fungal decay, as specified in the A Code of Practice For Prior to Purchase Timber Pest Inspections. These additional provisions are not recognised by this Code.

12.2 PRE-PURCHASE VISUAL TIMBER PEST INSPECTIONS

This is similar to a Regular or Standard Timber Pest Inspection in process **but differs in scope and purpose**. This inspection is commonly conducted prior to a property changing ownership and where property titles and monies are typically being exchanged for the property.

The purpose is to assist prospective property buyers make a more informed decision about purchasing a particular property based on the timber pest status of that property. It is most often for residential properties but can also apply to commercial or industrial properties. It is almost always visual only and non-invasive. Additionally, it is not for termites only but instead, for 'timber pests' such as borers and wood decay fungi.

For more information on Pre-Purchase Timber Pest Inspections, refer to the AEPMA Code of Practice for Prior to Purchase Timber Pest Inspections.

12.3 PARTIAL AND SPECIAL PURPOSE TERMITE INSPECTIONS

This refers to situations outside the previous two inspections listed above. This is an inspection that can be flexible in scope and purpose, and which is often tailored to meet variable requirements. However, it is commonly done where further investigation is required of previous termite management measures which have been started/implemented, or where a localised/partial only inspection is required or requested. This may be a visual or invasive inspection.

Examples are:

- Where only one of multiple residences requires inspection (e.g. one apartment out of a high-rise block of several)
- Only the common areas (strata) of a residential or commercial complex requires inspecting
- Where a partial termite treatment has been previously carried out and a follow-up inspection is recommended. Where there is no need to inspect the whole building, but rather just the specific area relating to a previous partial termite treatment.
- Where the first stage of a multi-stage termite treatment program requires checking before the next stage can begin e.g.: Dusting of termite activity in a structure prior to chemically treating the soil under and around the structure
- Inspecting a tree, stump, pole or fence where a termite nest has been treated previously
- A localised borescope, thermal camera or Termatrac inspection where high moisture readings or evidence of possible concealed termite activity requires confirmation
- An invasive inspection of a particular area where cladding or other building components have been removed/partially removed to permit inspection of a concealed area
- An area which was locked/inaccessible during a previous inspection

Partial or special purpose termite inspections may be conducted as 'visual only' inspections or may be performed using invasive techniques.

Frequency for this inspection is at the discretion of the termite management professional or to meet client specific requirements, such as:

- the warranty terms and conditions of individual proprietary termite management systems;
- the extent and severity of termite activity and/or attack
- the type and nature of treatments undertaken or applied; and/or
- the professional judgement and discretion of termite (pest) managers.

12.4 INVASIVE INSPECTIONS

Invasive inspections generally involve compromising or damaging surfaces to permit partial, full physical or visual access to concealed areas, for example, to enable inspectors to access and inspect wall cavities, concealed subfloor areas etc.

This may entail drilling holes in walls or ceilings (internal or external), and/or dislodging or removing sections of internal wall lining, roofing or external cladding and/or bricks/masonry blocks to permit inspection of previously concealed or partly concealed areas.

A commitment to quality service and property protection is paramount when doing invasive inspections. Under this Code, where a recommended invasive inspection may damage or impair properties, fixtures and/or fittings, Timber Pest Managers must consult and gain agreement from clients or property owners or managers to proceed. In the event of any uncertainty as to what is involved and the expected consequences, Timber Pest Managers

must gain written permission to carry out all specified invasive inspection work before any such works are undertaken. Such works may necessitate the involvement of other tradesman or specialists.

A Special Purpose or Partial Inspection does not negate the need for a standard visual inspection if a Standard Visual Inspection has not been conducted in the preceding 12 months.

Special note: Standard Visual Termite Inspections and Pre-Purchase Timber Pest Inspections are not 'invasive' inspections, which may require potentially termite and other timber pest affected timbers and materials to be physically removed, opened up or compromised.

13. PROPOSED TERMITE MANAGEMENT PLAN

Under this Code, Timber Pest Managers must provide each client with a written Termite Management Plan (Proposal) before they commence any termite management work.

Each proposal must include:

a) The client details, and property location, date and proposal

b) Reference a current termite or timber pest inspection report for the property being quoted on or stipulate for the provision of a Termite Inspection prior to the commencement of termite management

c) full details of the treatment methods and products being proposed to be deployed, including:
   - Brand Name
   - Active Constituent
   - reasonable expectations and anticipated outcomes of the proposed treatment(s) and management options

d) clearly identifiable costs of proposed management/treatment options; and

e) a list of any actual and/or potential limitations that (or may) affect the effectiveness of one or more elements of the proposed termite management treatment, including construction design, building practices, site conditions, client requirements or any other treatment limiting factors which may arise.

Proposals must also contain sufficient clear detail to ensure clients fully understand and appreciate:

a) The nature and implications of each of the various techniques, components and products involved in the proposed treatments (including cutting concrete, drilling holes, removing gardens, replacing or removing soil, trenching, etc.).

b) The implications and likely impacts of the works proposed, both for them and the environment and for them in terms of on-going commitments and responsibilities.

This Code requires that there are no misunderstandings among or between the parties involved in each termite management program. Under this Code, to ensure full understanding, Timber Pest Managers must assure themselves that clients understand and appreciate all parts of each proposal. They must also require acceptance of all proposed treatments and management programs prior to any work commencing.

14. TERMITE TREATMENT PROCESS

Under this code and in general, treating active termites is divided into four stages:

- Inspection and assessment
- Eradication of Termite Infestation (Curative treatment)
- Managing the risk of future termite infestations (Deterrent treatments and other options)

- Follow-up Inspections

Eradication of termite infestations (curative treatments)

The main aim of 'curative' treatments is to stop active termite infestations and prevent further damage associated with that termite activity.

Under this Code, while every attempt to eradicate termite colonies from which infestations may originate should be pursued, the main priority should always be to eradicate all live activity from buildings and surrounds being treated.

Importantly, both Timber Pest Managers and their clients must understand that cessation of termite activity does not guarantee structures will be protected or immune from attack by other colonies in the area.

Curative treatments are not designed as stand-alone treatments and should not be used as such. Therefore, a preventative termite management system should be installed in conjunction with successful eradication of termite activity from within the structure.

Under this code, every effort to locate the termite colony and the entry point(s) should be made where possible and appropriate.

Searching for the colony should include:

- Test Drilling and colony location work on trees and stumps using best practice methodology (temperature probe)
- The use of additional inspection devices such as moisture meters, borescopes, microwave movement (Term-a-trac, thermal imaging and possibly even properly trained sniffer dogs.
- Invasive inspection procedures (removing sections of or creating openings in building fabric such as interior linings, external cladding, roofing and brickwork to permit partial or full access).

Where possible and appropriate, searching for the entry point should include:

Invasive inspection procedures (removing sections of or creating openings in building fabric such as interior linings, external cladding and brickwork)

- Additional inspection devices such as moisture meters, borescopes, radar movement (Term-a-trac), thermal imaging and possibly even properly trained sniffer dogs
- Digging the soil abutting the foundations
- Lifting dampcourse where overlapping foundation slab edge
- Inspection around service penetrations (water, power, drainage)
- Checking climbing vegetation on foundation wall
- Close attention to missing ant-capping between structural timbers and masonry e.g. (engaged piers in garages and subfloor

Note: Where invasive work such as removing bricks, cutting or drilling internal linings, drilling of trees is necessary, permission from the client should firstly be sought. And it may be necessary to involve the services of other trades or specialists.

14.1 DUSTING

Dusts toxic to termites can be used to eliminate termite colonies, even when nests have not been located.

Very fine (ultra-small particle) dusts made up of or containing termite toxicants are gently blown into termite-excavated wood or other suitable termite 'workings' (e.g., if necessary, termite runways/galleries encased by termite 'mud').

Termites that are dusted directly (those on whom dust particles land), and those that become affected by the dust while using dust covered tunnels, 'groom' each other, thus spreading toxicant among and between colony members and, over time (dusts do not kill termites immediately), eliminating, or at least suppressing colonies.

It is important to apply a light covering of dust over as many termites as possible whilst minimising the amount of stress and disturbance to the termites. To help achieve this outcome, treatment holes should be sealed with tape after each application. This also helps to preserve crucial temperature and moisture levels inside these workings.

The deployment of 'aggregation containers or stations can also help maximise the number of termites exposed to dust toxicants.

Dusting is not designed as a stand-alone treatment and should not be used as such. Therefore, a preventative termite management system should be installed in conjunction with successful eradication of termite activity from within the structure by the use of termiticidal dust.

Also, to help promote colony decline, Timber Pest Managers should dust termites each time activity is found. This means Timber Pest Managers should regularly check for and monitor termite activity after each dusting treatment and re-apply dust if termite activity is evident.

Importantly, the absence of activity at and around treatment sites does not necessarily mean success. A thorough re-inspection is required to confirm elimination of termite activity in the structure.

The efficacy of termite dusting treatments depends on several factors including:

- the presence of undisturbed and uncontaminated feeding sites identified with live termite activity (termites are easily disturbed and reluctant to venture into areas which seem at all 'suspicious');
- time of year (dusts are more effective during the warmer months of the year when the termites are more active);
- termite numbers (in general, the larger the percentage of colony population treated, the higher chance of colony elimination);
- operator skill (termite dusting is delicate work and requires skills that only come with good training and experience);
- moistness of termite 'workings' (termite galleries and tunnels must be as dry as possible to permit dusts to travel and be distributed as far as possible); and
- to some degree, the termite species involved.

14.2 FOAMING

Specially designed foaming agents contain slow acting, specifically registered termiticides which can be injected under pressure directly into active termite workings.

For foaming to be effective, Timber Pest Managers must, first identify suitable, undisturbed and uncontaminated feeding sites demonstrating ample live termite activity.

Termites that come into direct contact with the toxicant-charged foam, and those that pick up foam/liquid residues using the foamed tunnels, 'groom' each other and spread termiticide among other colony members to either eliminate or suppress the colony.

Termiticidal foams expand under pressure to reach places that other treatments cannot. However, it is important to mix the correct expansion ratio. Generally, wet foams (less than 10 parts 'solid' material to one part water) will not travel and penetrate as far as a dry foam (15 to 30 parts solid to water ratio). **Wet foams also increase the risks of staining walls and wetting floors.**

Foaming is particularly suited for injection into termite workings in trees and landscape timbers.

Foaming is not designed as a stand-alone treatment and should not be used as such. Therefore, a preventative termite management system should be installed in conjunction with successful eradication of termite activity from within the structure by the use of termiticidal foam

As with other treatment methods, it is incumbent on Timber Pest Managers to regularly and frequently monitor termite activity after treatment and re-apply foam if termite activity becomes evident. And, as with other treatments, an absence of apparent termite activity at and around treatment sites does not necessarily mean success.

14.3 BAITING

Termite Baiting and Monitoring systems emerged as an alternative to termiticide soil treatments which require a continuous and consistent application of termiticide to the structural elements of a building to prevent concealed termite ingress. In practice, the need for such a consistent application can be hindered by building design, landscaping, and restricted accessibility

Termite baiting and monitoring systems operate in the opposite way. Instead of trying to prevent concealed ingress from a remote termite colony, baiting and monitoring systems are intended to destroy the attacking colony thus relieving the structure of all termites originating from that colony.

The system does this through the introduction of Insect Growth Regulators (IGR's) to the colony which can be achieved via the use of several key components: above-ground 'termite baits', in-ground 'termite monitors' or preloaded termite monitors – a hybrid of the two.

Both baits and monitors should be used together if a building is found to hold an active infestation. The bait stations are typically the main component used to destroy the infesting termites inside a building while the monitoring system is typically intended to potentially detect and control other termite colonies on the grounds surrounding the structure.

Baiting Above Ground

Above ground baiting involves placing cellulose-rich termite food which has been treated or mixed with palatable, slow acting insect growth regulators (IGRs) into easily accessible containers which, in turn, are positioned (on or above the ground, inside or outside actual building structures) where termites are actively feeding. The bait is introduced into the colony by applying it to an active site where it is hoped that it will be accepted and consumed by the worker castes of the colony and proliferated throughout the colony nest via the natural feeding processes of sub-terranean termites known as trophallaxis.

IGR's are Chitin Synthesis Inhibitors that, once introduced into the colony, effect the normal formation of the termite's exoskeleton and mouth parts, particularly during the various moulting stages. Additionally, the fertility of the Queen is affected and ultimately this results in the collapse of the colony and subsequent elimination of all termites originating from that colony.

Termite baiting has become an invaluable tool to Timber Pest Managers that provides a more environmentally responsible alternative to the use of traditional residual termiticides. However, the system is not without its challenges and should only be undertaken by those with specific knowledge of the termite species being managed, the known effects IGR's have upon the target species and of any seasonal or geographical influences that may impact the baiting process.

Because termites are relatively fussy eaters with very acute senses of taste and smell, it is important that baits are made as palatable as possible (to termites) by ensuring:

- bait is made and kept moist; and
- all bait mixing equipment and hands are clean and free of odours (wearing disposable gloves is recommended).

It is also important that Timber Pest Managers/bait station installers minimise the amount of disturbance when installing the bait stations and introducing/replenishing the bait.

Timber Pest Managers should factor in the need to monitor termite activity regularly after bait stations have been installed and be prepared to replenish baits as and when required.

As with dusting and foaming, an absence of activity or feeding at baiting sites does not necessarily mean success. This means thorough re-inspections of all structures are required to confirm elimination of termite activity in the structures.

The efficacy of above ground baiting treatments depends on several factors, including:

- Timber Pest Managers' abilities to identify and locate undisturbed and uncontaminated feeding sites showing live termite activity;
- time of the year (baiting is faster acting during the warmer months of the year when the termites are more active);
- accurate species identification (currently available baiting products are more effective on some species than others, for instance baiting is generally ineffective for Mastotermes darwiniensis) and often slow working on Nasutitermes and Schedorhinotermes species.
- bait acceptance (termite bait must be consumed in sufficient quantity to result in colony elimination, and the quantity of bait consumed depends on many factors including colony size); and
- bait avoidance (termites may avoid feeding on baits when feeding areas have been excessively disturbed during installation, sites or baits have been contaminated, or, for no apparent reason at all)

Measuring successful colony elimination

The aim of baiting programs is to eliminate termite colonies known to be attacking built structures or

reasonably suspected of having the potential to invade and attack.

In most cases, colonies cannot be located. This means measurements of success, subjective as they may be, can often be made by observing baiting sites.

In general terms, with regular bait station checking, observed bait consumption and the need to replenish bait materials is the first indication of potential success, in that it shows Timber Pest Managers that toxicant is being actively consumed and, in all likelihood, being transferred back to nests or colonies and fed out to other colony members.

Specific measurement observations

One of the benefits of baiting as a reactive measure to a termite infestation is its ability to observe key quantifiable indicators that can be used to confirm colony elimination. Importantly, the following observations may differ depending on the types of system deployed.

Over time, from when baited stations are first deployed, a number of sequential, observable changes and conditions will help indicate if colony elimination is underway or being achieved.

Termite feeding must have been recorded in bait stations and bait must actually have been recorded as being consumed. (Actual amounts of bait consumption will vary between products. Larger amounts of bait will be required for, and eaten by, larger colonies.). As a guide, 200g minimum and often more (large colonies may consume several kilograms of bait).

Bait preference

Some research, and observations by experienced Pest Managers suggest that termites consuming the bait, exhibit a preference for the softer bait matrix over other feeding sites e.g. building timbers. This may become evident by the reduction of termite activity outside of the areas being directly baited.

The bait preference may occur once feeding on the bait by an attacking colony has been achieved and the mode of action of the IGR starts to take effect, typically when termites have moulted and their ability to maintain their exoskeleton may affect the rigidity of their mandibles.

The ratio of soldier caste termites to worker caste termites is recorded as increasing from ratios normally associated with healthy colonies of the same termite species.

- Timber Pest Managers will observe and be able to record visible changes to the colour of termites in the bait stations (worker termites, for instance, which have been affected by IGRs may appear with splotchy uric acid discolouration to their abdomens).
- Timber Pest Managers will be able to observe and record significant behavioural changes, especially among worker termites.
- Sites which have previously shown early effects of bait toxicity, but at the same time, remained active, will be observed to become inactive (as an apparent result of bait consumption.
- Malformed pre-alates will be observed within bait stations.
- Mould and fungus is often evident in baiting stations and other areas of recent termite activity as termites die and deteriorate
- No live termites will be recorded as present in either bait stations or other surrounding structures.

Declaring successful colony elimination

After the important preceding indicators have been met, and no termite activity can be observed, two x one monthly checks of the baiting system stations shall be conducted, as well as a full ‘follow-up’ inspection of the property including all areas of previous termite activity, susceptible buildings and structures which shall be within 3 months of the first clear visit.

If the full ‘follow-up’ inspection still confirms that termite activity has ceased, then successful elimination of the termite colony may then be declared, at the discretion of the Timber Pest Manager, and at this point, preventative termite management measures can be maintained or initiated.

Reporting

The final full inspection of all affected buildings, structures and monitoring points to ensure and advise full control of termite activity, must be supported by a detailed inspection report confirming this.

Together with the final report, Timber Pest Managers must also provide their clients with a ‘Certificate of Treatment’.

Above Ground Bait Installation

One of the most import factors in achieving control of an infestation using termite baits is the availability of an active baiting site. This can be achieved via termite aggregation within in-ground termite monitors, or reactively via the direct installation of above ground bait stations to infested areas in a structure.

When baiting reactively using above ground bait stations, the selection and placement of the bait station is fundamental to the success of the treatment. This can be challenging as termite infestations do not always provide ideal baiting locations. Although a palatable food source, termite bait should not be relied upon to ‘lure’ termites into the bait stations. Instead, the installation should attempt to ‘introduce’ the bait into an already existing feeding site.

To achieve this the following principles should be applied:

- Installation must be in accordance with the product label and specifications
- A full termite inspection (with a report) in compliance with this Code should be undertaken prior to the commencement of a baiting program
- Appropriate baiting sites should be selected from active sites located during the termite inspection.
- The installation of the bait should:
  - Utilise the 'feeding front' of the termite colony as a baiting site. This is the point where the colony is most actively feeding and can be identified by the detectable presence of high moisture (via moisture meter), significant motion (via termite movement radar) and is typically located where termites are most active, with the potential to recruit high numbers of feeding termites, not necessarily the most damaged section
  - A small 'wick' (bait introduced into the termite workings directly in contact with the bait station) should precede the installation of the bait station to encourage termites from their galleries into the bait station
  - Both the installation of the wick and bait station should be done with the least amount of disturbance as possible
  - Gloves should be worn, and installation equipment employed should not be used in other pest management activities to avoid any contamination
  - The bait stations themselves work best when they are impervious to light, are airtight and allow for easy replenishment of bait.
- Once installed, regular services of the bait station(s) and assessment of the site should be maintained. Service frequency will vary dependent upon the species being baited, the season during which the baiting is being undertaken and the geographical location of the building under management however, 2-to-6-week intervals is considered typical
- At all stages, accurate recording of the baiting process is required (see 'Reporting' below)

In-ground Termite Monitors

While termite baiting can be an effective way of controlling an active infestation, it leaves nothing 'residual', so action is required to prevent future reinfestation by another colony. In-ground Termite Monitors (monitors) can be used to compliment a reactive baiting program or as a preventative termite management system.

Termite Monitors attempt to create a more favourable feeding environment than the building under management. This is achieved by placing numerous monitors in the ground around the structure which contain an attractive food source. Once termites have successfully been aggregated within the termite monitors, a termite bait containing an IGR can then be introduced or in the case of pre-loaded termite monitor stations, feeding observed, recorded and replenished.

In-ground Monitor Installation

Typically, in-ground termite monitoring installations require stations to be placed:

- according to manufacturers' label and specifications
- as far as practicable, installed every 3-5 metres
- where appropriate, closely follow the perimeter of the structure, (some manufacturers recommend placement under the dripline of the eaves)
- monitors need to be well bedded with soil tightly packed around the periphery of the monitor. Where organic matter is sparse, potting mix or organic rich soil can be added
- 10-20mm below the soil line ensuring that light and air ingress is limited and moisture is encouraged

Sites most likely to favour termite aggregation include:

- areas close to current or previous termite activity
- garden beds and mulched areas
- areas exposed to rain and moisture (as opposed to undercover and dry areas)

Other installation siting considerations include:

- The need to avoid areas where a chemical treatment zone may have been previously established
- Placing monitors within and amongst concrete and paved area via holes bored through the concrete. Stations designed for these bore holes should be applied.
- The location of pipes and electrical services that might pose a safety risk during installation.
- The necessity to prepare a site plan, marking the number and location of each monitoring station, and the placement.
- The placement of a durable notice.

Once installed, the Monitoring System will require regular and ongoing servicing for the system to remain effective. A 'monitor service' should identify any active termite monitors, where appropriate change or refurbish the lure material and replace or reinstall termite monitors as maintenance requires.

Servicing should comply with the manufacture's instructions and take into consideration the geographical location and its significance on termite pressure and species, the season, and the buildings risk. Typically, servicing is undertaken every 8 – 12 weeks.

If a monitor has aggregated a destructive species of termite to a sufficient manner, the station should be baited. Servicing of the active monitor should then be increased to the same frequency as the above listed 'reactive baiting' service frequency.

Reporting

As successful control of termites using termite baiting and monitoring techniques is based upon a cumulative effect of IGRs, reporting at all stages of termite management is vital. This includes:

- The provision of a 'Proposed Termite Management Plan' in accordance with this Code
- The provision of a 'Certificate of Installation' in accordance with this Code, including installation locations and maps
- A termite 'Service Report' should be produced after each site visit for either 'above ground' bait stations or 'in-ground' termite monitors. The service report should list:
  - the date, site and client details
  - if termites are observed in a baited location and the species
  - where bait has been consumed the quantity should be estimated and any bait replenishment noted
  - observable effects of IGR exposure to the termites recorded
  - new or removed bait stations listed
  - the overall progress of the program
  - and ongoing service frequency noted
- Once Colony elimination is suspected, it should be confirmed via a Standard Visual Termite or Timber Pest Report inspection and report
- A Certificate of Completion can be issued noting the total bait consumed and the ongoing management requirements
- Where a termite monitoring system is present, a 'Termite Monitoring Service Report' should be issued upon each service noting:

- date, site and client details
- if termites are observed in a monitor and the species
- a description of any bait applied, or maintenance undertaken
- the general condition of the system
- ongoing management and service frequency required

Special and notable considerations

While there is always variation, colony elimination can be expected between three to six months from the point of first feeding on termite bait. In some cases however, colony elimination can take considerably longer, especially in parts of Australia with cooler climates or where the termite genus is known to react more gradually to IGR's.

Factors that influence how long it can take to eliminate termite colonies include:

- the termite species,
- the size and number of termite colonies in the area,
- prevailing climatic conditions,
- distance between built structures (properties) and termite nests (which may be up to 100m away),
- presence or absence of disturbances as when termites are disturbed, feeding will often be delayed and may even avoid disturbed areas altogether,
- other nearby activities and events (activities undertaken by neighbours and/or local councils and utilities involving, for instance, tree removal, ground works, service installations, etc), and
- whether or not a chemical treated zone (barrier treatment) has been previously applied (termite feeding may be significantly delayed or disrupted by the effects of residual chemical in soil).

Limitations

Termite baiting and monitoring systems have a long-standing track record of safety and effectiveness as a termite management system. However, as with all termite management systems, baiting or monitoring should not be considered infallible. Termites are a part of the natural world and therefore hold a level of variability, meaning it cannot be assured that the termites will actively feed on bait when introduced to it nor can results always be predictable. Furthermore, buildings may sustain damage while the Timber Pest Manager is attempting to establish feeding by the termite colony.

While termite monitors can be reliable at early interception of termite activity, their efficacy can be affected by many external factors and colony elimination prior to a building sustaining damage cannot be guaranteed.

The success of baiting and monitoring systems depends on Timber Pest Managers carrying out regular, full and detailed checks, termite inspections and on-going system maintenance.

14.4 LIQUID APPLICATIONS

Liquid termiticides registered for direct treatment of termite infestations can be useful, where and when central termite nests have been located. However, central nests are rarely discovered within buildings.

Importantly, direct liquid application to above ground termite activity (not central nests) within buildings must not be performed unless product labels specifically allow such use.

Direct liquid application to economically important termite nests in trees, stumps or posts and where a mound is discovered in close proximity to 'at risk' structures, is often useful in lessening overall termite pressures on properties.

14.5 TREES AND STUMPS

Trees and stumps are favoured nesting sites for several economically important Australian subterranean termite species and therefore, should be regularly inspected for signs of termite activity.

Where active termites are concerned, susceptible trees and stumps should never be overlooked as the source of an infestation. Successfully locating and eliminating a termite colony or colonies in nearby trees or stumps can often stop active termites from damaging the nearby building(s) or structure(s).

Treating termite colonies in trees and stumps is useful in lessening overall termite pressure. When trees are attacked by termites, there are sometimes no tell-tale signs of termites until the tree snaps off and crashes to the ground in high winds. Termite mudding and/or alate flight cuts in the trunk are telltale signs of termites in trees and stumps. Probing or scouring the soil around the base of trees with a long-handled screwdriver or a dedicated soil probe can uncover active termites. However, the best method is to drill and test the tree itself.

Often, a typical arboreal nest situated further up a tree, is connected to another nest in the root crown of the tree via an internal “pipe” or channel and also by termite galleries under the bark and on the outside of the trunk.

Locating the nest

There are several methods for locating termite nests in trees, which can produce mixed results. Sometimes the nest can be missed. A traditional method used to detect termites in a tree is to insert a long piece of grass like paspalum into the drill hole in the base of the trunk when a cavity is found, leave it there for a couple of minutes and then withdraw the grass gently. Termites may grab onto the end of the grass. However, this does not prove there’s a nest in the tree. It’s much more reliable to use a temperature probe.

Temperature probes are used to compare temperatures inside trees to the ambient temperature outside, which helps greatly with locating the centre of a termite colony. There are various models and sizes of temp probes. However, the operational concept is the same.

An established termite nest inside a tree will register temps in the 30c to 38c degree range. At the same time, the outside temperature maybe 16c deg. or 25c deg. and so on. A comparison should be made. The normal temperature inside a healthy tree unaffected by termites, is somewhere between 15c and 25c but can vary considerably with the size and species of the tree, season, weather and geographic location (region). When the appropriate temperature is reached, treatment can then be applied accurately to the centre of the nest.When applying the treatment formulation (termiticide), the product label directions must be followed. Formulations and modes of action vary. There are dusts (both repellent and transferable formulations) registered for termite nest treatment in trees, but success is not guaranteed. Some species produce very wet mudding inside the tree which prevents dust flow throughout the cavity and the nest.

When injecting liquid termiticides into trees, 10 to 20 litres is usually sufficient. However, with large trees over 1 metre in diameter, very large nests may need up to 40 litres or more. A follow-up inspection should be done 2 to 3 months post treatment after the internal temperature of the tree has cooled, to confirm eradication of the nest inside the tree or stump.

Sealing up drill and injection holes

The preferred method is to firstly inject each hole with a registered fungicide, then chisel the timber around the edge of the hole, tap in a length of appropriate sized wooden dowel, fill with wood putty and then paint grafting solution over the top.

This minimises water and borer entry into the holes and reduces the likelihood of fungal and borer damage. The tree’s natural survival mechanism will callus over these areas in time

The procedure above, although preferable, is sometimes not practical. A suitable alternative is to fill the holes with a flexible acrylic (water based) caulking compound, available in cartridges.

Importantly, termite-susceptible trees should not be planted close to buildings.

15. PROTECTION AGAINST TERMITE INFESTATIONS

Deterrent treatments, most often applied as liquid termiticides, are often required as follow-ups to successful curative treatments and can also help protect properties which have thus far avoided termite infestations.

Termiticides in liquid form are often applied to (over or injected into) soil surrounding built structures to help prevent or ward off concealed termite entry which can lead to infestations and attack.

15.1 CHARACTERISTICS AND ATTRIBUTES

Different liquid termiticides and termiticide formulations bring with them different characteristics and attributes that help define their suitability for particular situations.

Repellency

Liquid termiticides are generally classified as being either repellent or non-repellent, based on how termites are observed to behave when they make contact with or detect termiticide-treated soil.

Non-repellent products generally allow termites to enter and forage within treated soils long enough to attain lethal doses of toxicant but generally, not long enough to allow them to make concealed entry into built structures. Termites may survive long enough after contact with a non-repellent termiticide to pass the toxin to other termites in the colony through their normal grooming activity.

Repellent products rely on termites being able to readily sense the presence of termiticides and therefore, avoid entering termiticide treated soil. Repellent products can be suitable when a 'continuous' (no gaps) treated zone under and around built structures can be guaranteed. Importantly, while 'continuous treated zones' (no untreated gaps within the zones) are generally achievable before structures are built, too often, the construction process itself can damage and render such zones ineffective. When considering that the risk of gaps in treated zones increases once structures have been built, non-repellent termiticides are generally recommended for post-construction situations.

Toxicity

All registered termiticides have been independently assessed as providing sufficient termiticidal toxicity to be effective when used and applied according to label directions.

Importantly, all such products have also been independently assessed as having acceptable levels of safety for people and the environment when applied as per label directions.

Longevity

The length of time over which termiticidal products, applied according to label directions, should remain active in the soil is called the 'period of protection'. 'Period of protection' is, by law, stipulated on every product label. However, stated 'periods of protection' may become invalidated by physical and/or environmental factors (see Chapter 5. *Limitations of termite management and termite management systems)*.

Requirement to inform

Under this Code, all licensed Timber Pest Managers are required to know and understand these facts and are also, required to inform and explain how each of these termiticide characteristics and attributes impact on and interact with their clients' particular situations and needs.

It is also incumbent on Timber Pest Manager signatories to this Code that they carefully explain to their clients the importance of and need for at least an annual timber pest (termite) inspection, carried out in accordance with this Code.

Product labels and safety data sheets (SDS)

By law, product labels provide crucial information about almost every aspect of safely and successfully installing termite management treatments.

Product labels, approved by the APVMA, are legal documents that must be read, understood and adhered to.

'Safety Data Sheets' (SDS) contain important, detailed information about chemical products including their physical and chemical properties, toxicity, eco-toxicity, handling and storage requirements, spillage procedures, requirements for 'personal protective equipment' (PPE), and first aid procedures.

Every Timber Pest Manager using or applying an APVMA-registered chemical must carry and be able to provide relevant SDS's on request.

15.2 IMPACT AND IMPLICATIONS OF SOIL TYPE

Soil type and quality have a major impact on achieving successful soil treatment outcomes. Timber Pest Managers should identify and determine the type and nature of any soil they intend to treat before providing clients with termite management proposals.

Where soils are deemed unsuitable for effective soil termiticide treatment, Timber Pest Managers may have to consider (and cost) replacing such soils with more suitable materials. Heavy clay soils, for instance, generally make it difficult, if not impossible, for certain chemicals to become evenly distributed across and within the soil profile and therefore, must be replaced where possible or practical.

Very sandy soils contain minimal organic matter and often allow termiticides to be leached away by heavy rains. It is often advisable to add heavier loams to treatment trenches in sandy soils to help prevent unwarranted leaching.

Often around houses, proposed treatment areas contain layers of rock derivatives such as decomposed granite, blue metal rock, and crusher dust. Where practical, all such rock derivatives should be removed and replaced with suitable soil before treatments are applied.

Where undesirable soils or materials lie under concrete, Timber Pest Managers should explain the limitations imposed by such soils and materials and recommend cutting the concrete to allow soil replacement. If and/or when clients refuse to accept such recommendations, Timber Pest Managers should add an appropriately worded 'limitation to achieving a successful outcome' to affected termite management proposals and ensure clients acknowledge the limitation wording by asking them to sign next to the wording, or confirming by email if more convenient. It is obviously the client's choice whether to sign or not, but if they choose not to, at least the Termite Manager has informed them of the limitations.

Under circumstances where soil amelioration is neither possible, practical nor acceptable, Timber Pest Managers should consider termite baiting and monitoring as an alternative.

15.3 APPLICATION CONSIDERATIONS

Liquid termiticides can be applied to establish either 'horizontal' or 'vertical' 'treated zones'.

Horizontal treated zones are created when termiticides are applied to soil surfaces surrounding buildings along a band designed to deter or prevent termites from gaining vertical concealed entry to buildings. It is recommended that Timber Pest Managers refer to each product's installation manual and product label for more information.

The more commonly adopted vertical treated zone approach requires liquid termiticides to be more deeply incorporated into soils in order to deter or prevent termites from gaining concealed entry to a building horizontally.

The most effective method of creating even and continuous vertical treated zones is to dig continuous trenches around target buildings structural elements and then treat the excavated trenches and soils with termiticide as the trenches are back filled.

Soil injection equipment (rodding) must only be used where trenching and treating back-fill is not possible. Refer to product labels and/or installation manuals for more information.

15.4 TREATED ZONES UNDER EXTERNAL CONCRETE COVERING

When installing horizontal or vertical treated zones under or behind concrete (paths, patios, etc.), suitable equipment should be used to inject termiticide through pre-drilled holes.

Uneven distribution of termiticide can occur when applying by this method, which is why most labels state that the application volume must be increased.

Where soil to be treated lies underneath concrete, Timber Pest Managers should explain the limitations imposed by either injection or failure to treat at all and recommend cutting the concrete and digging and back-filling trenches with treated soil. If clients refuse to accept such recommendations, Timber Pest Managers should add an appropriately worded 'limitation to achieving a successful outcome' to affected termite management proposals and ensure clients acknowledge the limitation wording by asking them to sign next to the wording, or confirming by email if more convenient. It is obviously the client's choice whether to sign or not, but if they choose not to, at least the Termite Manager has informed them of the limitations.

Loose laid pavers must be removed to facilitate trench and treat type applications. Depending upon the height of the pavers in relation to building foundation footings, pavers abutting foundations can be substituted by a shallower layer of decorative pebbles. The client must agree to this obviously.

16. CONSTRUCTION CONSIDERATIONS

Termites gain concealed entry to built structures via gaps, cracks, joints and intersections created during construction.

These potential entry points are found in different locations depending on the varying type**s** of construction. Competent Timber Pest Managers who understand the principals of construction will not only know where termites are more likely to be found but also where to concentrate treatment activities to eliminate or prevent future termite activity.

16.1 SUSPENDED FLOOR CONSTRUCTION

Where floors are suspended above the ground by posts, poles, stumps, foundation walls or piers, access to sub-floor areas is vital to the success and effectiveness of any termite management program.

Sub-floors with less than 400mm clearance from the lowest structural floor member are considered inaccessible.

If possible, and acceptable to clients, holes should be cut through floors to allow sufficient access to at least inspect and apply a continuous where possible, horizontal termiticide treated zone to the soil surface, after scarifying the soil where practical If this is not possible, a 'limitation to achieving a successful outcome' should be added to all so-affected termite management proposals and ensure clients acknowledge the limitation wording by asking them to sign next to the wording. It is obviously the client's choice whether to sign or not, but if they choose not to, at least the Termite Manager has informed them of the limitations.

Sub-floor areas with more than 400mm clearance must have vertical treated zones installed around each point where buildings and building sub-structures touch the ground. If supporting members are timber piers or poles, each pier or pole must be drilled and internally checked for termite activity.

Timber Pest Managers should consider whether sub-floor ventilation is adequate to avoid and/or prevent inappropriate moisture build up which may attract termites. Where sub-floor ventilation is inadequate,

Timber Pest Managers should recommend structural amendments to improve air flow. If clients refuse to accept such recommendations, Timber Pest Managers should add an appropriately worded 'limitation to achieving a successful outcome' to affected termite management proposals and ensure clients acknowledge the limitation wording by asking them to sign next to the wording. It is obviously the client's choice whether to sign or not, but if they choose not to, at least the Termite Manager has informed them of the limitations.

16.2 SLAB-ON-GROUND CONSTRUCTION

Slab-on-ground construction involves pouring a concrete slab poured directly on top of the soil (or other introduced substrate like sand) surface with no sub-floor area. Among the many and varied methods of slab-on-ground construction are:

Slab-on-strip footings

- Concrete footing foundations, positioned below where load-bearing walls will be built, are poured before actual slabs are poured.
- These footing foundations spread the weight of built structures over a larger area for greater stability.
- Potential concealed termite entry points may occur where footings meet slabs (especially if strip foundations have not been properly cleaned off before pouring the slabs), and also around service pipes which penetrate through slabs.

Monolithic slabs

Monolithic slabs are similar to slab-on-strip footings except that the slabs and supports for load bearing walls (thickening beams) are poured at the same time.

If slabs have been constructed in accordance with Australian Standards - AS 2870-2011 - Residential slabs and footings or AS 3600-2009 - Concrete structures, to lessen the chance of cracking, the only concealed termite entry points are likely to be around service pipes penetrating through the slabs and expansion joints and concealed or obscured foundation slab edges

Infill slabs

With infill slabs, external walls are partially constructed to act as form work and the slabs are poured inside.

In terms of termite risk, this design is more problematical in that slabs often shrink around the outside, leaving a gap for termites to get through. In many cases, these gaps can be hidden by internal walls, carpets, skirtings, etc, thus providing termites with concealed access directly to the inside of the building.

Also, infill slabs are often filled with soil and other material underneath to build the height of the floor above the natural ground level. This is sometimes not compacted properly leaving voids under the slabs which are difficult to successfully treat.

To provide preventative protection, infill slabs generally require internal drilling and injecting as well as supplementary external perimeter treatments.

Waffle pod slabs

Waffle pod slabs are a relatively new design involving polystyrene or plastic boxes (pods) laid out (with gaps between each pod) on level ground and the slabs poured over the top and in between the pods.

Waffle pods are particularly challenging for Timber Pest Managers as termites seem to enjoy attacking and residing within the polystyrene pods, where they are effectively protected from treatment by even the best Timber Pest Managers. Waffle pod slabs are even more challenging because they are prone to cracking, particularly around step downs and pipe penetrations.

Termite baiting systems may be the best approach to providing adequate protection for this type of construction.

16.3 JOINS AND CRACKS IN SLABS

Concrete slabs-on-ground can themselves, form at least part of a termite management system. Importantly, however, slabs need to have been constructed in accordance with the National Construction Code (NCC) and Australian Standards, to lessen the chance of cracks forming and allowing concealed termite entry.

Barriers or deterrents to concealed termite entry are, however, often compromised where:

- two slabs are joined;
- there are 'step downs' to accommodate changes in slab levels;
- extensions are added to existing slabs; and
- pipes and other penetrations extend (as the, inevitably always do) through slabs.

Where possible, Timber Pest Managers should make every possible attempt to identify these potential concealed entry points and clearly identify and consider them when writing termite management proposals.

16.4 BUILDING FRAMES

The design and methods by which wall and roofing frames are constructed are both important in helping Timber Pest Managers decide where to concentrate treatment activities to eliminate or prevent future termite activity.

Designs and types of building frames are as many as they are varied.

Brick veneer and timber frame constructions

Buildings constructed using timber frames are not only clad externally with a veneer of bricks but can also involve weatherboard, cement sheeting and sheet metal cladding.

Most internal walls in buildings designed around timber framing are usually clad with plasterboard or timber.

Once termites gain access to such buildings they often follow timber 'bottom plates' to quickly move undetected around and throughout the built structures, including up into large dimensional window lintels, inter-floor areas and roof cavities, in order to locate and exploit suitable and desirable food source. That is why internal wall claddings should often be drilled or even removed to allow thorough inspection and treatment. This is an 'invasive' inspection.

Full brick (including cavity brick and double brick) constructions

In the case of 'full brick' buildings, both the external and internal walls are brick and mortar based. However, there will always be a cavity between the brick walls which can allow termites to move undetected throughout the building.

Inspection of and treatments for these types of buildings can be most challenging.

Concrete block constructions

Concrete blocks are, generally, much stronger than brick and, generally, are laid as single skin walls that often serve as both the external and internal surfaces.

However, internal surfaces may sometimes be lined with a sheeting material. This is sometimes attached to timber framing (battens) behind the sheeting.

If the voids inside the blocks are carefully filled with concrete at the time of construction, termites will not be able to move internally between blocks. However, if blocks are not filled or poorly filled, termites can have concealed entry to roofing timbers and then other areas of block-based buildings which are inherently difficult to inspect and treat.

Termite resistant frames

Wall and roof framing materials can have a major impact on the potential severity damage caused by termites.If frames are constructed using termite resistant material, building damage is generally confined to non-structural elements such as window & door frames, architraves and mouldings, timber flooring, timber cabinetry, plasterboard and other cellulose based materials.

Some timbers are naturally termite resistant, and others may be treated to prevent termite attack. Such resistance will not, however, necessarily ensure that termite damage will not be structurally significant. For instance, high moisture and humidity levels in termite workings can potentially lead to corrosion in structural metals which, over time, can lead to structural integrity being compromised.

Termite resistant building frame materials include:

- masonry (concrete, brick, etc.)
- preservative-treated timber
- naturally resistant timber
- metal (usually galvanised steel)

16.5 REPLENISHMENT ('RETICULATION') TERMITE MANAGEMENT SYSTEMS

Reticulation termite management systems, which may be installed during the early stages of construction or sometime after construction has been completed, generally comprise a network of underground pipes designed to distribute liquid termiticide evenly through the soil around and under buildings.

While reticulated systems are generally more time consuming and expensive to install, they allow for the future refurbishing and reactivation of treated zones without the need to excavate a trench, drill through concrete or lift pavers etc.

16.6 BRIDGING AND BREACHING

Protective termiticide-treated zones are breached when one or more objects form 'bridges' between buildings and any ground outside treated zones (termed bridging) or where a gap in the treated zones exists. that termites can exploit (termed breaching).

Common examples of how breaching or bridging can be caused or can occur include:

- building extensions
- add-ons such as carports, verandas and decking
- garden and pool sheds
- raised garden beds set against buildings
- concrete paths installed against buildings
- fences attached to or secured against buildings
- retaining walls and landscaping set against or in contact with buildings
- large trees which have grown sufficiently to touch buildings
- even materials (think firewood) stored or stacked against building walls

Termiticide treated zones can also be breached when and if they are disturbed or broken which can allow a free passage for termite entry. Such disturbances can be caused by the installation of underground cables, repairs to external plumbing, and incursion of tree roots.

It is important that clients are made fully aware of:

- the potential for their termite treatments to be bridged and breached
- how they can and should best avoid and prevent breaches occurring
- the need to urgently contact their Timber Pest Managers for advice and possible remedial action if their treated zones are in any way disturbed or otherwise compromised

16.7 PERIODS OF PROTECTION AND WARRANTIES

Products

The minimum length of time over which termite management products should provide protection against concealed termite entry is called the “Period of Protection” and is stipulated on each product label.

Some products have different periods of protection applicable to different geographical areas and regions to accommodate climate and environmental impacts on product longevity.

All products, however, must be registered with the APVMA and used in accordance with their labels.

By law, termiticide manufacturers must provide warranties that their products are ‘fit for purpose’ according to product specifications. If products fall outside those specifications, manufacturers must, at least, provide replacement products. Manufacturers are not, however, held responsible for how products are applied.

Treatment services

Timber Pest Managers, who are responsible for how inspections are carried out and how products and other treatments are applied, may offer ‘service warranties’ which extend for a set period of time (usually 12 months).

If any issues occur during service warranty periods, Timber Pest Managers are obliged to investigate.

Fees for any required or recommended rectification work may be quoted depending on the results of any investigation.

Most service warranties are conditional upon regular (at least 12 monthly) timber pest/termite inspections being carried out, after which Timber Pest Managers may reissue new service warranties.

The offer of any service warranty is usually dependent on both the full disclosure and client acceptance of treatment limitations, site access, and other site factors noted in writing as impacting or potentially impacting on warranted services.

Some manufacturers and Timber Pest Managers also offer overarching warranties and guarantees. It is also possible, at a cost, for clients to obtain insurance cover for termite damage. Such additional warranties, guarantees, and coverage should be assessed on an individual basis.

16.8 GROUNDS AND SURROUNDS

Under this Code, termite management is not just about buildings. Timber pest/termite inspections and/or termite treatment should also focus on areas in the immediate vicinity of buildings such as:

Landscaping and gardens

Gardens usually contain mulch, are wetter than surrounding soil, and often contain smart irrigation systems and timber- based landscaping materials such as bark chip in various states of decay. All this makes them relatively attractive to termites.

Gardens and landscaping timbers should be kept away from buildings. Special care should be taken to ensure gardens and garden materials are kept well away from 'weep holes' (vertical joints between bricks close to ground level that are left open to allow any moisture to escape outside the house) and sub-floor air-flow vents in foundation walls, both of which may provide termites with concealed access to buildings.

Trees and stumps

Trees and stumps are favoured nesting sites for several economically important Australian subterranean termite species and therefore, should be regularly inspected for signs of termite activity.

Where active termites are concerned, susceptible trees and stumps should never be overlooked as the source of an infestation. Successfully locating and eliminating a termite colony or colonies in nearby trees or stumps can often stop active termites from damaging the nearby building(s) or structure(s).

Treating termite colonies in trees and stumps is useful in lessening overall termite pressure. When trees are attacked by termites, there are sometimes no telltale signs of termites until the tree snaps off and crashes to the ground in high winds. Termite mudding and/or alate flight cuts in the trunk are telltale signs of termites in trees and stumps. Probing or scouring the soil around the base of trees with a long-handled screwdriver or a dedicated soil probe can uncover active termites. However, the best method is to drill and test the tree itself.

Often, a typical arboreal nest situated further up a tree, is connected to another nest in the root crown of the tree via an internal "pipe" or channel and by termite galleries under the bark and on the outside of the trunk. For detailed advice on treatment of trees and stumps, refer to Section 14.5.

Importantly, termite-susceptible trees should not be planted close to buildings

Fencing

Timber fencing should be inspected, and any termite activity treated accordingly. Points where fences touch building**s** should be thoroughly inspected. Decayed fencing timbers should be replaced.

16.9 PHYSICAL TERMITE MANAGEMENT SYSTEMS

Physical termite management systems (often referred to as physical barriers) are, most often, installed during building construction. Physical systems which have been retrofitted to existing buildings are a relative rarity, although some systems installed during construction may require repairs down the track.

Typical physical termite management systems include chemically impregnated blankets; termiticide - based sealants; stainless steel mesh; and crushed granite.

Physical systems do not stop termites from entering buildings. Rather, they are designed and purpose built to prevent concealed termite access. This is why regular termite inspections are essential to ensuring building and structural protection.

In many cases, and for varying reasons and risk factors, Timber Pest Managers will recommend that physical systems be supplemented and/or complemented by additional (for instance, liquid chemical or monitoring and baiting) termite management measures.

For additional information on Physical Termite Management Systems please seek consultation from an AEPMA member or refer to ***AEPMA's Code of Best Practice for Termite Management During Constructions***.

16.10 FUTURE INNOVATIONS IN TERMITE MANAGEMENT

Major research and development undertakings by companies and organisations in Australia and around the world are likely to result in an exciting range of new termite management and other pest management products, technologies and application techniques.

Importantly, for the health and safety of consumers, Timber Pest Managers and the environment, all such products will be required to be thoroughly trialled and tested and, assuming they pass such testing, be submitted for registration by the APVMA and/or satisfy requirements of *AS3660.3-2014 Termite management - Assessment criteria for termite management systems.*

17 Termite Management Recording

Records of termite management

Under this Code, Timber Pest Managers must provide their clients or their agents with comprehensive '*Records of Termite Management'* at each stage of any termite management process.

Timber Pest Managers should also retain copies of all termite management records.

Appendix C provides a comprehensive list of information required to appear on all records of termite management.

Durable notices

As well as records of termite management, Timber Pest Managers must also ensure they prepare a 'durable notice' attesting that timber pest/termite inspections and termite management treatments have been carried out. Such durable notices must be permanently fixed to buildings in both secure and prominent locations, such as electricity meter boxes.

Appendix C also provides a detailed list of information required to appear on each 'durable notice'.

Durable notices should be clearly written, on and using materials that will not deteriorate or fade over time, so they can be easily accessed and read by future building owners and/or occupiers.

18 Termite Risk Management

Reducing termite risk

Regular maintenance and inspections are essential elements in cost-effectively reducing the risk of termite entry into buildings and the resulting damage..

To protect their building from termites, building owners and managers should:

- Ensure their buildings are inspected at least annually by suitably qualified and licensed timber pest inspectors (more frequent inspections may be required in high-risk areas).

- Take care not to compromise (by bridging or breaching) existing or recently installed termite management systems.
- Fix water leaks in and around buildings, paying special attention to drainage points for air- conditioning and hot water systems, ensuring drainage is piped/diverted well away from any built structures.
- Remove loose cellulose material, especially timber lying on the ground.
- Ensure there is adequate ventilation available to all sub-floor areas and that ventilation vents are kept clear.
- Ensure gardens, paths, pavers etc, are kept well below the height of finished internal flooring.
- Generally, follow specific recommendations from professional Timber Pest Managers.

19 FEES

The AEPMA Codes of Industry Best Practice are freely available to everyone to access, view or download from the AEPMA website.

In order to become Signatories to this code and thus, promote their businesses as such, timber pest managers need to be accredited by successfully completing the dedicated online training module and assessment supporting this code of best practice and then sign the appropriate code agreement undertaking that they will conduct their business dealings with integrity and professionalism and in accordance with this code when providing timber pest services to their clientele.

Once accredited, the Timber Pest Managers/code signatories will then be added to the Register of AEPMA Approved Code Accredited Termite Management Specialists listed on the AEPMA website

Accreditation fees vary according to member or non-member status, but as a guide, the fee for training and accreditation for this Termite Management Code of Industry Best Practice for AEPMA members is $125 inc. GST . per person.

Accreditation fees for non AEPMA members are higher than those payable by AEPMA members, because the Administration Committee must carry out a more extensive review of the application for participation in this Code.

Fees will be reviewed annually and can be varied from year to year at the discretion of the Administration Committee. Should this position change, AEPMA members and other Code Signatories will be notified within 14 days of the decision being made to change the fee structure."

20 CODE TRAINING

The Administrative Committee is responsible for determining the required level of training for Accreditation under this Code. It holds the authority to revoke the accreditation of any company or individual who fails to meet these training requirements and, as a result, to remove their listing from the Register of Code-Accredited Termite Management Specialists and Termite System Installers published on the AEPMA website.

Annually, the Administrative Committee will elect a Training Committee, consisting of a minimum of three and up to a maximum of five members. The Training Committee will:

a. Ensure pest management company employees who install or inspect installations associated with the Code are adequately trained and accredited to undertake and perform the tasks contained in the Code.

b) Undertake/organise/approve ~~of~~ training courses to ensure employees are adequately trained.

c) Establish with firms/companies who seek accreditation to the Code, an appropriate and ongoing training program to ensure ongoing continuous improvement of services provided to the public and other stakeholders.

d) Have the sole discretion to determine whether a company/firm has adequately trained personnel to satisfy delivery of the Code.

e) Ensure that unless personnel are appropriately trained, a firm/company/individual is not accredited to the Code.

The decision of the Training Committee shall be final.

GLOSSARY

AEPMA	The Australian Environmental Pest Managers Association Limited. AEPMA is the national peak body for professional Timber Pest Managers including specialists in timber pest detection, assessment and management in Australia.
APVMA	The Australian Pesticides and Veterinary Medicines Authority is the Australian Government regulator of agricultural and veterinary (Agvet) chemical products, including insecticides and other pesticides. For an Agvet chemical product to be legally manufactured, imported, supplied, sold or used in Australia, it must be registered by the APVMA, unless exempt by the Agvet Code.
Best Practice	A 'best practice' is a method or technique that has been generally accepted as superior to any alternatives because it produces results that are superior to those achieved by other means or because it has become a preferred or 'superior' way of doing things: for instance, a 'superior' standard way of complying with legal or ethical requirements. Best practices may be used to maintain quality as an alternative to mandatory legislated standards and can be based on self-assessment or benchmarking. Best practice is a feature of accredited management standards such as ISO 9000 and ISO 14001.
building (built) environment	The environment surrounding, beneath, and above a building—including air, water, soil, vegetation, nearby structures, materials, and other life forms—as well as the interactions and impacts these elements have on one another
building owners and managers	People or entities that either own or have primary responsibility for managing buildings on behalf of owners who commission, contract out, and pay for building-related services, including professional pest management.
built structure	A building or other structure built by a person or people.
cellulose	A structural organic compound on which termites feed. Cellulose is normally found in plant based products in the form of timber, paper and cardboard.
chitin synthesis inhibitors (CSIs)	CSIs (Chitin Synthesis Inhibitors) are either formulated or naturally occurring chemicals that interfere with the normal development of the exoskeleton (cuticle) in arthropods, including insects. They are a type of Insect Growth Regulator (IGR

client(s)	A client is a person for whom or entity for which termite management services are undertaken by professional Timber Pest Managers. Clients may either own buildings or properties or manage them on behalf of owners.
Code of Practice (pest management industry) (CoP)	This document, commissioned by AEPMA on behalf of the Australian professional pest management industry, outlines prescriptive requirements for best practice and provides guidance on how such practices should be implemented and delivered
Compliance (with Code of Practice)	A signed agreement confirming commitment to observe and comply with all requirements and stipulations of the Code, serving as formal proof of intent to uphold its provisions
concealed access (unobserved/unobservable access)	Terms used to describe the situation where termites gain or can gain entry into a building without such entry being able to be easily or readily seen by trained and experienced pest inspectors and/or Timber Pest Managers.
conducive conditions	Specific conditions known to be favoured and sought out by and attractive to termites. Termites are most likely to be found during inspections in areas and situations where environmental conditions are 'conducive' to their foraging behaviour.
DAWR	Department of Agriculture and Water Resources
economically important termites/termite species	Species of subterranean termites that have the potential to cause significant damage to a structure or building. A list is available in Item 8.4 of the Code
floor coverings	Materials used to cover the floor structures. Floor coverings may include carpet, linoleum, tiles, or floating timber flooring.
inaccessible voids	Floor, subfloor, inter-floor, roof or wall spaces to or through which a timber pest inspector may not be able or reasonably expected to gain access to carry out an inspection.
insect growth regulator (IGR)	A (typically synthetic) organic pesticide that imitates natural insect hormones, disrupting the normal development of exposed insects and preventing them from reaching maturity. This disruption results in death prior to adulthood. The two most common forms used in pest management are Chitin Synthesis Inhibitors (CSIs) and Juvenile Hormone Analogues (JHAs)
inspection zone	A band generally at least 25mm, and typically 75mm high or wide, constructed or applied around a building perimeter or subfloor member over which termites must travel over to reach susceptible timbers and building interiors. Example is a concrete foundation slab edge Termites which bridge inspection zones should leave readily visible traces, such as mudding.

inspections/regular inspections	Under this Code of Practice, inspections for evidence of termite attack and/or to determine the risk of concealed termite entry are required to be carried out by adequately and certifiably trained, qualified and experienced timber pest inspectors. Timber pest inspectors may also be (and often are) licensed, suitably qualified, professional Timber Pest Managers. There are several 'types' of inspections based on objectives and frequency.
installation	The process of laying out, positioning, fitting, securing, finishing off, checking and, if required, testing termite management systems.
insurance cover/appropriate insurance cover	Professional Timber Pest Managers and Timber Pest Inspectors are required under this Code to acquire sufficient insurance cover to protect both themselves and their clients in the event of misadventure, mishap, or underperformance. All AEPMA members are required to carry adequate professional indemnity and public liability insurance.
IPM (Integrated Pest Management)	Integrated Pest Management is a multidisciplinary approach to pest management with the main aim being to maximise the control of insect infestations by the use of multiple methods, products, technologies with input from different stakeholders. IPM is based on the proper identification of the pest, knowledge of the pest's ecology, non-chemical means of control and the judicious use of insecticides.
juvenile hormone analogue (JHA)	Juvenile hormone analogue (JHA) is a synthetic insect growth regulator (IGR) which disrupts normal growth and development of the immature stages of insects.
life span	The period over which a system or technology continues to function appropriately and adequately (when used in relation to termite management products, systems and components).
limitations	The functionality of termite management systems can be limited (affected and even compromised or destroyed) by events or actions surrounding their installation or which take place after their installation. Under this Code of Practice, such limitations must be understood by and communicated to all stakeholders before, during or after system installation.
manufacturers' guidelines	Installation, monitoring and maintenance guidelines and instructions provided by termite management system manufacturers.
mud tunnels (mudding, mud leads, shelter tubes)	Subterranean termites generally construct 'mud' tunnels/'mud leads' or 'galleries' that allow them to travel over obstacles and surfaces while remaining protected from the outside environment. These are typically constructed from a 'mud like' material of soil, faeces and re-worked building materials.

national competency standards	National industry-specific standards prescribing minimum knowledge and skill levels for individuals wishing to prove competency in specified roles or tasks within specific industries, trades or professions (http://training.gov.au).
new building	A building constructed 'from the ground up' prior to being occupied.
obstructed/unobstructed	The degree to which one or more potential termite access points can be easily seen and observed by timber pest inspectors or others. If the view of a particular area or building component is obstructed, termites may gain concealed access through that area.
occupants	Persons present within a property. This may include tenants, and where properties are used to provide services, business personnel and clients.
pest management industry ('industry')	All facets, including people and businesses, of professional pest management including: professional Timber Pest Managers (individuals and professional pest management companies and partnerships); manufacturers, retailers and distributors of pest management materials and technologies; and specialist consultants, researchers, and advisors.
Timber Pest Manager	A person licensed to undertake pest management services under relevant state legislation, and who is qualified to undertake termite treatments. Note that this name varies across the country with the different State legislative 'Acts'.
PestCert	The Australian accreditation body for Timber Pest Managers (see www.aepma.com.au for more information).
pesticide	Chemical or biological substance or mixture of substances used directly or indirectly for controlling, preventing, destroying, repelling or inhibiting pests.
plant pest	Plant pests are a disease causing organisms or invertebrates which attack or threaten agricultural production, forestry or native and amenity plants.
PPE	Personal protective equipment.
product label	Product specific document, normally attached or affixed to its relevant product container, that defines how products should be handled and used in accordance with approval by the APVMA.
Professional Timber Pest Managers/pest management professionals	Professional Timber Pest Managers who are trained, experienced and qualified to carry out a range of pest management services for property owners (private and public) on a fee-for-service basis. Professional Timber Pest Managers who are members of AEPMA maintain professional liability insurance cover and are bound by AEPMA's Code of Ethics.

Property Manager	A person or entity who manages a tenanted property. It is often a Property Manager who arranges access for Timber Pest Inspectors to inspect tenanted properties. Property Managers only rarely actually sell properties.
recommended service and inspection schedule	Termite system manufacturers' recommendations as to how often prescribed services to and inspections of systems need to be carried out (for at least 50 years) for system integrity and functionality to be maintained and manufacturers' warranties to be upheld.
registered/currently registered	Pesticidal products that are approved and registered by the Agricultural Pesticides and Veterinary Medicines Authority (APVMA) for use according to their label directions.
regulatory bodies/regulators	Government (federal, state and local) agencies and their employees/officers responsible for developing, communicating and enforcing rules, regulations, and both mandatory and non-mandatory standards, processes and procedures.
registered training organisation (RTO)	Organisation in charge of the Workplace Trainer and Assessor and issue the qualification or Statement of completion of the achieved competency units
SDS/MSDS	Safety data sheet/Material safety data sheet.
stakeholders	For the purpose of this Code of Practice, a stakeholder is any person or entity with an interest, vested or otherwise, in the property, or involvement in the design, installation, and functionality of termite management systems.
strip shield	A sheet of material – most commonly a corrosion-resistant metal - impervious to termite entry, which is placed between building members to prevent concealed termite access, and therefore, force termites out to the edges of the sheet to render termite entry or entry attempts visible. A common form of strip shield is the long established ant cap commonly installed on the top of foundations walls and piers.
structural elements	Components of a building which support vertical and horizontal function, integrity and non-structural elements.
structural frames	Strong framework made, generally, from concrete, timber or steel, which directly or indirectly, supports all other building components, including flooring, internal and external cladding, and roofing, as well as various fittings and conduits.
structural significance	A term used to indicate that damage affects the performance of affected members.

subterranean termites	Termites which normally attack structures from the ground, thrive in soil and need a constant moisture source (usually from the ground). While subterranean termites can establish colonies within buildings, the majority come from remote colonies built under or nearby under the ground or in trees and tree stumps.
system maintenance	On-going inspection, checking, and/or replenishment to ensure continued system integrity and that termites have not breached or bridged the system and gained entry into the building.
termite damage	Degradation that can be directly attributed to termite attack.
termite management	The management of: • all aspects of termite behaviour, termite environments, termite colony function and development • all aspects of buildings and materials which can be potentially attacked by termites in order to minimise the risk of attack and damage caused by termites.
termite management system	A system of treatment that prevents, deters, monitors for, detects, controls and/or eliminates termites gaining entry into a building. The term, 'termite barrier' was previously used to describe certain elements of termite management systems but is now regarded and accepted as being deceptive and outdated as they do not necessarily stop termite entry into structures.
termite management systems for new buildings (buildings under construction)	One or a combination of systems designed and approved to be installed during the building process to prevent concealed entry of termites into a building.
termite risk	The risk of termite incursion and attack as affected by types and species of termites present, likely proximity of termites to a building, a building's environment (including temperature and humidity), presence or absence of hidden or observable/visible termite access opportunities, and the amount and type (attractiveness) of termite food and water available.
termites	Highly specialised insects that live in colonies and feed on (gain their energy from), in the main, plant fibre carbohydrate (cellulose). Termites also require adequate water to survive and thrive. For the purpose of this Code, the term 'termites' refers specifically to subterranean termites. Termites belong to the epifamily Termitoidae within the Order Blattodea.
termiticide	A pesticide or pesticide treated article, element or substance used for controlling, preventing, destroying, repelling or inhibiting termites.
timber	For the purpose of this Code, timber is wood which has been derived from trees, then dried and processed for use in construction.

timber formwork	Temporary framing used during building construction to support concrete while it sets and cures. Timber pests can sometimes gain access to built structures via timber formwork during construction or post-construction if the formwork is not removed once its job is done. Timber formwork is often in direct with ground and/or soil.
timber in service (in service timber(s))	Timber or timber products used in or as building elements or structural elements of a building or a structure.
timber pest	Economically significant termites, borers, decay-causing fungi and some airborne pollutants which may attack and degrade seasoned timber in service
timber pest inspector (specialist timber pest inspector)	An appropriately qualified person who carries out specialist timber pest inspections. Under this Code, specialist timber pest inspectors must be adequately qualified, trained and experienced in timber pest inspection conduct and reporting.
trades (personnel)	Employed and subcontracted tradespeople including: bricklayers, stonemasons, carpenters, electricians, plumbers and gasfitters, tilers, painters, plasterers, and builders' labourers.
units of competency	Individual, industry-specific elements of the National Competency Standards. A unit of competency defines the minimum knowledge and skill levels required by an individual to be competent at performing a specific task or role. See http://www.training.gov.au
vendor	A person or entity that sells a property.
wall linings	Cladding or coverings which conceal wall structures.
warranty/warranty provisions	In contract law, a warranty has various meanings but generally means a guarantee or promise which provides assurance by one party to another party that specific facts or conditions are true or will happen. This factual guarantee may be enforced which allows for a legal remedy if that promise is not true or followed. Although a warranty is, in its simplest form, an element of a contract, some warranties run with a product so that a manufacturer makes the warranty to a consumer with which the manufacturer has no direct contractual relationship. A warranty may be express or implied, depending on whether the warranty is explicitly provided (typically written) and the jurisdiction. Warranties may also state that a particular fact is true at one point in time or that the fact will continue into the future.
whole-of-building	All parts of a building, including both structural and non-structural elements, including contents, furnishings, cladding, fixtures and fittings.

working party(ies)	Group(s) of individuals from, attached to or affiliated with the Australian professional pest management industry, who have volunteered to develop, design and write pest management industry Codes of Practice.

REFERENCES

Abe T, Bignell D and Higashi M (2000). Termites: Evolution, Sociality, Symbiosis, Ecology.

AEPMA (2021). A Code of Practice for Prior to Purchase Timber Pest Inspections. 4th edition. www.aepma.com.au/Codes-of-Pactice

AEPMA (2016). A Code of Practice for Termite Management during New Constructions.

Gerozisis J, Hadlington P & Staunton I (2008). Urban pest management in Australia. 5th Edition. University of New South Wales Press, Sydney, 326 pp.

Peters BC, King J and Wylie FR. (1996) Pests of Timber in Queensland. Queensland Forestry Research Institute, Department of Primary Industries, Brisbane, 175 pp.

Hadlington P and Staunton I (2008). Australian Termites. 3rd edition.

Standards Australia *AS 1604 - Specification of preservative timber* series. Australian Standard, distributed by SAI Global Limited. www.saiglobal.com

Standards Australia (2014) AS 3660.1: 2014 Termite Management - Part 1: New Building Work. Australian Standard, distributed by SAI Global Limited. www.saiglobal.com

Standards Australia (2014) AS 3660.2: 2000 Termite management - Part 2: Termite management in and around existing buildings and structures. Australian Standard, distributed by SAI Global Limited. www.saiglobal.com

Standards Australia (2014) AS 3660.3: 2014 Termite management - Part 3: Assessment criteria for termite management systems. Australian Standard, distributed by SAI Global Limited. www.saiglobal.com

Standards Australia (2010) AS 4349.3: 2010 Inspection of Buildings - Timber Pest Inspections. Australian Standard, distributed by SAI Global Limited. www.saiglobal.com

Standards Australia *AS/ ISO 10002-2006* Australian Standard on Complaints Handling – Customer Satisfaction, Guidelines for Complaints Handling in organisations.

APPENDIX A: TERMITES AND TERMITE BIOLOGY

Introduction

Termites have lived on Earth for at least 120 million years.

Approximately 70 percent of the Earth's land surface contains at least one of the 2,600 species in 281 genera discovered thus far.

Termites consume cellulose, in one form or another, and play a crucial role in nutrient cycling and helping improve soil structure through the decomposition of wood and plant debris.

Termites only become 'pests' when they attack or threaten structural or other timber in the 'built environment' or damage crops and other materials significant to humans.

Australia is home to five families of termites. Those five families are made up of around 30 genera and, among these, approximately 350 species.

Only 30 Australian termite species are known to attack timber important to humans. The remainder are either soil debris or grass feeders.

Importantly, however, the 30 'pest' species account for an annual bill of about $1 billion in damage and treatment costs in mainland Australia.

Termite Colonies

Unlike many other insects, termites live together in communal nests and divide tasks among themselves for the benefit of the community as a whole. This is why they are often described as 'social insects'.

Castes

In each colony, there are three main tasks which different colony members perform:

- working (gathering, processing and distributing food, colony structural development and maintenance, and care for the needs, nurturing, hygiene and development of other caste members);
- defending (protecting colonies from outside attackers and influences); and
- reproduction (producing new termites and expanding the spread of the species).

Each task falls to a different termite 'caste': workers, soldiers and reproductive**, a**nd each caste has a specialised body shape and behaviour pattern to enable caste members to perform their required tasks.

Workers

Workers (all wingless, sterile and blind) construct and repair nest and galleries, tend the eggs and young, forage for food and feed the rest of the colony.

In more recently evolved termite species**,** however, workers are called helpers or pseudergates (helpers with wing buds). Primitive species workers can either remain workers or, (given the right hormones) can be 'switched over' to become soldiers (defenders) or even reproductives if required.

Worker termites are responsible for the majority of damage to properties.

Soldiers

Soldiers are easily distinguished from other castes by their heads, which are generally larger, thicker and coloured. They too are wingless, sterile and blind.

Because their mandibles are so specialised for defensive duties, soldiers must be fed by the workers or helpers.

The primary function of the soldier is to defend the colony against predators such as ants. However, they have been known to explore new areas for food and recruit workers to newly discovered resources.

Termite soldiers rely on chemical as well as physical weapons. Some soldiers bite or hit their attacker whilst others spray or inject a poison or deterrent substance. Some have strongly built heads, which may be used as plugs to seal the nest from predators. The soldier caste is the most distinctive and is often used to identify particular species.

Reproductives

Members of the reproductive or alate caste are the potential kings and queens of new colonies.

Reproductives have eyes, reproductive capabilities and wings for flight. They usually leave the colony (swarm) through the summer months, often via specially constructed and well protected exits (called flight cuts).

Alates tend to mainly swarm in high humidity conditions. They are attracted to lights at night and are commonly found in spider webs which are a useful spot for Timber Pest Managers to inspect.

After swarming, alates 'drop' their wings and search for a suitable mate and then begin building a new colony (only a small percentage live long enough to get to this stage).

The original mating pair is the new king and queen. The king remains a similar size after mating, however the queen (after the colony reaches a certain size) becomes an immobile egg laying machine (physogastric) which in some more recently evolved species, is capable of laying up to an incredible 80,000 eggs a day.

Nests

Termites are social insects which build and live in centralised colonies.

Nests are critical to colony survival as they form effective climate chambers which maintain temperature and humidity within critical limits.

Termites maintain nest temperatures around 30^{o}C to 34^{o}C and relative humidity around 80%.

Nests also provide a defence against predators such as ants and birds.

Nests can be an important store of food**,** and some termite species grow their own food in the form of fungus which is farmed within the nest as a source of protein to supplement their external foraging feeding and to sustain colonies in harsh environments.

Nests come in many forms, dependent, mainly, on the species involved. That is why nest form and structure can aid in species identification.

Depending on the species, nests may take the form of ground mounds, attached to trees, posts or poles, underground or inside trees. Some species are multi nesters and there may be several underground nests at any one time, a feature which can make control more difficult.

Some termites build their nests within structures, such as houses, and maintain them by building mud galleries (tubes) which connect them to the soil. These galleries are frequently hidden in walls or cavities or in rare cases sustained by water leaks within the built structure.

Underground nests, nests inside trees, tree stumps and nests hidden in buildings can sometimes be difficult to locate.

From their nests, termites forage for food underground through the soil, potentially up to 100 metres in any or all directions, another feature which can make nest detection extremely difficult.

Nests are the homes of the reproductive queen and king who are tended to and fed by the worker caste and protected by the soldier cast.

Reproductive alate flights generally take place fairly close to nests and can be very useful in locating nests.

If there are multiple nests within feeding range of a building**,** controlling termites may take substantial time and effort.

Occasionally, nests may be found to have been built within building walls. More often than not, however, termite workings (mudding material) found in walls is merely part of termites' food gathering infrastructure.

Not only can there be multiple nests within attacking range (often 50 to 100m or more) of a structure such as a house, but there may be multiple species within the area that may attack the structure.

The nests of some species may be readily visible, for instance tree nests of *Nasutitermes walkeri* or mound nests of *Nasutitermes exitiosus.* While others, such as the underground nests or internal tree nests of *Coptotermes* and *Schedorhinotermes* species, may be completely invisible. Subterranean termite nests (underground or hidden) make it very difficult for Timber Pest Managers to locate and require greater reliance on remote treatment management techniques (such as baiting).

Identification and distribution

Termites which attack timber can be roughly divided into three groups: **subterranean**, **dampwood** and **drywood**. These descriptors are used to indicate where each group is normally found and also help describe their habits and behaviours.

While this Code of Practice deals with the management of subterranean termites, Timber Pest Managers and their clients should be aware of the importance of the other two groups and their potential impact.

Subterranean termites

Subterranean termites are mostly ground dwelling and require soil contact for a source of water. (Importantly, subterranean termites can survive in buildings above ground if they have access to an internal source of moisture).

Subterranean termites by far cause the most damage to timber in service in Australia.

There are approximately 20 species of subterranean termites - most commonly from within *Coptotermes, Schedorhinotermes, Nasutitermes* and *Mastotermes* genera and, to a lesser extent from within *Heterotermes* and *Microcerotermes* genera - which commonly attack timber in service throughout Australia.

Coptotermes

Coptotermes is the most economically important genus.

Members of the *Coptotermes* genus are easily distinguished from other termites when members of a soldier caste are poked or lightly squeezed to release a white milky liquid secreted from a specially modified pore (fontanelle) in the front of the head (a defence mechanism). Positively identifying individual species within the *Coptotermes* genus can be extremely difficult.

One particular species, *Coptotermes acinaciformis*, stands out from the rest due to the large amount of damage it causes throughout Australia.

Coptotermes acinaciformis is responsible for more economic loss than all the other Australian species combined. There are numerous reasons why *C. acinaciformis* is regarded as the most economically destructive Australian termite, including:

- the fact that they can be found over such a wide spread area, across nearly all mainland Australia
- the species is 'very comfortable' living in the centre of large populated cities and towns
- massive colony sizes of well over 1,000,000 termites that need lots of food

- aggressiveness and willingness to 'bully' other species out of a territory

Other *Coptotermes* species that Timber Pest Managers may encounter include:

- C. frenchi - a major pest of timber in service throughout Victoria, Queensland, and NSW
- C. lacteus - builds large above ground mounds in coastal and associated hinterland areas from southern Queensland, through NSW, ACT and Victoria and has been associated with damage to timber in service (however, the large mounds of C. lacteus are easily spotted and dealt with, usually before damage occurs)
- C. acinaciformis raffrayi - found only in the south west corner of WA (closely related to
- C. acinaciformis by biology and behaviour, with some debate as to whether this species is in fact C. acinaciformis)

  C. michaelseni - another WA native found along coastal areas up to approximately Geraldton where it builds low dome shaped mounds and is known to attack timber in service

Schedorhinotermes

Schedorhinotermes may not cause as much economic damage across Australia as Coptotermes, but in some regions—particularly in Queensland—they have matched or even exceeded Coptotermes in the number of reported house infestations.

Schedorhinotermes are easily identified from other termites in that the soldiers come in two sizes. 'Major' soldiers are approximately 6mm long, with bulbous shaped heads whereas 'minor' soldiers are only around 4mm long with a narrower head and more slender mandibles.

Identification between species can be difficult. However, the geography of where they are found can be a useful guide. The most common *Schedorhinotermes* species that Timber Pest Managers may encounter are:

- S. intermedius – found in coastal areas from south east Queensland down to the NSW- Victorian border
- S. actuosus – found across most of northern Australia from mid WA through to northern NSW
- S. breinli – found across the Northern Territory and around to central Queensland
- S. seclusus - mainly found in coastal Queensland and down to the NSW mid-north coast

Mastotermes

Mastotermes is the most ancient living termite genus in the world and contains only one species, Mastotermes darwiniensis.

Mastotermes termites have voracious appetites and cause havoc for building clients, farmers (mango, sugar cane, citrus, grape), electricity suppliers (poles and underground cables), tree growers, and councils (trees and palms in parks etc) across northern Australia, occurring from around the Tropic of Capricorn north.

Sometimes, however, it appears their range may be extended. Relatively recently, a Timber Pest Manager discovered *M. darwiniensis* in a number of houses, trees and landscaping timbers in close proximity to each other on the Queensland Gold Coast. Experts suspect the infestation originated in a load of timber sleepers from the Rockhampton area some years prior. While it was surprising that the population survived and actually spread in such a (relatively) cold climate, the termites' survival could well be yet one more sign that we really are seeing significant climate change.

The large size of the termites and associated galleries in damaged timbers plus where they are found makes identification of *M. darwiniensis* relatively easy.

Nasutitermes

Nasutitermes is the most evolutionarily advanced termite genus and can be easily identified by the pointed snouts (nasus) at the front of the soldiers' heads While species-level identification can be challenging, mound shape and geographic location often provide useful clues.The most common *Nasutitermes* species that Timber Pest Managers may encounter include:

- N. exitiosus - a major pest in the southern half of Australia where it builds distinctive dome shaped mounds up to a metre high (N. exitiosus tends to prefer hardwood (eucalypt) timbers over pine species and has a particular liking for timber bridges, fences and poles);
- N. walkeri - found from tropical north Queensland down the coastal belt to just south of Sydney where it builds distinctive arboreal nests on the trunks or branch forks of trees (nests often house kingfisher birds) and tends to feed on decayed or weathered hardwood timbers, therefore posing relatively little threat to structural housing timbers (unless the timbers are of native hardwood which was not uncommon in the 1960's and 70's); and
- N. graveolus – very similar to N. walkeri except that it can be found in tropical coastal areas from Ingham in north Queensland through to the NT/WA border.

Heterotermes

While *Heterotermes* are generally considered less of a threat to timber in service than other genera, in parts of northern Australia they have been known to cause considerable damage to houses. *Heterotermes* are often confused with *Coptotermes* because the soldiers look similar. However, on close examination, the head of the *Heterotermes* soldier is longer and more rectangular, compared to the tear drop shape of the *Coptotermes.*

The main species associated with timber damage is *H. ferox* which is found from the southern half of Queensland down throughout much of NSW, Victoria, South Australia, and the south west corner of Western Australia.

Microcerotermes

Generally, *Microcerotermes* pose only a minor threat to timber in service across Australia. When they do transgress, they generally only feed on already decayed or weather damaged timber such as posts, poles and fences.

The most common *Microcerotermes* species have distinctive cylindrical arboreal nests with stalactites dripping from underneath. Other species build low dome shaped mounds at ground level. *Microcerotermes* soldiers have rectangular heads resembling *Heterotermes* except for the presence of fine serrations on the inner margin of the mandibles (a feature upon which it was named).

The most common *Microcerotermes* species include *M. turneri* (north Queensland to central coast of NSW), *M. serratus* (across most of mainland Australia) and *M. distinctus* (southern half of Australia)

Dampwood termites

Dampwood termites generally feed on rotting timbers on the forest floor and seldom become a nuisance to humans.

However, if a structure has decay issues associated with timber being exposed to the elements (fencing, decking timbers and even internal timbers via a leaking roof etc), dampwood termites can further damage such timbers and may even venture into the surrounding sound timber.

Dampwood termites that Timber Pest Managers may encounter include:

- **Porotermes adamsoni** – a dampwood termite associated with damaging timbers in houses and found in the coastal belt and associated ranges from southern Queensland around to South Australia (including ACT) and also in Tasmania
- **Neotermes insularis** – a major pest of standing gum trees and some species of fruit and ornamental trees with the largest soldier of any Australian termite (up to 15mm in length), found along the coast from the Northern Territory right around to the Victoria/South Australia border

- **lyptotermes spp**. – a major pest of power poles and implicated in poles falling over, Glyptotermes live in standing trees and can survive after poles have been cut from them and put into service. However, most damage is done by associated decay throughout the termite tunnels rather than the termite itself. Glyptotermes spp. termites are found in coastal and highland areas from tropical north Queensland down to the Great Australian Bight in South Australia

Drywood termites

Drywood termites can live in small, isolated pockets in the dead wood of living trees and timber in service such as flooring, structural members and furniture. Unlike other termites, they source their water from the timber they consume and therefore do not require contact with the soil. Because of this fact, their galleries are clean and free of soil. However, there is one factor that will usually confirm that drywood termites have caused the damage: that being the presence of dry, sesame seed-like frass (faeces) throughout the gallery system and on horizontal surfaces in close proximity to the infestation. Often this is the first indication of drywood termites noticed by building clients and Timber Pest Managers upon inspection.

Several Australian state and territories consider the presence of some species of drywood termites a serious biosecurity risk and as a result have introduced legislation to classify and combat these pests. Under prescribed legislation, several species of drywood termites are classified as either a notifiable or prohibited plant pest and heavy fines exist for the non-reporting of these pests' infestations. Appendix E summarises the reporting requirements for the species of drywood termites listed as a notifiable or prohibited plant pest.

Drywood termites can be categorised as either native (endemic to Australia) or exotic (introduced to Australia). Most native drywood termites exist in dead branches or stumps without ever causing a nuisance. However colonising flights can take hold in power poles and other timber in service. They can also be accidentally introduced into a home via infested furniture and other timbers. There are several relatively important drywood termite species that may be encountered by Timber Pest Managers.

- **Cryptotermes primus (Hill)** – Considered a minor to moderate pest of structural timber, house stumps and utility poles. It has also been found in dead trees, branches, logs, root crowns, sapwood and heartwood in the coastal strip from the tip of Cape York down to about Sydney.
- **Cryptotermes queenslandis (Hill)** – Regarded as a minor pest and has been found in dead branches, stumps from coastal areas from south-east to north-east Queensland.
- **Cryptotermes domesticus (Haviland)** – Considered a minor pest, and has been collected from various structural timbers, furnishings, ornaments, packaging, dead trees and logs from various locations across northern Australia including several islands off north-eastern Queensland and the Torres Strait.
- **Cryptotermes cynocephalus (Indo-Malaysian drywood termite)** – A relatively minor pest recorded feeding on structural timber, furniture, dead trees and fallen logs in coastal north- east Queensland.
- **Cryptotermes tropicalis (Gay & Watson)** – Another relatively minor pest of structural timber and house stumps, dead and decaying trees and logs and is limited to rainforest areas of coastal NE Queensland.
- **Cryptotermes brevis (West Indian drywood termite)** – This is an introduced drywood termite, noted for its clean, frass filled galleries, similar to their native cousins. C.brevis. However, C.brevis is much more voracious in terms of damage to timber in service and, in fact, has been labelled the world's most destructive termite. Its presence is usually not noticed until the timber it is infesting collapses. C. brevis was introduced to Australia in the 1960s and has been found in structural timber and furniture in Brisbane, Maryborough, Bundaberg, Rockhampton, Gold Coast, Sydney and Canberra.
- **Cryptotermes dudleyi (Banks)** – A major pest of structural timber, in particular that of boats. Despite several quarantine interceptions at ports of entry, there is no evidence to suggest that this species is established in Australia.

Feeding behaviour

All termites consume cellulose in one form or another.

Subterranean termites find their cellulose-rich food by leaving their nests and 'foraging' through underground galleries/tunnels or covered tracks which they build between their chosen 'larders' and their nests.

Through their gallery system, termites**,** from a single colony may exploit food sources over as much as one hectare, with individual galleries of *Mastotermes* extending up to 200m from the nest.

How subterranean termites locate food on their foraging expeditions remains a topic of much debate within the pest management industry.

Most experts believe foraging is completely random and that actually finding food is, to an extent, a matter of luck.

Others, however, claim there has to be a master plan based on where some termites have been found. The truth, probably, lies somewhere in between.

Termite foraging is a collective process in which termites search in organised patterns. Termites are known to communicate the location of food by laying pheromone trails for other nest mates to follow. There is some research to suggest that termites can not only estimate the size of the chunk of timber they have discovered but can actually determine its nutritional value.

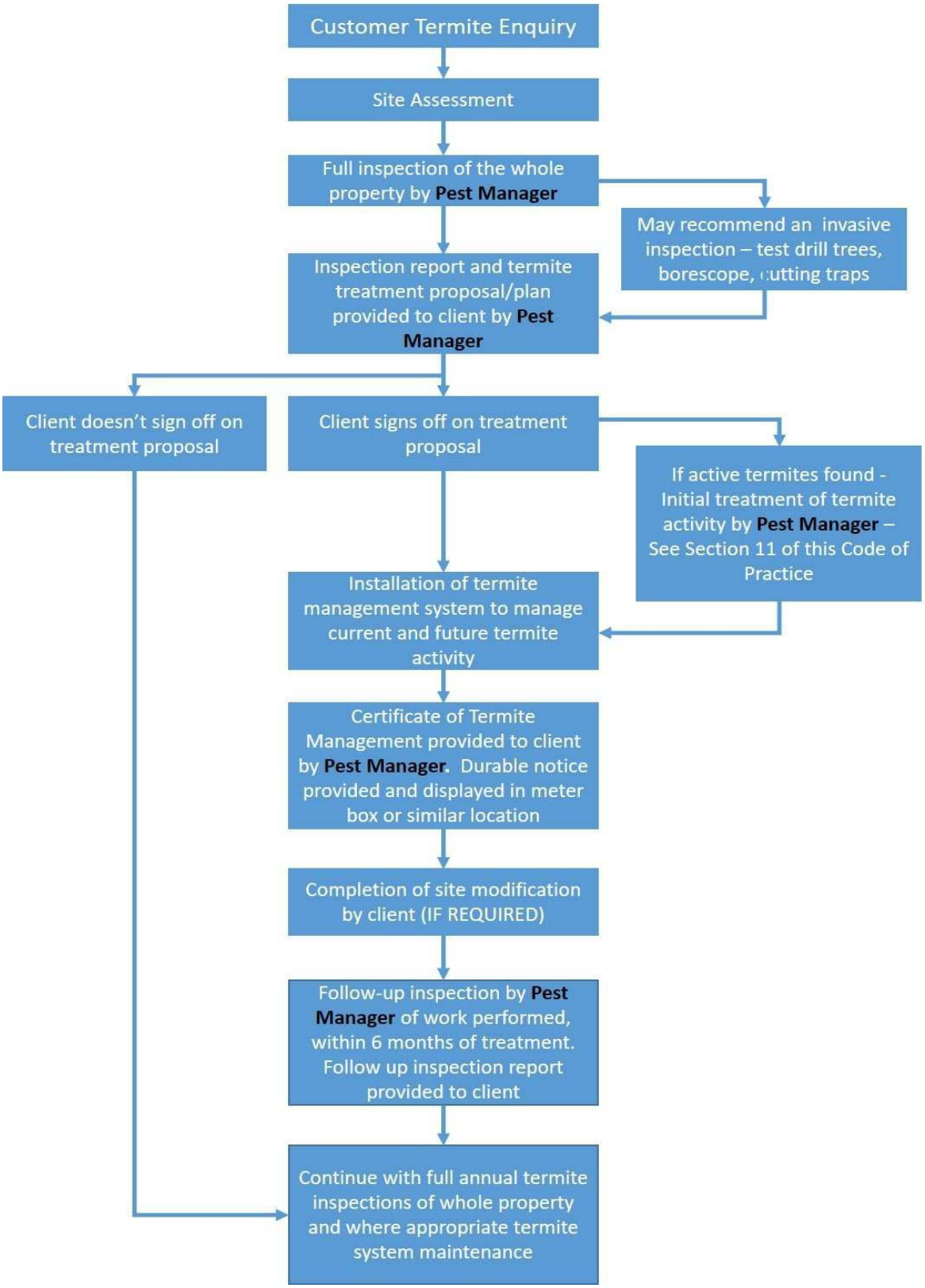
While some termites can, albeit somewhat inefficiently, break down cellulose on their own, in most cases, digestion is the result of a symbiotic relationship between termites and microbes in their digestive systems (much the same as ruminant**s** and some other herbivorous animals employ gut microflora to help them digest pasture). In the case of termites, microbes in their gut break down the various complex cellulose molecules into simple sugars, which the termites can then absorb and utilise to provide energy.

So important are these microbes that young termites are actively 'inoculated' early in their lives by being fed a concentrated mix of microflora excreted (from the anuses) of mature workers or soldiers. This same method of proctodeal feeding is employed to restore microbial health after termites moult, to replace microbes lost when, as part of the moulting process, the entire gut lining is shed with the old skin.

To help conserve precious protein (dietary nitrogen), in which most termite food is generally extremely poor, most termites dispose of excess, dead and diseased members of the colony by cannibalism.

Termites are known to damage materials that have no nutritional value during their search for food. These include polystyrene, rubber, plastic, leather, mortar and some metals. A particularly annoying trait is the attack on underground power cables, with termites chewing through the outer rubber and plastic sheathing, thus exposing the conducting wires to moisture resulting in short circuits and ultimately**,** power failure.

APPENDIX B: DECISION MAKING TREE



APPENDIX C: CERTIFICATES OF TERMITE MANAGEMENT AND DURABLE NOTICES

Details required for a 'Certificate of Termite Management'

- Company name & details
- Technician name/s and license details
- Methods of control options employed
- Date of treatment
- Products used (trade name and active constituents)
- Rate of application
- Volume
- Amount of concentrate
- Site Plan identifying areas treated
- Limitations
- Recommended future inspection frequency
- Maintenance requirements

Details required for a 'durable notice'

A durable notice must be permanently fixed to the building in a prominent location, such as in a meter box or the like, indicating:

- termite management system used;
- date of installation of the system;
- where a chemical is used, its life expectancy as listed on the appropriate authority's registered label;
- Where reapplication of chemical is required, such as re-charging of reticulation system and/or direct spray of soil or pressure injection through masonry to soil underneath, the recommended termiticide to be used and the appropriate volumes;
- installer's or manufacturer's recommendations for the scope and frequency of future inspections of termite activity;
- details of the installer, installation company, including contact details and relevant license number

The notice should be legible, on a material that will not deteriorate easily and so that it can be understood by property clients and Timber Pest Managers.

APPENDIX D: LIST OF PEST CONTROL AUTHORITIES BY STATE

Australian Capital Territory	Environment and Planning Directorate - Environment
New South Wales	NSW Environment Protection Authority
Northern Territory	NT Department of Health
Queensland	Queensland Department of Health
South Australia	South Australian Department of Health
Tasmania	Tasmanian Department of Primary Industries, Parks, Water & Environment
Victoria	Victorian Department of Health
Western Australia	WA Department of Health

APPENDIX E: REPORTING REQUIREMENTS

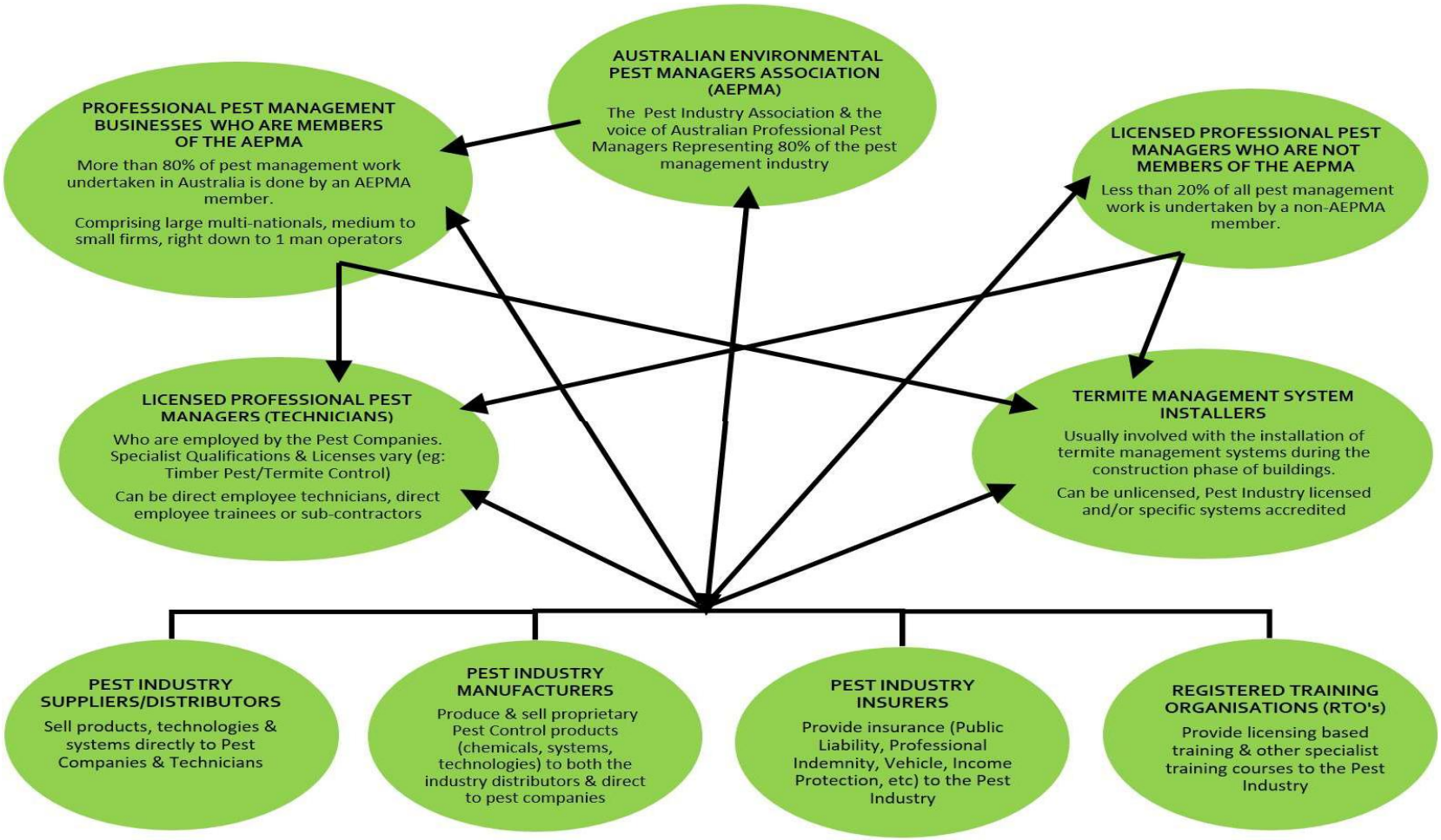
REPORTING REQUIREMENTS FOR NOTIFIABLE (PROHIBITED) DRYWOOD TERMITE PESTS IN AUSTRALIAN STATES AND TERRITORIES

(Correct at 10th November 2015)

State	Drywood termite Species	Status of Pest	Reporting Timeframe	Maximum Penalties within legislation	State/Territory Authority	Contact details
New South Wales	West Indian Drywood Termite *Cryptotermes brevis*	Declared a Notifiable Pest in Part 2 of the Schedule under Section 12 of the Plant Diseases Act 1924	Within 24 hours	$11,000	Department of Primary Industries - Biosecurity NSW	http://www.dpi.nsw.gov.au/biosecurity/plant Exotic Plant Pest Hotline: 1800 084 881 Email: biosecurity@dpi.nsw.gov.au
Western Australia	West Indian Drywood Termite *Cryptotermes brevis* Indo-Malaysian Drywood Termite *Cryptotermes cynocephalus* Exotic Drywood Termite *Cryptotermes dudleyi* Native Drywood Termite *Cryptotermes domesticus* Native Drywood Termite *Cryptotermes primus*	Prohibited Pest (C1 Category Exclusion) under Section 12 Biosecurity and Agriculture Management Act 2007 Listed as Prohibited Pest for whole of state in West Australian Organism List (WAOL)	Within 24 hours	$20,000	Pest and Disease Information Service (PaDIS) - Department of Agriculture and Food	https://www.agric.wa.gov.au/biosecurity-quarantine/biosecurity Phone: 1800 084881 Email: info@agric.wa.gov.au

Queensland	West Indian Drywood Termite *Cryptotermes brevis*	Listed as a biosecurity matter (Category 1 Restricted Matter) under *Section 22 and Schedule 2 of the* Biosecurity Act 2014	Within 24 hours	$88,350 or six months imprisonment	Department of Agriculture and Fisheries	https://www.daf.qld.gov.au/forestry/pests-and-diseases/termites Phone: 13 25 23 (within Queensland) or 07) 3404 6999 Email: call web@daf.qld.gov.au Fax: (07) 3404 6900
Northern Territory	West Indian Drywood Termite *Cryptotermes brevis* Exotic Drywood Termite *Cryptotermes dudleyi* Native Drywood Termite *Cryptotermes domesticus* Native Drywood Termite *Cryptotermes primus*	Declared a notifiable pest under Section 6(4) Plant Health Act (PHA). Notifiable Pest as listed in Northern Territory Plant Health Manual - Version 3.0	Within 24 hours	$76,500 (Non reporting - Section 15 of PHA)	Department of Primary Industry and Fisheries (DPIF) - NT Quarantine	Website: NT Quarantine Darwin Office Phone: (08) 8999 2118 Fax: (08) 8999 2053 Katherine Office Phone: (08) 8973 9704 Fax: (08) 8973 9777 Alice Springs Office Phone: (08) 8951 8166 Fax: (08) 8951 8112 Email: quarantine@nt.gov.au
Victoria	No reporting requirements					
South Australia	No reporting requirements					
Australian Capital Territory	No reporting requirements					
Tasmania	No reporting requirements					

APPENDIX F: INDUSTRY FLOWCHART



CONTACT AEPMA

For a list of the Timber Pest Managers who have agreed to be bound by this Code, please visit the AEPMA website (www.aepma.com.au)

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