AS 4349.3—2010

Australian Standard®

Inspection of buildings

Part 3: Timber pest inspections

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- Australian Environmental Pest Managers Association
- Australian Institute of Building
- Australian Institute of Building Surveyors
- CHOICE
- Concrete Masonry Association of Australia
- Consult Australia
- Engineers Australia
- Institute of Building Inspectors
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- Queensland Building Services Authority
- Royal Institution of Chartered Surveyors

Additional Interests:

- Independent Chairperson

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Australian Standard®

Inspection of buildings

Part 3: Timber pest inspections

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PREFACE

This Standard was prepared by the Standards Australia Committee BD-085, Inspection of Buildings to supersede AS 4349.3—1998.

The objective of this Standard is to provide persons and organizations concerned with timber pest inspections of residential dwellings, commercial and industrial buildings with the basic criteria necessary in order to facilitate inspections and reports that satisfy the requirements of both the client and the inspector. This Standard is to be used for pre-purchase inspections for timber pest issues.

This Standard does not cover compliance with building regulations or assessment of a building under construction.

This Standard is part of the AS 4349 series of Standards, which covers minimum requirements for the inspection of buildings, as follows:

AS	
4349	Inspection of buildings
4349.0	Part 0: General requirements
4349.1	Part 1: Pre-purchase inspections—Residential buildings
4349.3	Part 3: Timber pest inspections (this Standard)

The changes to the previous edition of this Standard comprise the following:

(a) Modification of scope and general section:

(i) Clarifying scope, application, limitations.

(ii) Inspector to determine if any tests are to be conducted on site.

(iii) Inspector to determine if access is safe and reasonable.

Inspector to report observed potential major safety hazards. Such potential safety hazards are likely to be urgent and serious by their very nature.

NOTE: This is not a safety inspection nor a compliance inspection.

(iv) New definitions.

(b) New section for inspection agreement.

(c) Modification of inspection process—Clarifying areas to be inspected, inspection records, inspector to determine safe and reasonable access, some tests may be required, tests to be at the sole discretion of the inspector, reporting of observed potential major safety hazards.

(d) Modification of inspection report section—Clarifying report content, some tests may have been conducted at the sole discretion of the inspector, further inspections, observation and reporting of potential major safety hazards with clear warnings to the client, need for timeliness and urgency in implementation of recommendations and the elimination of potential major safety hazards.

(e) Change of order in the appendices.

(f) New informative appendices:

(i) Moisture management issues.

(ii) Strata and company title property inspection.

(g) Inclusion of commentary to some clauses.

Notes to the text contain information and guidance. They are not an integral part of the Standard.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard. An ‘informative’ appendix is only for information and guidance.

This Standard incorporates commentary on some of the clauses. The commentary directly follows the relevant clause and is designated by ‘C’ preceding the clause number and is printed in italics in a panel. The commentary is for information only and does not need to be followed for compliance with this Standard.

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FOREWORD

Every year many buildings in Australia are damaged by fungal decay (rot), wood-boring insects, by subterranean termites (the latter are also commonly but incorrectly called ‘white ants’) or other timber pests. Persons who wish to purchase or maintain a property that includes timber structures may require advice to determine whether the pests are or have been present in the building, there is heightened risk of timber pest presence, or there is damage caused by timber pests. A uniform system of inspection will help to ensure that all inspections meet a minimum acceptable standard.

STANDARDS AUSTRALIA

Australian Standard
Inspection of buildings

Part 3: Timber pest inspections

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard provides minimum requirements for non-invasive inspection of buildings for the activity of timber pests and preparation of associated reports. The inspection is to be carried out by a suitably qualified inspector.

This Standard includes limited requirements for invasive inspection.

AS 4349.0 sets out the requirements for building inspections other than those detailed in other Parts of AS 4349.

NOTE: State or Territory legislation may include requirements beyond this Standard.

C1.1

A pre-purchase timber pest inspection should be undertaken as early in the buying process as practicable. This way, the purchaser will know about the condition of the property and will be able to make a better informed decision as to whether to proceed with the purchase. A pre-purchase inspection report may be suitable for a vendor to include with the papers for the sale of a property.

AS 3600.2 recommends that a routine inspection for termite management purposes be carried out at least annually.

A timber pest inspection beyond the scope of this Standard, for example the use of invasive techniques or specialized equipment, should comply with AS 4349.0. The additional content should be distinguished as not part of the AS 4349.3 requirements.

The Australian Qualifications Framework includes competency units for timber pest inspection.

The basis of this Standard is a non-invasive inspection comprising visual inspection supplemented by non-marking sounding of elements and assessment of moisture content of materials. The Inspector might decide to supplement this type of inspection with other non-destructive techniques or equipment, depending on the particular circumstances; however the use of such further equipment is beyond the minimum requirements of this Standard.

The nature of timber pest activity and non-invasive inspection is such that some residual damage is inevitable in some cases.

For the purposes of this Standard timber pests that damage timber are subterranean and damp-wood termites, borers of seasoned timber and wood decay fungi. This Standard does not require inspection and report on drywood termites or mould.

NOTES:

1 Drywood termites are not included in the Standard inspection and report due to the extreme difficulty in locating the small colonies and the very rare incidence in Australia.

2 Chemical delignification is not a timber pest under the scope of this Standard, even though delignified timber closely resembles timber that has been decayed by a white stringy rot fungus.

Underground inspection is beyond the scope of this Standard. For example, house stumps below ground level, tree roots and the parts of fence posts below ground level are excluded from this Standard.

The purpose of a timber pest inspection on a property is to assess the following:

(a) Evidence of timber pests.

(b) Existence of visually observable damage caused by timber pests.

(c) Susceptibility of building to timber pests.

(d) Further investigations required.

NOTE: Regular, competent inspections are strongly recommended, at least on an annual basis. Where justified, more frequent inspections may be recommended, e.g. in situations considered more conducive to timber pests.

1.2 LIMITATIONS OF STANDARD

A report prepared in accordance with this Standard is not a certificate of compliance of the property within the requirements of any Act, regulation, ordinance, local law or by-law, and is not a warranty against problems developing with the building and/or the site in the future. This Standard does not include the identification of unauthorized building work or of work not compliant with building regulations.

1.3 APPLICATION

This Standard is intended to be used for non-invasive inspection of buildings and property carried out for pre-purchase inspection or routine timber pest management purposes and may be suitable for other purposes.

This Standard applies to all classes of building, as described in the Building Code of Australia.

1.4 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
3660	Termite management
3660.2	Part 2: In and around existing buildings and structures—Guidelines
4349.0	Part 0: Inspection of buildings—General requirements
HB 50	Glossary of building terms
BCA	Building Code of Australia

1.5 DEFINITIONS

For the purpose of this Standard, the definitions below apply:

1.5.1 Access hole (cover)

Hole cut in flooring or other part of a structure to allow for entry to carry out an inspection.

1.5.2 Accessible area

Area of the site where sufficient safe and reasonable access is available to allow inspection within the scope of the inspection.

1.5.3 Breach (termite)

Hole or gap in a termite barrier that provides termites with passage through that barrier. Breaches include removal of a section of treated soil from a chemical soil barrier or a perforation or a disjunction in a physical barrier.

1.5.4 Bridging

Spanning of a termite barrier or inspection zone, to provide subterranean termites with passage over or around that barrier or inspection zone.

The bridge can be part of the building structure, foreign objects (including soil, tree roots and debris) or a structure built by the termites themselves.

1.5.5 Client

Person or other entity for whom the inspection is being carried out.

1.5.6 Drywood termites

Termites that do not require a water source other than the atmosphere and the moisture content of the timber in which they occur.

1.5.7 Excessive moisture conditions

Presence of moisture that is conducive to timber pest activity.

1.5.8 Frass

Dust and droppings produced by borer activity.

1.5.9 Fungal decay

Loss of strength due to destruction of cellulose and or lignin by wood decay fungi.

NOTE: Fungal decay is commonly but incorrectly called ‘wet rot’ and ‘dry rot’.

1.5.10 Inspection

Close and careful scrutiny of an item carried out in order to arrive at a reliable conclusion as to the condition of an item.

1.5.11 Limitation

Factor that prevents full achievement of the purpose of the inspection.

1.5.12 Major safety hazard

An object or physical situation with a potential for causing harm to life or health of persons.

1.5.13 Mould

A type of fungus that does not structurally damage wood.

1.5.14 Non-invasive inspection

Visual inspection supplemented by sounding that does not mark the surface and may include limited use of equipment as described in this Standard.

1.5.15 Property

Allotment, including improvements and all timber structures such as buildings, patios, decking, landscaping, retaining walls, fences and bridges.

1.5.16 Site

Area within the property boundaries and within 30 m of the nominated building.

1.5.17 Subfloor space

That part of a building between the soil and the ground floor level.

1.5.18 Timber pests

Subterranean and dampwood termites, borers of seasoned timber and wood decay fungi, but not including drywood termites.

1.5.19 Inspector

Person or organization responsible for carrying out the inspection.

SECTION 2 INSPECTION AGREEMENT

2.1 GENERAL

An inspection agreement between the Client and Inspector shall be entered into prior to the inspection or inspections taking place. The inspection agreement shall include the purpose and scope in accordance with this Section. Where necessary for clarification, details from Sections 3 and 4 shall be included in the agreement.

The inspector shall be licensed or registered in accordance with any applicable statutory requirements.

C2.1

Many jurisdictions in Australian may not have statutory requirements for licensing or registration of timber pest inspectors.

If required by the client, the inspector shall provide details of qualifications and experience.

Any changes to the purpose and scope shall be agreed by all parties at the appropriate time.

NOTE: The inspection agreement should be in writing and agreed by all parties to the agreement.

2.2 PURPOSE OF INSPECTION

The purpose of the inspection is to provide advice within the agreed scope to a prospective purchaser, an owner or another interested party regarding the condition of the property, at the time of inspection, in relation to the activity of timber pests.

2.3 SCOPE OF INSPECTION

2.3.1 General

The inspection shall comprise non-invasive inspection of the property for timber pest activity as set out below.

A pre-purchase timber pest inspection shall include non-invasive inspection for all timber pests in accordance with this Standard.

A routine timber pest management inspection shall comprise non-invasive inspection for timber pests in accordance with this Standard. In this context a routine inspection is deemed to be one undertaken on a site where timber pests are not known to be present.

Where inspection is required beyond the scope of the inspections described above, for example in accordance with the Client's requirements, to confirm the presence of an infestation or to determine the extent of an infestation or treatment required, invasive inspection and/or the use of specialized equipment or techniques normally will be necessary. In this case the agreement shall include the proposed scope of inspection, including the extent of interference with the building fabric and details of equipment or techniques to be used.

An estimate of the cost of treatment of timber pests or of repairs to damage caused by timber pests is not included in an inspection report in accordance with this Standard.

C2.3.1

The cost of rectification of damage due to timber pests is notoriously difficult to estimate reliably. This is primarily because the actual extent of work cannot be known before commencement of the work. There is also reduced competition as many contractors are unwilling to undertake rectification work. Quotes should be obtained to assist in selecting an appropriate contractor.

2.3.2 Areas for inspection

The inspection shall include all accessible areas of the site and does not include areas that are not accessible. The Inspector shall determine the extent of accessible areas at the time of inspection, based on the conditions encountered at the time of inspection.

The client shall arrange right of entry, facilitate physical entry to all parts of the property and supply necessary information to enable the Inspector to undertake the inspection and prepare a report. The Inspector is not responsible for arranging entry to the property or parts of the property.

NOTE: Areas that are not accessible at the time of inspection may be the subject of an additional inspection following the provision of access (also see Clause 3.3).

2.3.3 Inspection process

The inspection shall comprise non-invasive inspection of the property for evidence of timber pests and damage caused by timber pests and to form an opinion regarding the susceptibility to infestation of the property by timber pests at the time of inspection.

The inspection shall include evidence of timber pests and damage whether or not the timber pests are considered active at the time of inspection.

2.3.4 Limitations

Limitations that are reasonably expected to be present or that reasonably may occur shall be identified.

NOTES:

1 The inspector may be able to anticipate many limitations of an inspection.

2 Known limitations relating to access should be included.

C2.3.4

Many disputes between the client and inspector occur because the client did not expect the inspection to be subject to some form of limitation. In order to avoid such disputes it is necessary that the inspector, who is normally the more knowledgeable party, inform the client during the agreement phase of limitations that may restrict the full achievement of the client's purpose of inspection. The opportunity to inform the client prior to the inspector's visit to the property is limited and there will always remain the possibility of unexpected limitations that will be apparent only when the inspector visits the property; however, it is important that the client have a realistic understanding of the inspection limitations prior to the inspection.

Examples of expected limitations include legal right of entry, locked doors, security system, pets, furniture and similar obstructions. While these are common and expected limitations, the inspector should not assume that the client is aware of the significance of the various factors, but rather should inform the client.

Examples of limitations that may not be expected at any particular inspection, but which are common, include access restrictions due to height or narrow boundary clearance, thick vegetation, small roof space or small subfloor crawl space and adverse weather conditions. It is not practicable for the inspector to anticipate and inform the client of all possible limitations that may be present when the inspector visits the property; however, the client should have an appreciation, during the agreement period, of the types of limitation that may occur.

2.3.5 Extent of reporting

Items to be reported are as follows:

(a) Evidence of the presence of timber pests, irrespective of whether past or current.

(b) Evidence of damage caused by timber pests and resultant hazards where applicable.

(c) Conditions conducive to timber pests.

(d) An opinion regarding the susceptibility of the building to timber pests.

(e) Recommendations for further investigations.

C2.3.5

If in the opinion of the inspector, there exists a major safety hazard to occupants due to timber pests it is considered that the inspector has a professional duty to ensure that the report clearly identifies the hazard in such a manner that it is not easily overlooked by a reader of the report.

SECTION 3 INSPECTION

3.1 GENERAL

The inspection shall be undertaken in accordance with this Section.

3.2 TIMBER PEST INSPECTORS

The person undertaking the inspection shall be informed about principles of construction including type and style of building relevant to timber pest activity and damage. The person shall also be informed about the ecology, behaviour and identification of timber pests and be familiar with the damage they cause and the procedures required for their management and control.

NOTES:

1 The respective state or territory legislation may include requirements beyond this Standard.

2 Timber pest inspectors should comply with occupational health and safety requirements and take adequate personal health and safety precautions in accordance with the relevant industrial safety regulations.

3 Appendix A describes the different types of timber and their classification into softwoods and hardwoods.

C3.2

The inspector may recommend that other specialists be engaged to report, in detail, on particular problems that are encountered in the course of a timber pest inspection.

3.3 AREAS FOR INSPECTION

The inspection shall include all accessible areas on the site. Inaccessible areas, including where reasonable and safe entry is denied to the inspector or where reasonable and safe access is not available, are excluded from, and do not form part of, the inspection.

The inspector shall determine the extent of accessible areas at the time of inspection, based on the conditions encountered at the time of inspection. All access shall comply with applicable occupational health and safety requirements.

Reasonable access does not include the cutting of access holes or the removal of screws and bolts or any other fastenings to access covers, removal of any sealants to access covers or removal of coverings or cladding. The inspector is not expected to remove roof cladding to gain access. Reasonable access shall be determined in accordance with the provisions of Table 3.1.

The inspector shall determine whether sufficient space is available to allow safe access to confined areas.

TABLE 3.1

MINIMUM DIMENSIONS FOR REASONABLE ACCESS

Area	Access hole mm	Crawl space mm	Height
Roof interior	400 × 500	600 × 600	Accessible from a 3.6 m ladder
Roof exterior	—	—	Accessible from a 3.6 m ladder placed on the ground

NOTE: The presence of access points of the nominated dimensions does not guarantee that reasonable access is available, as proximity to other building elements or members might prevent access in practice.

Where sufficient access to enable inspection and testing in accordance with the scope of inspection is not available, recommendations shall be made for gaining access.

3.4 ITEMS TO BE INSPECTED

The inspection shall include all buildings and relevant features on the site.

Buildings include any detached or semi-detached items such as car accommodation, laundry, ablution facilities and garden sheds and the like. Relevant features include retaining walls, paths and driveways, steps, fencing and the like. On large allotments the site is limited to 30 m from the main building. Where uncertainty exists the main building shall be as nominated by the client.

Inspection of buildings shall include, as applicable, the interior including all built-in items, the roof space, the subfloor space and the exterior.

Inspection of Strata and Company Title residential property is limited to the nominated residence and does not include common property or property owned by others.

NOTE: Further information regarding inspection of Strata and Company Title residential property is given in Appendix F.

All timber in accessible areas shall be inspected, except as excluded below. Examples of timber elements to be inspected include—

(a) structural timbers e.g. subfloor, floor, walls, stairs, ceiling joists, ceiling battens, roof framing;

(b) joinery and decorative timbers e.g. doors and door frames, windows and window frames, skirtings, joinery;

(c) ancillary structures e.g. false floors, built-in cupboards, built-in furniture;

(d) attachments and outbuildings e.g. garages, carports, pergolas, patios, verandahs, sheds, posts;

(e) garden timbers e.g. landscaping timbers, fences, logs, pool surrounds, garden boxes or tubs, firewood, paving blocks, sleepers; and

(f) standing timbers e.g. trees and stumps with diameter greater than 100 mm.

The inspection does not include timber within the building that is not part of the building or that is obscured from visual appraisal. Examples of timber elements not to be inspected include the following:

(i) Furniture.

(ii) Furnishings.

(iii) Stored items.

(iv) Concealed timbers, including areas and items where inspection is limited or prevented by restricting factors e.g. furniture, furnishings and stored items such as clothing.

3.5 INSPECTION PROCEDURE

3.5.1 General

Inspection shall involve detection and appraisal of the following:

(a) The presence of timber pests, in accordance with Clause 3.5.2.

(b) Conditions that are conducive to timber pests, in accordance with Clause 3.5.3.

3.5.2 Presence of timber pests

Inspection for the presence of timber pests shall include damage probably caused by timber pest activity, signs of past or present timber pest activity or past treatment for timber pest activity. Signs of timber pest activity are described in Tables 3.2 and 3.3.

NOTES:

1 For guidelines on borers in timber see Appendix B.

2 For guidelines on fungal decay of timber see Appendix C.

3 For guidelines on termite damage in timber see Appendix D.

Where damage is detected the inspection shall identify the location of damage and the severity of the damage that was visible.

NOTES:

1 The damage visible at the time of inspection MAY NOT be the full extent of the damage actually present.

2 Where treatment options are being considered, the inspection should include identification of the pest by common name, genus and, where relevant, the species.

TABLE 3.2

SIGNS OF TIMBER PEST ACTIVITY

Indications	Timber pest			
	Fungal decay		Subterranean termites	Borers of seasoned timbers
	Wood decaying	Wood decayed		
Visible damage	Swollen or warped timbers, tide marks, collapse	Shrunk or warped timbers, tide marks, cubical or stringy rot	Misshapen timbers, flight holes, collapse	Holes, portions of timber missing
Visible signs of timber pests	Mycelium, fruiting body, or neither	Mycelium, fruiting body, or neither	Mudding, visible nests, swarms, termites	Frass, borers
Sounding	Dead sound when sounded	Dead sound when sounded	Hollow sound	Slightly dead sounding

An inspection in accordance with this Standard is non-invasive and does not include invasive inspection or the use of proprietary equipment or techniques.

In some circumstances the inspector might form the opinion that limited invasive inspection as described in Table 3.3 would significantly improve the reliability of the inspection. If an invasive or destructive test is to be conducted it shall be in accordance with the requirements of AS 4349.0. An inspection agreement specifically including permission from the owner or an authorized representative of the owner to undertake invasive and/or destructive investigation shall be entered into prior to commencement of such inspection.

TABLE 3.3

SIGNS OF TIMBER PEST ACTIVITY: LIMITED INVASIVE INSPECTION

Indications	Timber pest			
	Fungal decay		Subterranean termites	Borers of seasoned timbers
	Wood decaying	Wood decayed		
Testing				
Sounding	Timber dents as damage increases	Timber disintegrates as damage increases	Timber crushes as damage increases	Slightly dead sounding, increases as damage increases
Splinter test	Timber crumbles when splinter tested	Timber crumbles when splinter tested	Timber splinters	Not applicable

In some circumstances the inspector might form the opinion that the use of proprietary or specialist equipment would significantly improve the reliability of the inspection. The use of such equipment is not a requirement of this Standard. If an inspection including the use of proprietary equipment is to be conducted it shall be in accordance with the requirements of AS 4349.0. An inspection agreement specifically describing the equipment to be used and the scope of inspection shall be entered into prior to commencement of such inspection.

3.5.3 Conditions conducive to timber pests

The inspection shall include conditions that increase the likelihood of the presence of timber pests. Where practical, the inspection shall include any aspects that relate to the presence and maintenance of any termite protection systems if visible. The inspection shall include construction and site development, moisture conditions and termite barriers, as follows.

The inspection shall include, where practical, construction aspects such as the suitability of timber for the level of exposure, for example timber in contact with the ground or masonry.

NOTE: In many cases it is neither feasible nor possible for an inspector to determine the durability of the timber due to inability to identify the species or the possible level of preservative treatment. Formal identification of timber species is a highly specialized field.

The inspection shall include site development and usage, for example construction of garden beds that increase the risk of infestation or storage of timber, debris containing cellulose or other goods under and adjacent to the building.

The inspection shall include the potential for or presence of water or dampness in unintended locations, as follows.

(a) Absent or ineffective moisture barriers.

(b) Poor subfloor drainage and/or inadequate subfloor ventilation.

(c) Water entry due to, for example—

  (i) leaks through damp-proof courses or flashings;

  (ii) plumbing leaks;

  (iii) leaks through waterproofing membranes; and

  (iv) leaks from roof and stormwater disposal system.

(d) Excessive moisture in building elements, as described in Table 3.4.

NOTE: Appendix E describes aspects of moisture management that are important to the timber pest inspector.

TABLE 3.4

MOISTURE CONDITIONS CONDUCIVE TO TIMBER PEST ACTIVITY

Indications	Timber pest			
	Fungal decay		Subterranean termites	Borers of seasoned timbers
	Wood decaying	Wood decayed		
Moisture content (MC)	MC above 20% and often >30%	MC above, or may have reverted to, equilibrium MC (i.e. 8 to 15%)	MC usually higher than adjacent timber. MC may increase as the activity increases	Not applicable
Pre-conditions for infestation	Excessive humidity	Not applicable	Excessive humidity	*Anobium/Calymaderus*: Cool humid conditions, usually softwoods *Lyctus*: Sapwood of susceptible hardwoods

The Standard does not require the use of a moisture meter to determine the moisture content of timber; however if a moisture meter is not used the inspector where required must be able to demonstrate an alternative basis for determination of the moisture content of timber. The use of a moisture meter is not an invasive or destructive test for the purposes of this Standard.

C3.5.2

Comparing the risk of timber pests attack between different properties is of limited value. Assessment of the risk of timber pest attack is made by evaluating a range of risk factors present. The risk of timber pest attack is not necessarily related to the age, construction method or location of the property.

3.6 INSPECTION RECORDS

The inspector shall make a written record of the following information prior to, or during the course of, the inspection:

(a) Identity of the person undertaking the inspection.

(b) Identity of the client.

(c) The address of the property inspected.

(d) Date and time of inspection.

(e) Weather conditions at the time of the inspection.

(f) Limitations of inspection with respect to accessible area.

(g) Limitations of inspection with respect to scope of inspection.

(h) Observations.

(i) Where timber pests are detected, the location of activity and an indication of the severity of the damage that was visible.

NOTE: The inspection records should be retained for a period of at least three years.

C3.6

It is considered necessary that the inspector record various data on site at the time of inspection and that this record be retained by the inspector. This site record may or may not become part of the formal report provided to the client.

The purpose of this site record is to allow checking of the formal report in the event of discrepancies or other problems. The inspector is considered to be an expert practitioner within that field of practice and it is expected that such a practitioner will be able to demonstrate the basis for his/her conclusions in the event of problems. An appropriate site record made at the time of inspection is a suitable method of demonstrating such basis.

SECTION 4 REPORT

4.1 GENERAL

A written report shall be provided either in hardcopy or otherwise in a form agreed with the client that will enable the client to retain a permanent record of the report.

The report shall be written and formatted such that the specific findings of the subject inspection and the report summary can be readily distinguished from more general material such as background advice, disclaimers and the like.

C4.1

While explaining aspects of the report can be beneficial to the client, oral reports alone are not recommended and should not be relied upon.

The facts obtained from the inspection have to be clearly and comprehensively presented in the report. An evidence-based and objective approach should then be used to develop interpretations and conclusions given in the report.

The interpretations, conclusions and the inspector's opinion as to the overall condition of the property should be reasonably able to be checked by a suitably competent and experienced person who is external to the client–inspector relationship. Thus, the report should include sufficient data from the inspection and the conclusions should be derived by logical and rational examination of those data.

Due to the litigious nature of this industry, it is desirable for the benefit of both the client and the inspector that the report be clearly written.

4.2 REPORT CONTENT

4.2.1 General

The report shall include, but not necessarily be limited to, the items listed in Clauses 4.2.2 to 4.2.5.

4.2.2 Circumstances of inspection

The report shall include the following:

(a) Name, address and licence or registration number under State and Territory legislation, where applicable, of the Inspector.

(b) Name of the person who undertook the inspection.

(c) Name and address of the Client.

(d) Date and time of inspection.

(e) Address of the property inspected.

(f) Details of inspection agreement.

(g) Prevailing conditions at the time of the inspection.

(h) Description and identification of the buildings or other timber structures inspected.

4.2.3 Limitations

The report shall identify areas within the scope of the inspection that were not inspected and provide the reason for exclusion from inspection. Examples of such limitations include a roof space where no safe access exists, a room full of stored goods, a locked room, vegetation close to a wall or an area of the property with an unrestrained dog.

4.2.4 Observations

Where timber pests are detected the report shall include the location and identification of the pest. Where termite activity is detected, the report shall include the genus and, where possible and relevant, the species of termite involved. The report shall describe evidence of termite attack, for example shelter tubes, and any evidence of past timber pest treatment.

The report shall record the presence of damage apparently due to timber pests, whether or not the inspector considers the pests to be active at the time of inspection.

The report shall identify any observed deficiencies in barrier integrity. Examples include bridging or breaching of physical barriers and observable interference with continuity of chemical barriers.

The report shall include records of elevated moisture content that could indicate the presence of timber pests and the basis of such determination of the moisture content, and of moisture problems on the property that could increase the likelihood of pest infestation.

Where the inspector has based conclusions from the inspection wholly or in part on the application of specialist techniques or proprietary equipment the report shall include a description of the technique or equipment used, the brand and model of equipment used where applicable, and sufficient record of observations to demonstrate the basis for the conclusions reached.

4.2.5 Safety hazards

The report shall record major safety hazards which result directly from the activity of timber pests and which are present and observed during the course of the inspection. Examples of safety hazards include balustrades made unsafe by timber decay and the imminent collapse of a structural member.

4.2.6 Recommendations

Where the inspector has formed the opinion that further inspection is warranted the report shall include suitable recommendations. Examples of such recommendations may include provision of access to allow inspection of an inaccessible area, invasive inspection where infestation is suspected and inspection by a building inspector or engineer where serious damage is present.

The report shall include recommendations for the frequency of future inspections.

4.2.7 Conclusions

The report shall include the findings of the inspector derived from the observations at the property. For example, the opinion of the inspector regarding the presence of timber pests on the property, the presence of damage due to pest activity including any major safety hazard, the extent to which the inspection that was undertaken was adequate to satisfy the purpose of the inspection and the extent to which further inspection would improve the reliability of the inspection outcomes.

The report shall include an opinion from the inspector regarding the susceptibility of the subject property to sustaining damage from timber pests.

4.2.8 Summary

The report shall include an overview of the report contents, including—

(a) damage apparently due to timber pests activity detected;

(b) timber pests detected;

(c) further inspections recommended;

(d) major safety hazards due to timber pests observed; and

(e) the Inspector’s opinion regarding susceptibility to timber pests.

The summary shall not contain material that is not included in the body of the report.

4.3 LIMITATIONS AND CONDITIONS

4.3.1 Limitations

The report shall not contain any assessment or opinion in relation to—

(a) any area or item that could not be inspected by the inspector;

(b) an aspect of the inspection that is not within the inspector's expertise; or

(c) an aspect of the inspection that is solely regulated by statute.

4.3.2 Conditions

The report may be conditional upon or conditional in relation to—

(a) prevailing weather conditions, which affects the potential for the detection of timber pests;

(b) the accuracy of information provided by the client or representative of the client;

(c) the specific expertise of the inspector as specified in the report;

(d) deliberate concealment of pest activity or resultant damage; or

(e) any other factor limiting the preparation of the report.

APPENDIX A

TYPES OF TIMBER

(Informative)

A1 SCOPE

This Appendix describes the different types of timber and their classification into softwoods and hardwoods.

A2 CLASSIFICATION

A2.1 General

The classifying of timbers into softwoods and hardwoods is based on the anatomical characteristics of timbers and is not related to the hardness or softness of the timber. For example, balsa, which is one of the best-known 'soft' timbers, is a hardwood. The structure of softwoods and hardwoods is shown in Figure A1.

A2.2 Softwoods

Commercial timbers of this group are all conifers. These include pines, Douglas fir, spruce, kauri and Californian redwood.

A2.3 Hardwoods

Hardwood timbers are usually broadleaved and are distinguished from softwoods by the presence of vessels or pores in the timber. Hardwoods include eucalypts such as blackbutt, spotted gum, jarrah and tallowwood. Also included are scrubwoods such as yellow carabeen and white birch and imported species such as meranti and ramin.

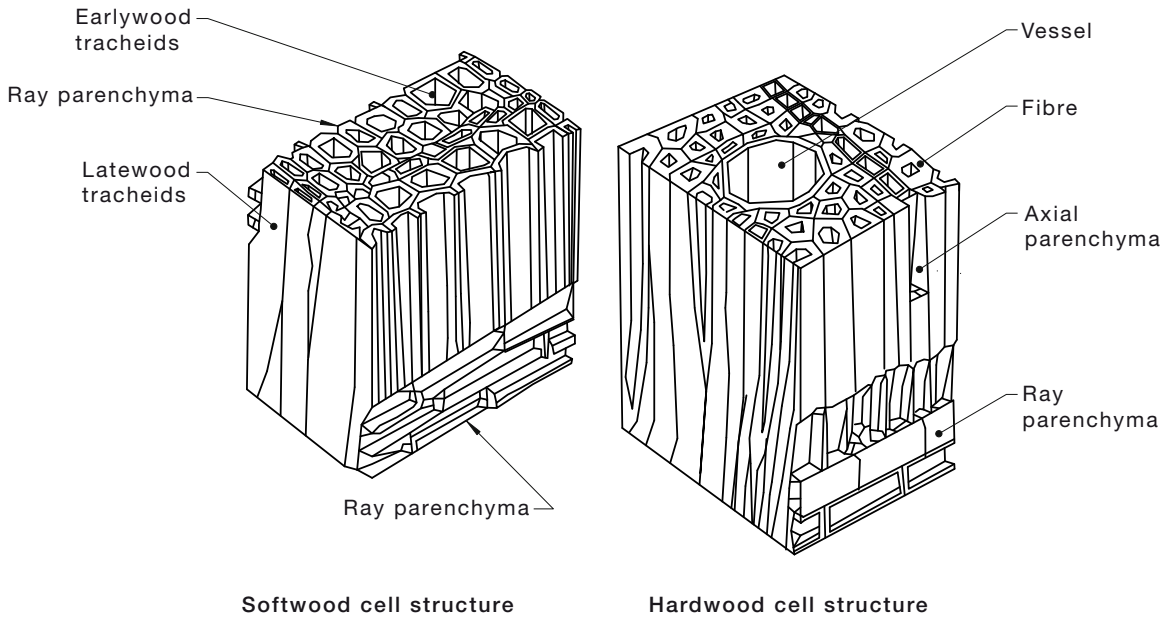


FIGURE A1 STRUCTURE OF SOFTWOODS AND HARDWOODS
(CELLWALL PITS HAVE BEEN OMITTED)

A2.4 Determination of types of timber

To aid in determining whether timber is hardwood or softwood, the use of a 10 × hand lens and a sharp blade or Stanley knife is of assistance.

Once a good cut has been made across the end grain of the sample the next step is to examine the exposed area under the lens. To do this, the lens is held close to the eye in the one hand and the specimen slowly raised towards it with the other so that the cut area on the end surface comes sharply into focus, showing clearly all the structural details. The examination of the specimen should always be done in a good light and the specimen held in such a way that the surface to be examined is well illuminated.

NOTE: Refer to Clause 3.5 regarding invasive and destructive tests as such are outside the scope of this Standard.

APPENDIX B

BORERS

(Informative)

B1 SCOPE

This Appendix describes the important principles for inspection of timber for borers, together with illustrations of species of borer and how they affect the appearance of timber.

B2 BORERS

Holes in timber with an accumulation of frass are evidence of the presence or history of borers. It is essential that a timber pest inspector is able to distinguish softwoods from hardwoods, and in the case of hardwoods, sapwood from true-wood (see Appendix A). Different species of borer damage each of these types of timber. Incorrect identification of the timber can lead to error in identifying the species of borer and result in ineffective or unnecessary treatment.

B3 TYPES OF BORER

The following types of borer can be found in timbers used in Australia:

(a) *Anobium punctatum* (common furniture beetle).

(b) *Calymmaderus incisus* (Queensland pine beetle).

(c) Curculionids and Lymexylids (pin hole or ambrosia).

(d) Cerambycids (longicorns).

(e) Bostrichids (auger beetles).

(f) *Sirex spp.* (wood wasps).

(g) Lyctids (*Lyctus brunneus, L discedens, Minthea rugicollis,* and similar).

(h) *Ernobius mollis (pinebark anobiid)*.

(i) *Hylotrupes bajulus* (European house borer).

(j) *Ambeodontus tristis* (two-tooth longicon).

(k) *Hadrobregmus australiensis* (dampwood borer).

(l) *Pentarthrum australe*.

(m) Cypress pine jewel beetle.

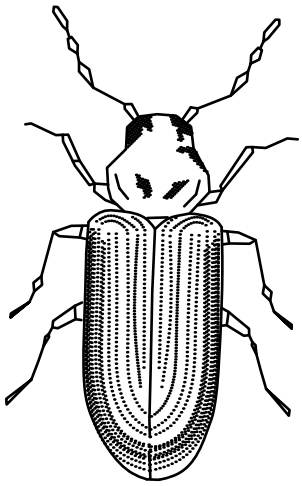
See Table B1.

TABLE B1

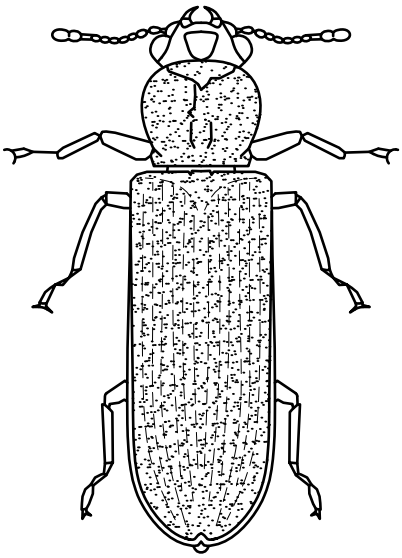
DIAGNOSTIC FEATURES OF THE DAMAGE CAUSED BY THE MORE COMMON WOOD BORERS

	Borers attacking standing trees and green timber					Borers attacking seasoned timber						Borers attacking decaying wood	
	Curculionids and Lymexylids (pinholes)	Cerambycids (longicorns)	Bostrichids (auger beetles)	*Sirex* (wood wasps)	Cypress pine jewel beetle	Lyctids (powder post beetle)	*Anobium punctatum* (furniture beetle)	*Calymmaderus incisus* (Qld pine beetle)	*Ernobius mollis* (pinebark anobiid)	*Hylotrupes bajulus* (European house borer)	*Ambeodontus tristis* (two-tooth longicorn)	*Hadrobregmus australiensis* (dampwood borer)	*Pentarthrum australe*
Timber													
Type	Mainly hardwoods	Mainly hardwoods	Mainly hardwoods	Softwoods mainly pine	Cypress pine	Hardwoods	Mainly softwoods	Softwoods in Queensland especially hoop pine	Softwoods with bark	Mainly softwoods	NZ rimu some pines	Softwoods and hardwoods usually decaying	Softwoods and hardwoods usually decaying
Zone	Sapwood and heartwood	Sapwood and heartwood	Sapwood only	Mainly sapwood	Sapwood and heartwood	Sapwood only	Mainly sapwood	Sapwood and heartwood	Mainly bark some sapwood	Mainly sapwood	Sapwood and heartwood	Sapwood and heartwood	Sapwood and heartwood
Larval galleries													
Direction in timber	Straight across grain	Meandering along grain	Meandering along grain	Curved random	Crescent-like	Meandering along grain	Meandering honey-combed	Cambial zone only	Meandering random	Meandering random	Meandering along grain	Meandering mainly along grain	Meandering mainly along grain
Discolouration	Present	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Frass (borer dust)													
Quantity	Slight	Slight	Copious	Tightly packed	Tightly packed	Copious	Copious	Copious	Moderate	Copious	Moderate	Moderate	Moderate
Description	Strands or powdery	Coarse and stringy	Fine and powdery	Coarse	Coarse	Fine and powdery	Granular like salt	Granular	Granular and speckled	Granular to powdery	Coarse and compacted	Powdery compacted	Very fine granular
Fight holes													
Shape diameter	Round 2 mm or less	Oval 6 to 10 mm (long axis)	Round 1 to 6 mm	Round 3 to 6 mm	Oval 4 to 6 mm	Round 1 to 2 mm	Round 2 mm	Round 2 mm	Usually circular 2 to 3 mm	Oval about 6 mm (long axis)	Oval about 6 mm (long axis)	Round 2–5 mm	Round 1–2 mm

NOTE: It is important to distinguish between the coniferous timbers, or softwoods, such as the pines, firs and spruces and the hardwoods, such as the eucalypts.



(a) Adult furniture beetle (*Anobium punctatum*)



(b) Adult powder post beetle (*Lyctus brunneus)*

FIGURE B1 (in part) TYPES OF BORER THAT DAMAGE TIMBER

(c) Adult auger beetle (Bostrichid borer)

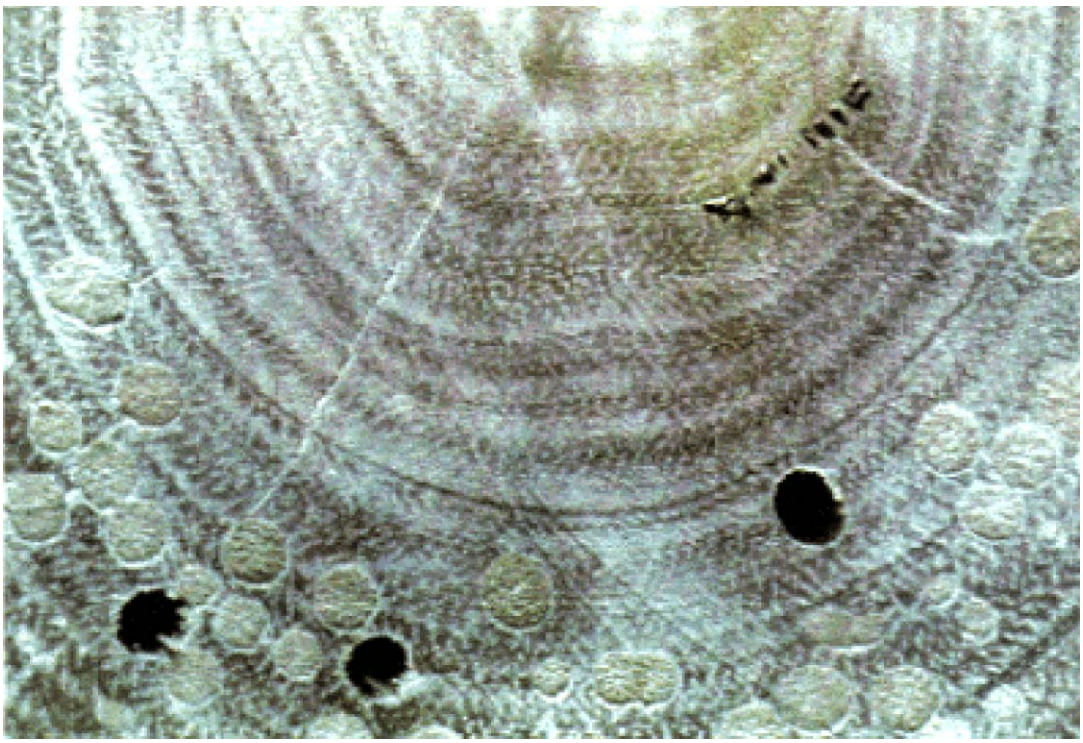
(d) Adult Cypress pine jewel beetle

FIGURE B1 (in part) TYPES OF BORER THAT DAMAGE TIMBER

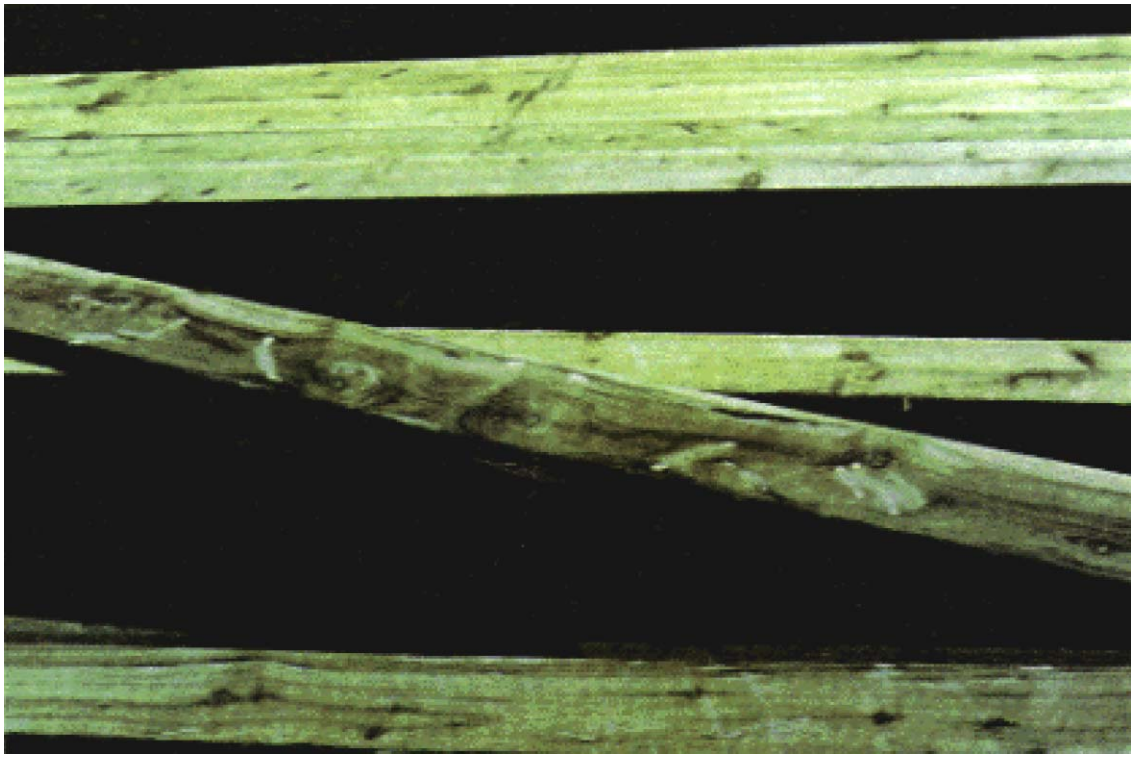
(e) Adult European house borer (*Hylotrupes bajulus*)

(f) Adult Lyctus (powder post) beetle

FIGURE B1 (in part) TYPES OF BORER THAT DAMAGE TIMBER



(a) Damage to timber caused by Bostrichid borer



(b) Cypress pine jewel beetle damage

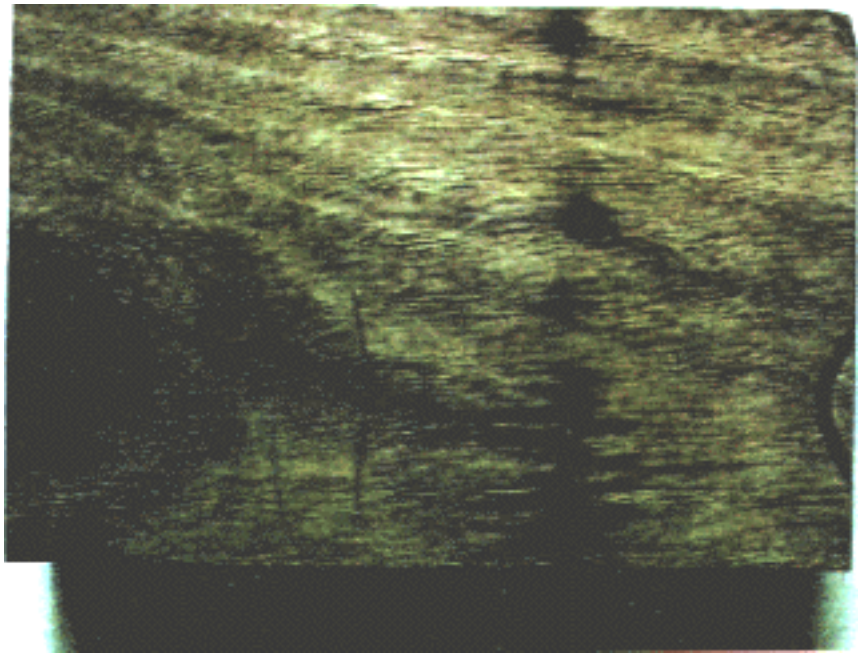
FIGURE B2 (in part) DETECTION OF BORERS

(c) Damage caused by *Hylotrupes bajulus*

(d) Lyctid damage

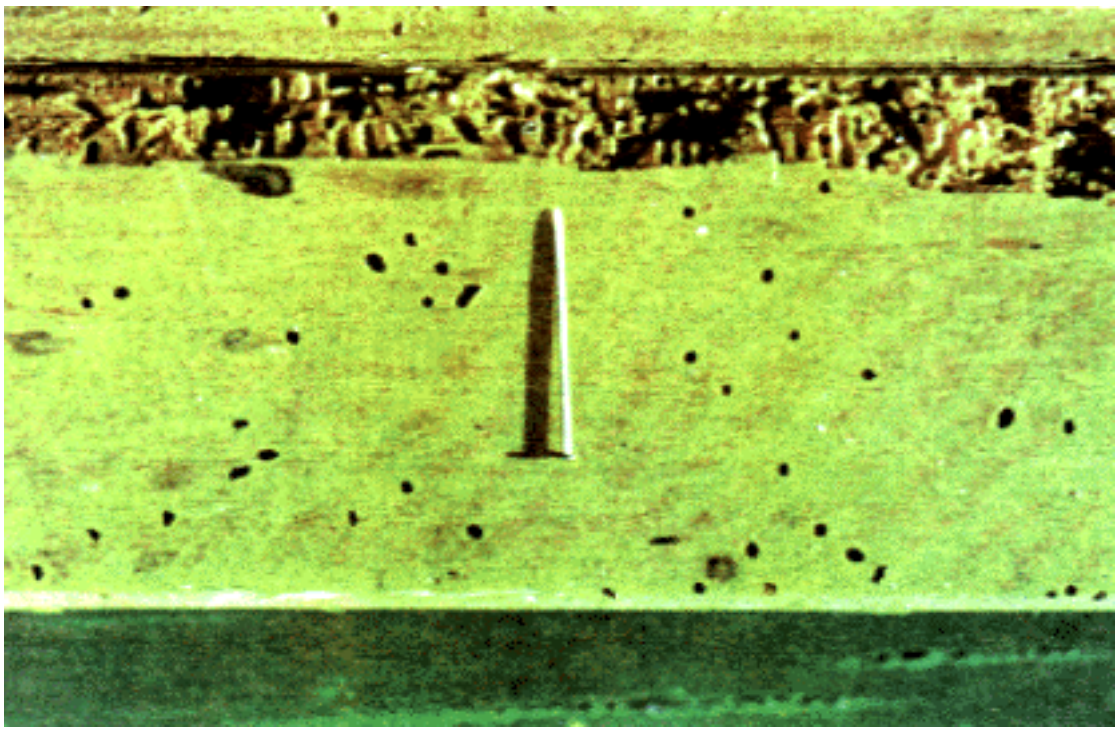
FIGURE B2 (in part) DETECTION OF BORERS

(e) *Anobium punctatum* damage



(f) Curculionids and Lymexylids (pinhole) damage

FIGURE B2 (in part) DETECTION OF BORERS



(g) *Calymmaderus incisus* damage

FIGURE B2 (in part) DETECTION OF BORERS

APPENDIX C

FUNGAL DECAY OF TIMBER

(Informative)

C1 SCOPE

This Appendix describes the different categories of fungi inhabiting wood, and the types of rot that occur. A detailed descriptive account includes two terms (decaying wood and decayed wood) that are of practical significance in inspecting buildings for decay.

C2 WOOD DECAY

C2.1 General

The reproductive spores of a mould fungus and the vegetative threads (mycelium) of a wood decay fungus, the latter usually white, if present in sufficient quantities, can be seen with the naked eye. However, vegetative growths of wood decay fungi may be cream, brown or black.

Early dense white vegetative growth of one fungus, late cream/fawn vegetative growth of a second fungus, dark brown/black water-conducting strands of a third fungus. Off centre can be seen the pored surface of a young reproductive fruit body.

FIGURE C1 VARIED FORMS OF GROWTH OF WOOD DECAY FUNGI ON THE SAME PIECE OF TIMBER

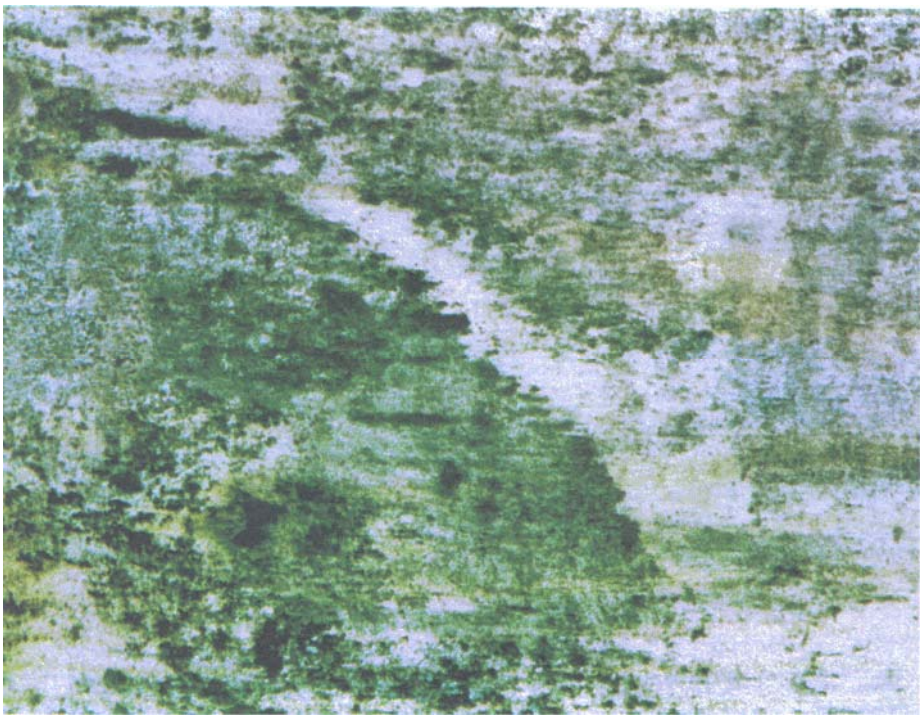
Wood decay fungi prefer to grow where conditions of temperature and moisture content are not subject to fluctuation. For timber out of ground contact, such a stable situation is more often deep in the wood than on the surface. When the fungus has exhausted the available nutrient from the timber, new growth is supported by feeding on the older growth and so the fungus may grow on other surfaces away from the timber leaving very little visible evidence of fungal growth on the wood itself (see Table C1(b)(iii) soft rot fungus, for an example).

C3 TYPES OF FUNGI THAT DAMAGE TIMBER

Not all fungi are capable of damaging wood. Furthermore, not all fungi that can grow on or in wood are capable of damaging the wood structure itself. Very few species of fungi are to be found on or in timber. Mould fungi are found only on the outside of timber but do no damage. Sapstain fungi consume only the sugars from sapwood and cause no change in the relevant strength properties of the timber. A few species of wood decay fungi damage the cellulose component of timber only; other species damage both the lignin (plastic) and cellulose components. The categories of fungi capable of growing in association with wood are listed and shown in Table C1.

TABLE C1

FUNGI CAPABLE OF GROWING IN ASSOCIATION WITH WOOD

Category	Observations
(a) Fungi not causing decay	
(i) Mould  (Reproductive growth of a mould fungus on timber)	Found on wood surface only. Cannot destroy wood (consumes cell contents, not cell walls). Looks unsightly. Produces mass of spores quickly. Potential respiratory problem to humans.

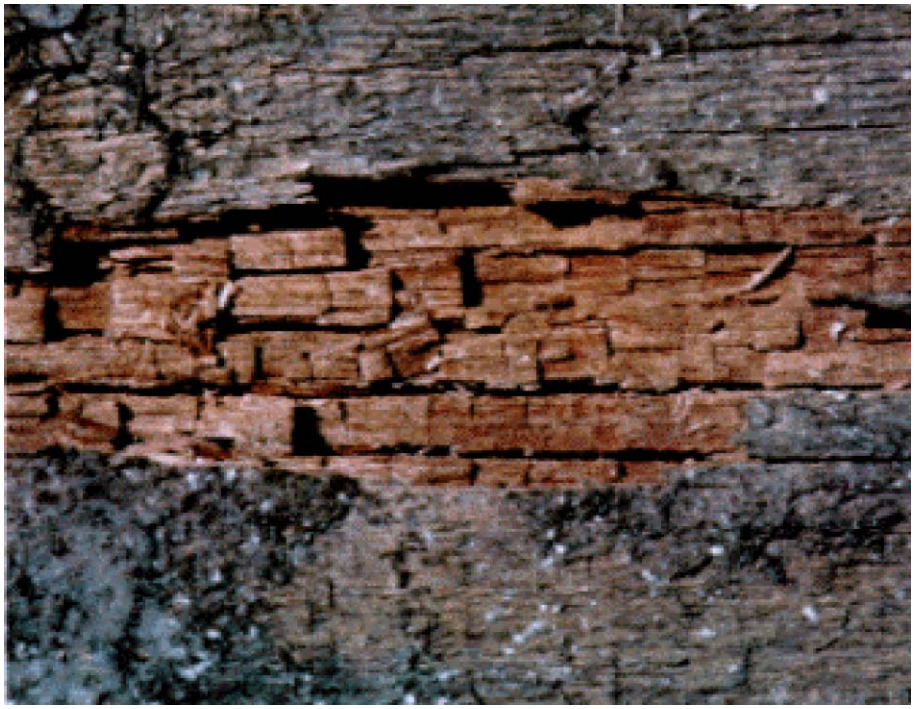
(*continued*)

TABLE C1 (*continued*)

Category	Observations
(iii) Sapstain (= bluestain)  (Varying amounts of bluestain in several sapwood sections)	Can only consume the free sugars that remain behind inside the cells of what was the sapwood of the living tree. Sapstain does not significantly affect the strength of timber.

(*continued*)

TABLE C1 (*continued*)

Category	Observations
(b) Fungi causing decay	
(i) Brown rot fungus*  (Above example shows brown rot fungus that has caused cracking across the grain) *Brown rot is commonly called brown cubical rot	Decomposes only the cellulose component leaving exposed lignin, which oxidizes and turns brown. The decayed wood is darker than un-decayed wood.
(ii) White rot fungus  (Above example shows brown rot fungus that has caused cracking across the grain)	Decomposes both cellulose and lignin. Remaining exposed cellulose is white, fibrous, i.e., stringy.

(*continued*)

TABLE C1 (*continued*)

Category	Observations
(iii) Soft rot fungus  (Above example shows soft rot fungus that has caused fracture in wooden state)	A mixed population of fungi and bacteria (normally soil-inhabiting) which decomposes the cell walls of the timber giving the appearance of small cubes of wood which tend to crack across the grain. The affected timber is always darker than undecayed wood. Also known as 'carroty rot.'

NOTE: Unlike insects, which are usually identifiable to species, vegetative fungal growth is not readily identified to species level. Hence, it may not be possible to name the fungi in an inspection report. It is, however, most important for the inspector to determine the presence of rot. It is also useful to be familiar with the type and range of possible fungal growths (i.e., early vegetative growth, late vegetative growth, water conducting strands, and reproductive growth as exhibited by early initials or by mature fruit bodies).

C4 TYPES OF DECAY IN AUSTRALIA

In general, decay of floorboards is caused by brown rot fungi, decay of window joinery by either brown rot or white rot fungi and decay of weatherboards often by white rot but sometimes by brown rot fungi. House stumps and fence posts decay from soft rot but may also have either brown or white rot. *Serpula lacrymans* (formerly *Merulius lacrymans*) is the world's most destructive fungal decayer of timber in buildings. This brown rot fungus has an optimum temperature for growth of 20°C (c.f. most wood decay fungi 25 to 28°C). Consequently, this fungus causes widespread damage in poorly ventilated subfloor areas in buildings in Melbourne where subfloor areas may be protected from the extremes of external temperatures. Probably as a result of high external temperatures, a species of *Coniophora* (also causing brown rot) is believed to be the commonest house timber decay fungus in Australia.

The term dry-rot is a misnomer, dry timber will not rot. Also at the other end of the scale waterlogged timber will not rot (see Table C3). Wood decay fungi are extremely resilient and remain viable when colonies are disturbed, or when only part of a colony is poisoned or when dried out (some species can survive in a dry state for 9 years).

TABLE C2

MOISTURE CONTENT VALUES RELATING TO TIMBER IN DEFINED SITUATIONS

Situation	Approximate moisture content, %
Oven-dried and desiccated timber in the laboratory	0
Equilibrium moisture content (MC) for timber in buildings, protected from the weather:	
Melbourne	10 to 12
Melbourne, with airconditioning*	8 to 14
Inland Queensland	7 to 12
Coastal Queensland	10 to 15
Lowest level at which decay can continue	18 to 20
Lowest level at which corrosion of metal fastenings occur in wood	18
Fibre saturation value, i.e., level above which decay can commence	30
Waterlogged wood	150 or greater depending on timber species
Moisture content of decaying wood	20 to 120
Water as free water present in cell voids	30 to 150 or greater
Timber changes dimensionally:	
In theory	0 to 30
In practical situation	7 to 30
Moisture meter gives accurate reading	9 to 30

* Airconditioning resulting in dehumidification will produce MC values of 8% to 11% whereas the evaporative cooler type would result in values of 12% to 14%.

C5 MOISTURE

C5.1 Moisture content levels

To prevent decay starting in a susceptible timber, it is important to keep the moisture content (MC) below a certain critical value. The human senses are not suited to discriminating differences in moisture levels in materials; hence suitable instrumentation for determining the critical levels is essential.

The MC above which unprotected timber is considered to be decay susceptible is a conservative value of 18% to 20% MC. Together with a splinter test, the experienced investigator is able to determine the presence and extent of each of the following states of the timber:

(a) Sound and safe.

(b) Sound but susceptible.

(c) Affected and decaying (i.e. active).

(d) Affected and decayed (i.e. either dormant or has finished rotting).

C5.2 Moisture content of timber

Moisture content (%) of wood is the ratio of the mass of water contained in the wood to the mass of dry wood expressed as percent. Four combinations of moisture content of wood and relative humidity of airspace are listed in Table C3 with comments relating to conditions for fungal growth and subsequent wood decay. The presence of vegetative growth is not necessarily an indication of the presence of decay; however, the presence of a reproductive fruiting body of the fungus is usually associated with significant wood decay warranting replacement of timber (at least in part).

TABLE C3

THE MOISTURE RELATIONSHIPS OF WOOD DECAYING FUNGI AS RELATED TO GROWTH ON AND IN WOOD*

Scenario No.	Moisture content of wood, %	Relative humidity of air space, %	Location and amount of fungal growth	Condition of wood
1	<20	<90	No growth on or in wood	Not decaying
2	20 to 120	<90	Growth mainly inside wood, surface mycelium flat and may not be too obvious	Decaying
3	30 to 120	>90	Growth inside wood, surface mycelium luxurious and growth very obvious	Decaying
4	>150	>90	Luxurious growth on surface, but with little growth within the wood	Not decaying (because 'waterlogged')

* For example, untreated joists/bearers of a suspended wooden floor.

NOTE: A comparison of Scenario No. 2 with No. 4 shows that the amount of growth visible on the wood surface may give no indication as to the amount of decay in that wood. It is for this reason that we characterize fungal decay simply according to the condition and appearance of the timber itself.

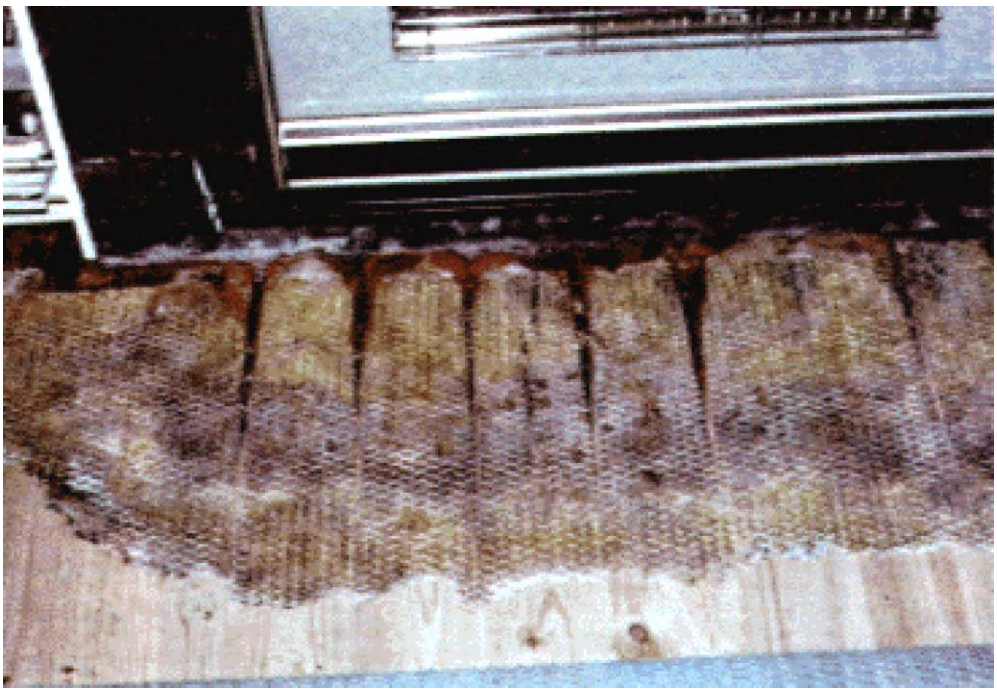
C5.3 Moisture values for building timbers in Australia

The values for moisture content (%) for different building situations are listed in Table C2. The additional values listed are a guide to determining the degree of risk for any timbers examined for moisture content (%).

C6 APPEARANCE OF DECAY OF TIMBER

Decaying wood and decayed wood are visually quite different. Decaying wood contains sufficient moisture to retain its original shape and may have sufficient strength to withstand normal loads.

In contrast decayed wood is reduced both in moisture content and size as indicated by cracking either along or across the grain or by fibres coming apart in a stringy manner. Decayed wood will have undergone considerable strength reduction and in the case of floorboards could eventually be expected to fail under the load of humans or furniture (see Figures C2 and C3).



Imprint of underlay is seen on the white/grey/yellow vegetative fungal growth; additional early white vegetative growth is seen between brickwork; dark orange/brown deposits of reproductive spores of this decay fungus (*Serpula lacrymans*) are also evident.

FIGURE C2 ACTIVELY DECAYING FLOORING NOT YET FAILED UNDER HUMAN LOAD

C7 INSPECTION FOR DECAY IN TIMBER

C7.1 Splinter test to determine strength loss

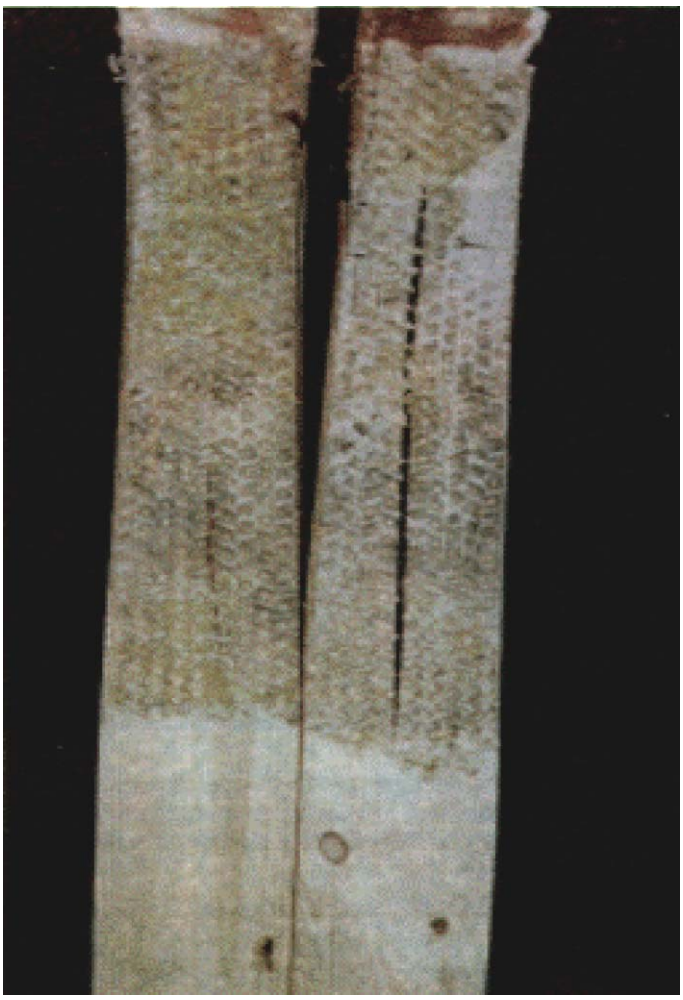
Although some practice is necessary, the splinter test is basically simple. A sharp instrument e.g. a knife with a locking blade is more suitable than a chisel or screwdriver (the latter is usually too blunt to drive deep enough into the wood). Following is the procedure for testing:

(a) Insert the knife at right angles to the surface of the wood to a depth of 3 to 4 mm; this is best done with a single forceful jab, rather than a continuous push. If the blade has a wide tip, the latter should be inserted parallel to the direction of the wood grain.

(b) Bend the knife towards the face of the wood to pry out a splinter of wood. Sound wood will make a distinctive sound and produce a long splinter of wood with a jagged end without breaking across the top of the blade. Wood seriously affected by white rot fungus will fail along the grain, disintegrating into white and fibrous lengths. Brown-rot- and soft-rot-affected wood will break across the point of knife insertion, with no long splinters being produced and without a tearing sound. Badly decayed wood will often come out in large chunks as the knife penetrates the timber. If the surface strength is affected, the splinter test is repeated, gradually penetrating deeper until sound wood is reached.

Until the inspector is fully experienced with the splinter test, splinters from suspected decay-affected timbers should be compared with splinters similarly removed from timber (of the same species) in adjacent areas that are more likely to be sound (e.g., the above-ground areas around a post or stump that is being inspected for decay at or below ground line).

NOTE: Refer to Clause 3.5 regarding invasive or destructive tests as such are outside the scope of this Standard.



Two boards removed from same floor seen in Figure C2, showing shrinkage and obviously reduced strength of decayed flooring.

FIGURE C3 DECAYED FLOORING

C7.2 Moisture content (MC)

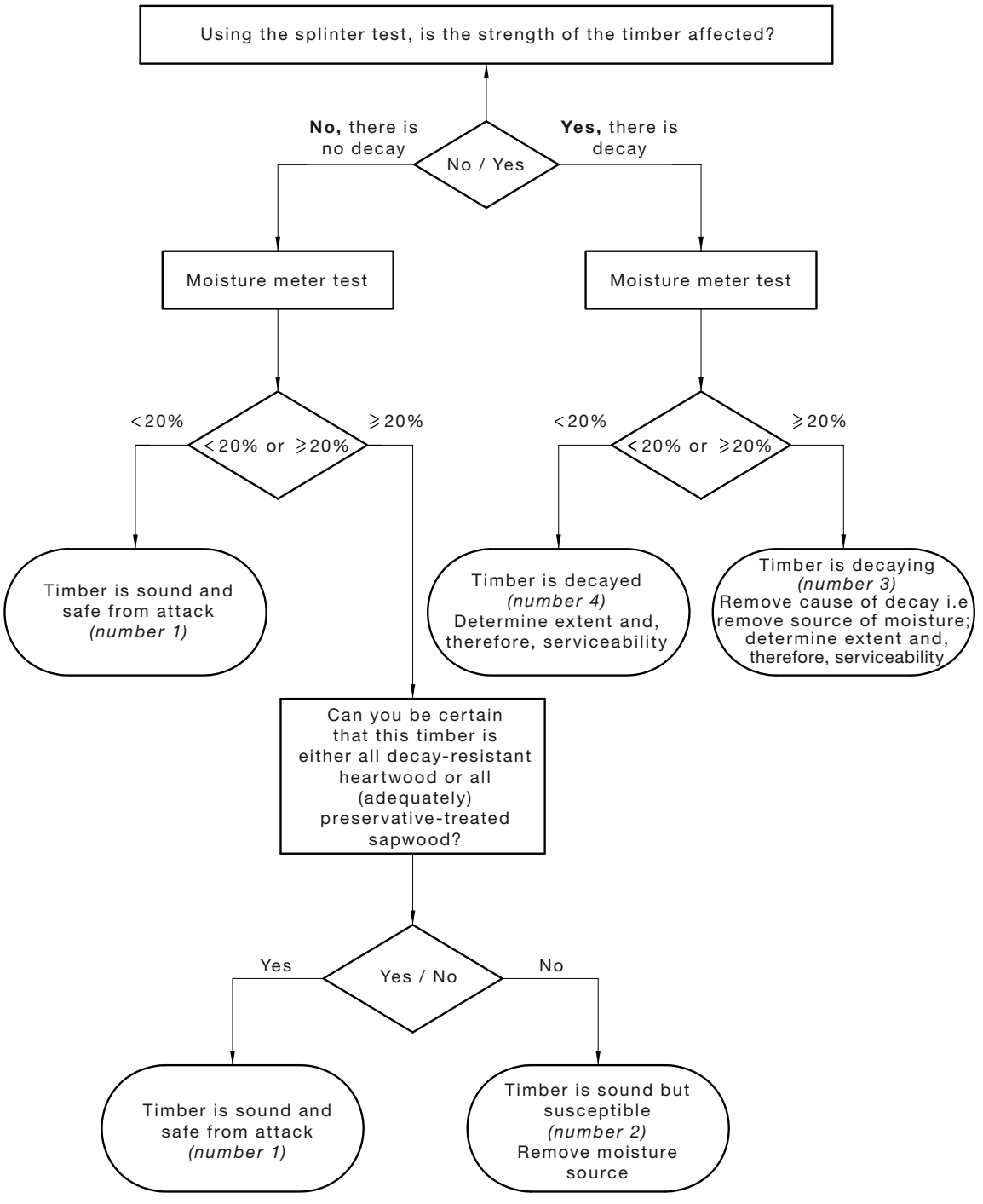
The moisture content of the timber should be checked in all areas perceived to be damp or where ventilation is considered to be inadequate.

The human senses are not adequately equipped to assess moisture. Electric moisture meters give accurate readings for only certain specified materials, one example of which is timber. They are accurate (Table C2) between the points where there is a reasonable level of moisture in the walls of the wood cells (9%) to a level beyond which those cell walls will accept no more water themselves (i.e., the fibre saturation value of 30%). The safe value is from 9 to 18 or 20% MC (see Table C2). The possession of both a suitable moisture meter, and the ability to interpret its readings is essential for any inspection of a building for the decay susceptibilities of its timber components.

The procedure outlined in Figure C4 is suggested for the inspection of building timbers.

In carrying out inspections according to the procedures set out in Figure C4 the most critical determination is which timber is affected and decaying (*number 3*), because decay will most likely spread (unless sources of moisture are quickly removed). Affected and decayed (*number 4*) may warrant timber replacement, but the rot there should not spread unless a new moisture source becomes available in that area. Sound but susceptible

(*number 2*) indicates a situation where decay is likely to eventually occur (again unless moisture removal is practised). Sound and safe (*number 1*) requires no further attention following this inspection.



Number (1) Timber is sound and safe
Number (2) Timber is currently sound but susceptible
Number (3) Timber is affected and actively decaying
Number (4) Timber is affected and decayed i.e. has either finished rotting or the wood-rotting fungus is currently dormant

FIGURE C4 FLOW CHART OF PROCEDURE FOR DETECTION OF DECAY IN TIMBER USING A COMBINATION OF SPLINTER AND MOISTURE METER TESTING

APPENDIX D

TERMITE DAMAGE IN TIMBER AND THE DETECTION OF SUBTERRANEAN TERMITES

(Informative)

D1 SCOPE

This Appendix provides useful information on termite damage in timber and the detection of subterranean termite infestation in a building and outlines the steps that are necessary to obtain a correct identification of the species of termites found.

D2 DETECTION OF INFESTATION

A certain amount of technical knowledge and experience is necessary to determine if there is termite infestation in a building, particularly in the early stages when the attack has just started or when it is confined to remote locations in the building. The inspector should know the habits of termites in general, the manner in which they work, the places where they are likely to be found and the signs which show that they are present.

The inspector should carry a pointed instrument (e.g., a screwdriver or knife) to probe into woodwork. For many situations, such as inspections under and inside buildings, a bright light is essential (e.g., torch or shielded lead light). Where necessary, overalls, respirators and other protective equipment should be used.

Termites have soft bodies that cannot withstand the desiccating effects of dry air. They move about in sheltered mud tubes, which they build when they have to cross open spaces that are exposed to the air. Consequently, they are not easily noticed and may go undetected except by the trained eye. Figure D1 illustrates how termites have gained access to flooring timbers over a metal shield. The presence of shelter tubes is the most positive indicator of a termite infestation. An inspector should be able to distinguish between old and new shelter tubes. Old shelter tubes are brittle, cracked and break away easily, whereas the new ones tend to be stronger and less dry.

It is quite simple to establish that timber has been attacked by termites after considerable damage has been done (see Figure D2). Termites excavate galleries that follow the grain of the wood, often for several metres without any surface openings. In some cases, these galleries follow the growth rings of the timber, giving heavily attacked wood a ‘leaved’ or ‘layered’ appearance when cut; in others, the whole of the interior may be eaten out, leaving only a paper thin skin of uneaten wood or paint. Subterranean termite galleries may contain irregularly honeycombed structures through which the termites can move freely. They should not be confused with galleries formed by wood borers, which are often packed with frass (borer dust), or those of drywood termites which may contain copious amounts of faecal pellets.

Termite damage in timber may be detected by the presence of mud ‘plastering’ along joints and cracks in the surface or by a depressed or corrugated surface skin, which remains after the interior has been eaten. When lightly tapped, damaged wood often has a ‘papery’ sound. Timbers with a large cross-section may have to be drilled or probed to determine their condition.

If termite activity is noticed in any one location in a building, it is advisable to make a thorough search of the entire building. If infestation has occurred at or above the ground floor of a multi-storey building, all the upper floors and the roofing frame should be subjected to thorough scrutiny.

Where termite activity is first noticed in an upper floor, without visible signs of attack in the lower floors except perhaps the ground floor, the termites may have travelled from floor to floor through the wall cavities, lift-wells and other likely places or through casings covering electric wiring, telephone cables or utility pipes. Such covered conduits should be examined carefully as they are ideal routes for termites. Other places that should be examined are woodwork, wooden panelling on staircases and walls, behind pictures hung on walls, and false ceilings.

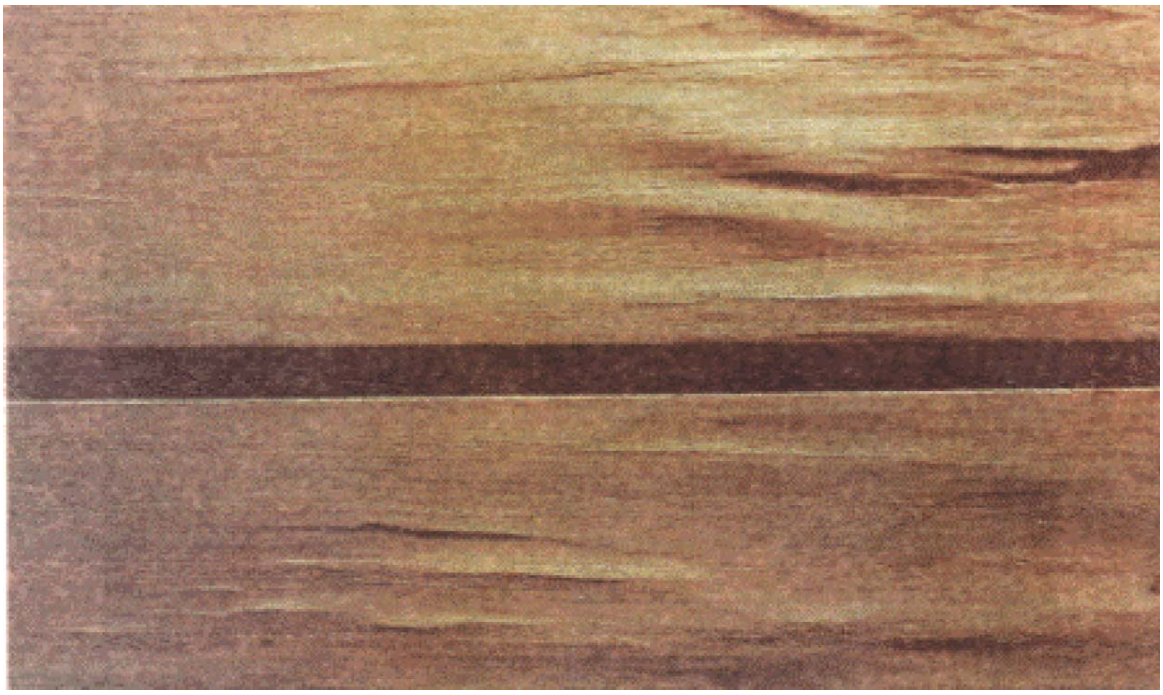
A search should be made for nests for distances up to a distance of 30 m from the main building and within the boundary (see Figure D3). In most urban situations it is almost impossible to locate the nest during a visual inspection since it is usually located underground. Nests may be obvious mounds or may be concealed in the earth fill under a concrete slab floor or hearth. They may also be in the base of a stump, pole, fence post, railway sleeper or tree. All likely places should be examined carefully and should be probed to determine their soundness. No matter what the external shape, location or covering of a nest, the inner zones centred on the nursery always consist of concentric layers of cells with thin, fragile walls of organic matter and soil.

FIGURE D1 TERMITES BRIDGING TERMITE CAP BY MEANS OF A SHELTER TUBE

(a) Termite damage to external cladding

(b) Door jamb damaged by *Coptotermes frenchi*

FIGURE D2 (in part) TIMBERS DAMAGED BY TERMITES



(c) Wall panelling damaged by *Coptotermes frenchi*

(d) Workings of *Coptotermes acinaciformis* in a stud wall

FIGURE D2 (in part) TIMBERS DAMAGED BY TERMITES

(a) *Coptotermes acinaciformis* mound in Northern Australia

(b) Termite nest in a timber post

FIGURE D3 TERMITE NESTS

D3 IDENTIFICATION OF TERMITES

A subterranean termite colony is made up of large numbers of workers, a lesser number of soldiers and, generally, a pair of reproductives, the king and queen. At certain times of the year the colony may also contain winged reproductives (alates) and the precursory nymphs.

Accurate identification of the species of termite is based largely on characteristics of the soldiers and, to a lesser extent, on characteristics of the reproductives. Three species of termites are illustrated in Figure D4. When collecting termites it is important to ensure that where possible soldiers and winged forms are included in the sample. Soldiers are recognizable by their strongly pigmented, pear shaped heads, or by their conspicuous mandibles (jaws).

The number of specimens that may be collected from a particular site will often depend on the size of the colony. However, whenever possible, at least three specimens of each caste should be included.

Termite specimens cannot be stored satisfactorily in the dry state and should be gently transferred to a small glass or plastic vial containing preservative (80% alcohol 4 volumes of methylated spirits to 1 volume water).

All termite specimens should be accompanied by the following data:

(a) Locality, stated as precisely as possible, e.g., the address of the building.

(b) Date of collection and collector's name.

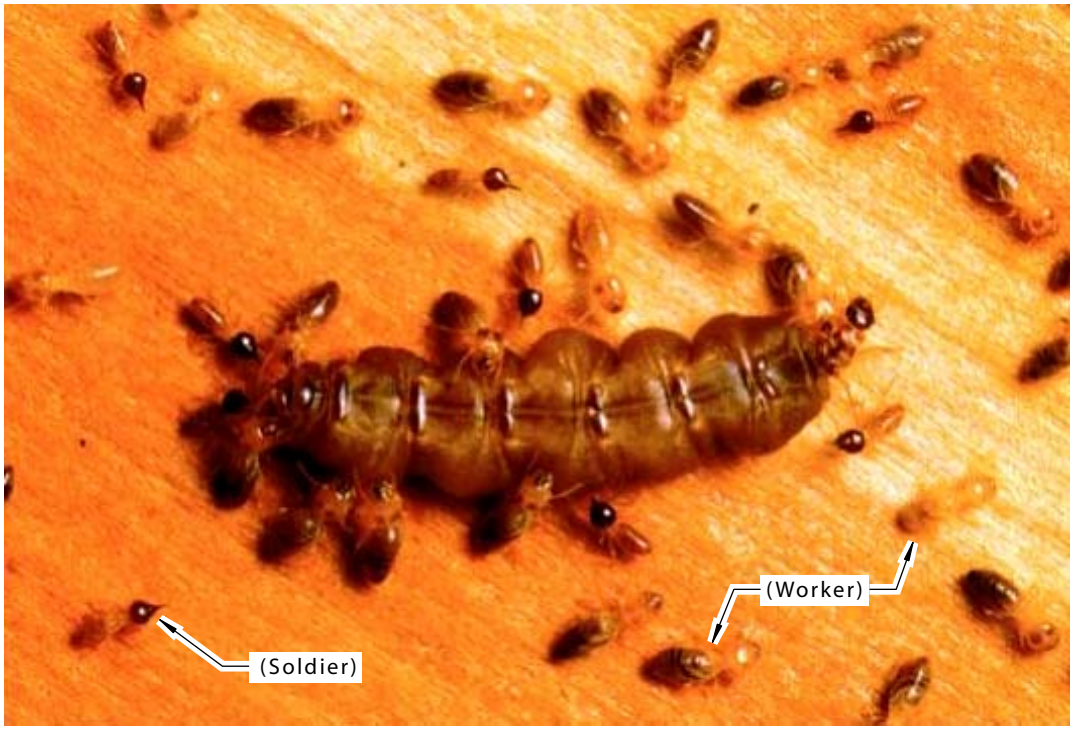
(c) Situation in which collected, e.g., from mound, under log, in flooring.

The data should be recorded in pencil on a label placed in the vial with the specimens.

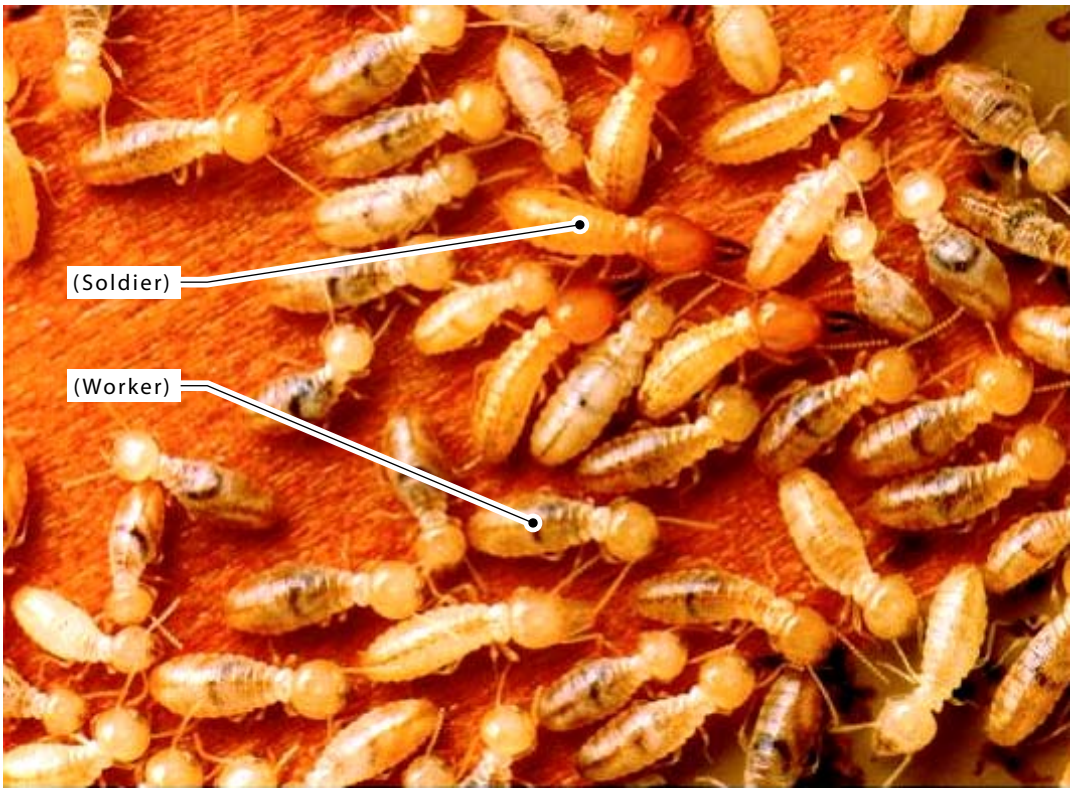
As far as is possible, only one species should be included in each container. It should be pointed out, however, that two or more species are frequently very closely associated, especially in nests or mounds and, in such situations, it is generally impractical to segregate the species in the field.

NOTE: Flammable liquids should not be forwarded through the postal service. Where specimens have to be transported long distances, the preservative should be drained off and replaced with a wad of tissue moistened with preservative. The vial should be well packaged to avoid breakage.

In the absence of a local specialist, the specimens should be sent to the head offices of the State Forestry Services, CSIRO Forestry and Forest Products, Melbourne, or CSIRO Entomology, Canberra, for identification.



(a) Queen, soldiers and workers of *Nasutitermes exitiosus*



(b) Soldiers and workers of *Coptotermes acinaciformis*

FIGURE D4 (in part) SPECIES OF TERMITES

(c) Soldiers and workers of *Mastotermes darwiniensis*

(d) Alates of *Mastotermes darwiniensis*

(e) King, queen, soldiers and workers of *Neotermes insularis*

FIGURE D4 (in part) SPECIES OF TERMITES

APPENDIX E

MOISTURE MANAGEMENT ISSUES

(Informative)

E1 SCOPE

This Appendix describes aspects of moisture management that are important to the timber pest inspector. They are important because moisture is needed by two of the most important classes of wood-destroying timber pests, and detection of elevated moisture levels can under certain circumstances aid the inspector in locating otherwise-hidden timber pest activity, by termites and/or by wood-rotting fungi.

It is not the intention in this Appendix to attempt to address all of those moisture management issues that an inspector carrying out an inspection to AS 4349.1 would need to be informed about. However, there is obviously some overlap between the interests of the two inspections (AS 4349.1 and AS 4349.3) regarding water leaks, moisture build-up in the 'wet-areas' of the dwelling, drainage, discharge of appliance overflows and ventilation.

The importance of moisture management issues, regarding the existing and future risks of damage by the important timber pests (rot and termites), warrants the inclusion of this separate appendix.

While an inspection carried out to AS 4349.3 without tests is of limited value, an inspection with tests is of considerably more value. The tests normally applied comprise the tapping of timber (to determine the soundness of the interior of the timber being sampled), and the use of a moisture meter to determine the presence of elevated moisture levels in materials. This Appendix discusses additional information the inspector can obtain, when the inspector is proficient both at using a moisture meter and in interpreting the results.

E2 MOISTURE ISSUES

E2.1 General

The presence of elevated moisture levels (see Paragraph E2.3) may provide conditions conducive to future timber pest activity, or could possibly indicate that the location of the elevated moisture levels may contain activity of the important timber pests comprising fungal decay (rot) of timber and/or wood-attacking termites. (An exception to the requirement for elevated moisture levels is the development of wood-boring insects of seasoned timber, which can both commence and complete their life cycle in timber of moisture content no higher than 16%).

Note that the material with the elevated moisture level may be an adjacent non-timber material which may then support the activity of timber pests within adjacent timber (either by direct transfer to the abutted material or by providing high local humidity in the immediate vicinity).

E2.2 Detection of moisture

Water leaks may often be readily visible, directly as accumulated freestanding water, or be indirectly-detectable as maybe gaps in materials (e.g. in downpipes) or as missing materials (e.g. missing guttering), defective flashing, corrosion of associated metals, discolourations/depressions (e.g. in soil beneath position of leakage), accumulation of debris (e.g. blocked drains/gutters), presence of localized stains (e.g. localized water/mould stains on a ceiling), open-ended pipes (e.g. downpipes with no drainpipe connection, hot water service overflow pipes, overflow pipe of a grey water storage tank), variations in appearance/consistency of materials (e.g. patch of very soft soil), excessive daylight

entering otherwise-dark areas (e.g. wider-than-normal gaps in roof cover seen from within a roof void). However, in the absence of such readily visible or indirectly visually-detectable water leaks, the human senses are not very efficient at detecting variations in the actual moisture levels within the materials themselves (though sometimes there are accompanying changes in material properties such as the shrinkage/swelling of certain materials, including timber). Therefore, the inspector needs all the help available, in terms of appropriate instrumentation, for detection of elevated moisture levels.

E2.3 Elevated moisture levels

What constitutes an elevated moisture level will vary from material to material. For timber, the material can be considered to be elevated when the moisture meter reading is in excess of a value of 15% (15% being the highest of the equilibrium moisture contents listed in Table C2 of Appendix C of this Standard). Some moisture meters with 'travelling light' indicators often have not every incremental value listed (e.g. for a meter with listed scale values of 6, 8, 9, 11, 12, 14, 15, 17, 19, 20, 22, 23, 25, etc., in which case the appropriate value to consider as being indicative of elevated moisture levels would be a moisture content reading of 17% or greater).

However, a type of moisture meter is available with automatic sound emission once the pointer deflects to a position indicative of an elevated moisture level (which, for one brand of moisture meter, when the timber scale is selected, is anything greater than the pre-set value of 16.5%).

E3 THE DETECTION OF THE PRESENCE OF LEAKS AND THE DETECTION OF THE PRESENCE OF ELEVATED MOISTURE LEVELS

E3.1 General

This Paragraph deals with the detection of leaks and elevated moisture levels, which are of importance to the inspector carrying out an inspection to AS 4349.3, as such moisture management issues relate to timber pest issues.

E3.2 Leaks

The items to look for may include:

(a) Overflowing guttering.

(b) Missing guttering.

(c) Rusted or pitted guttering or downpipes (including stains/mould/water marks on underside of eaves linings in cases of 'concealed guttering', or where the downpipe passes over the eaves linings) or rusted roof sheeting.

(d) Downpipes not connected to a drain/drainpipe.

(e) Overflow pipes of full water storage tanks discharging to ground nearby.

(f) Leaking garden taps.

(g) Blocked pipes (e.g. end of drainpipe over open drain where that drainpipe is full of debris), or blocked guttering (e.g. leaf litter or grass visible above the rim of the gutter).

(h) Broken pipes (including downpipes/drainpipes broken by lawnmower contact).

(i) Stains/mould growth/water marks/irreversible swelling of chipboard, e.g. in subfloor under kitchen/bathroom/toilet/laundry/en suite.

(j) Wet soil/localized soil subsidence.

(k) Toilets (flush to see if they leak at the pan collar).

E3.3 Elevated moisture level in the dwelling

For a dwelling, where there is a subfloor and where the inspection of the subfloor proves to be unobstructed/unrestricted, it may simply be sufficient for the interior tests to comprise looking for elevated moisture levels in the so-called 'wet areas' comprising the kitchen/bathroom/toilet/laundry/en suite.

The following materials can be tested, non-destructively and non-invasively, using a capacitance-type moisture meter (what is known in America as a 'power-loss' meter, which helps explain how such a meter actually works) provided that the moisture meter is set to the setting that is considered by the manufacturer to be appropriate for any particular material being tested:

(a) Ceramic floor and/or wall tiles.

(b) Slate floor tiles (but only if they are relatively low in metal ore content).

(c) Cork floor tiles (but not vinyl tiles or vinyl sheeting).

(d) Exposed floorboards (including any chipboard, plywood, medium density fibreboard (MDF)).

(e) Any other floor materials accessible (e.g. for a slab construction sometimes a small area of the concrete is left uncovered inside the base of a laundry tub or at base inside a cupboard).

(f) Plaster walls (avoid any areas with corner metal angle protective strip under the surface).

(g) Wood-panelled walls.

(h) Skirting boards particularly near ends abutting showers.

(i) Basal parts of exposed doorframe/trim members.

(j) Window sills/reveals particularly of any windows extending down to near-floor level.

(k) Kickboards (whether timber, chipboard or MDF, but not of metal; of vanity/cupboards/units; particularly important because there is a 'dead space' behind which would tend to accumulate any moisture in the near vicinity).

(l) Top surface of shelving in sink cupboard units if any staining/mould/water marks are seen on that shelving.

(m) The wall at other side of any abutted wall, of any tap and/or rose walls of the showers if practicable.

NOTE: Even if the shower has recently been run, and there may be drops of water on wall and floor tiles (but those drops will usually not be continuous), so the moisture meter can still be used to determine if there are elevated moisture contents in any tiles due to the accumulation of continuous moisture behind the glazed surface of those tiles.

Further information may be gained from testing—

(i) exposed flooring of walled-outbuildings abutted to the dwelling (e.g. the concrete floor of an abutted garage); or

(ii) flooring of any former concrete paving/patio which has since been enclosed to form a room of the dwelling; there most likely has never been any damp-proof material positioned under that paving/patio.

For the ground floor(s) of a dwelling on a concrete slab, then in addition to sampling the 'wet-areas' as listed above, the timber pest inspector may find useful information by sampling the skirting, and the basal parts of exposed doorframe/trim (including for robes and cupboards), and sills and basal parts of reveals of any windows positioned near floor level; for all other rooms additional to those wet-areas.

Include sampling of timber steps, if present, at such areas as changes in level for a split-level dwelling on a concrete slab.

E3.4 Drainage

There are three areas of drainage relevant: site drainage, subfloor drainage for dwellings with a subfloor, and wall drainage (i.e. for drainage, of a slab dwelling, from the base of the gap between the wall materials).

E3.5 Site drainage

Many properties are on sloping sites. It would be fair to expect that water run-off (from high side of this property, and perhaps also from neighbouring property) should be collected, and then diverted before it can accumulate against the side walls; this does not necessarily happen. While sometimes there may be an excellent drain running across the front of the slab of an abutted garage, the dwelling itself may have been given no such consideration. So the inspector should be aware of some of the consequences, and could be on the look out for the following:

(a) Garden beds up-slope, abutting the dwelling, (e.g. where the top of the garden bed is higher than the base of weep holes or ventilators, allowing run-off or garden bed watering to pass through the weep holes/ventilators).

(b) Downpipes discharging onto ground at perimeter walls, and also where the soil/paving/ pavers abutting the exterior of that wall do not slope away from the perimeter walls.

(c) When inspections are being carried out during dry weather, and the inspector is not certain that ground/pavers/paving slope away from perimeter walls; then the inspector may wish to consider adding a statement to the subsequent report that observations should be made during and after heavy downpours to check whether run-off accumulates at the exterior of perimeter walls of the dwelling.

E3.6 Subfloor drainage

This is an important area, and in many cases is going to reflect the adequacy or otherwise of the site drainage. For other than a stumped building of weatherboard construction, the subfloor soil should be dry. The experienced inspector may look for:

(a) Signs of water accumulation against any perimeter wall footings, where the soil has not been properly backfilled leaving a trough inside the perimeter wall.

(b) Signs of water accumulation around the base of stumps e.g. in any depression around the stumps which may have been formed following the activities of a pest controller providing a chemical application.

(c) Signs that any scrap timbers on the soil in the subfloor are wetter and/or heavier than average.

(d) Signs that excessive moisture has been moving up through perimeter brickwork, e.g. presence of thick layer of ‘salt damp’ on the internal faces of perimeter brickwork.

(e) Signs that the inspectors overalls are becoming damp/wet during the inspection of the subfloor, perhaps together with the appearance of any wet soil on the soles of the boots worn in the subfloor by the inspector.

E3.7 Wall drainage

Moisture can accumulate in the basal areas of wall voids (in slab constructions of other than in-fill/in-pour type) as a result of condensation of moisture from moist air in the cavity forming on the colder surface when materials of different thermal properties differentially cool down after outside temperature changes. Similarly moisture can accumulate in the basal areas of such wall voids if there are gaps in mortar and wind-driven rain enters into the wall cavity. Such accumulated moisture has to be drained from the base of the flashing which normally runs from under the base of the bottom plate and is then angled down across the breadth of the cavity before coming out in the mortar at the base of the brick course which is one brick course below the internal floor level. Weep holes are usually incorporated as omitted mortar at the vertical abutments of adjacent bricks along the relevant brick course, and are often positioned between every third or fourth brick (but there will most likely be none under windows or under patio doors, where they are not required). The inspector may check the following:

(a) The bases of weep holes being clear of ground and garden beds and paving and pavers, and clear of any abutted slabs of carports/garages.

(b) The weep holes are not blocked or partly-blocked by mortar dags or other debris.

(c) The weep holes have not been filled by uninformed owners ‘not wanting draughts in their walls’, or partly-filled with rolled mesh by owners wanting to prevent possible vermin entry.

(d) Weep holes are not blocked by addition of render to the exterior of the walls (if questioned, the renderer may well state that there is no problem because their rendering is waterproof. From the moisture management point of view the rendering is simply going to hold the moisture of condensation inside the building providing conducive areas for timber pests.

Internal signs of the absence of weep holes, where there were required, may include the presence of excessive mould growth on base of walls and/or on skirting and even on the back of curtaining materials at perimeter windows (how visible that mould growth can be may well depend on the actual natural colour of the individual materials; but there may be an additional mouldy/musty smell).

E3.8 Discharge of appliance overflows

Discharge of water from hot water services and from cooler units can provide conducive conditions for timber pest activity (particularly for any wood-attacking subterranean termite foraging in the soil in the immediate area). In the summer months, in situations with otherwise dry soil around the perimeter of a dwelling, the presence of water from the air conditioner outflow may prove attractive to any foraging termites. So too, particularly in the cooler months, can the combination of the warmed soil beneath the hot water service and the nearby drips from the overflow pipe of that service. It is, therefore, important that the inspector attempt to locate the position of the end of the overflow pipe for any pressurized hot water service (even if the service unit is located in a roof void or in a laundry cupboard, rather then abutting the exterior of a perimeter wall); and that the inspector can then make recommendations for extending the overflow pipe so that moisture is not deposited close to perimeter walls of the dwelling (or in the subfloor of the dwelling).

E3.9 Subfloor ventilation

If the dwelling has a subfloor, then the subfloor is possibly one of the most important areas on the property for inspection by the timber pest inspector. It is where the inspector looks at the subfloor drainage, looks for leakage/mould/stains beneath the wet areas and elsewhere, looks for scrap timbers on the soil (are they moist, if so are they rotting, if so have they attracted termites, or are termites attacking the sound timber), and at redundant formwork timbers (and any remaining levelling hurdle timbers), and timber props/bracing in soil contact.

Other areas to be inspected include checking that floor frame timbers are free of soil contact (not always the case including maybe after restumping has occurred), looking at any stored timber/paper/cardboard, as well as just looking for signs of timber pest workings/damage/activity including termite damage/workings/activity, or for signs of the presence of a notice regarding previous termite management. The inspector should also determine whether the metal antshielding on stumps and perimeter piers is adequate.

The inspector may also be making an important mental note of any particular potential future concealed points for termite entry inside the subfloor (e.g. gaps in basal brickwork of chimney, stump bracing in ground contact, between face of any plinth fixing timbers and the abutted face of the perimeter concrete stumps); such entry points may well figure in the inspector's final deliberation on the risk level of future termite attack for the property.

The timber pest inspector should also look at the state of the subfloor ventilation from either the theoretical or the practical or possibly from both points of view.

Some general observations include the amount of natural light entering the subfloor in certain areas (after the subfloor entry door is closed behind the inspector, and after the torch/floodlight has been temporarily switched off).

The inspector may also look for the following:

(a) Ventilators that are positioned in-line with floor frame bearers (often happens at the perimeter long walls of a dwelling).

(b) Areas with no ventilators present (e.g. abutted garage, abutted patio(s) having fill beneath, at top perimeter wall on a sloped site), including presence of resulting 'dead pockets' where air circulation can be restricted.

(c) Any ventilators which though present are totally buried (no daylight entering); important because from the exterior inspection of the perimeter walls the existence of such ventilators would not have become known (to the inspector now, or previously to the owner).

(d) The size and placement of openings in the inner leaf of brickwork of a cavity brick construction and how they line up with the position of the ventilators of the outer leaf.

(e) That there is sufficient clearance, for airflow purposes, under the subfloor (i.e. a minimum clearance of 150 mm).

(f) Whether both the number and spacial distribution of ventilators is adequate.

(g) The adequacy of the size of the ventilators, and whether the openings in the vent have been blocked or partly-blocked by such things as mortar dags/render/paint or stored goods abutting exterior of perimeter walls.

(h) The adequacy of gaps between any perimeter plinth boards.

(i) Whether there are obstructions to airflow due to the presence of such features as basal brickwork of fireplaces/chimneys, wine cellars in subfloor or workshop areas with delimiting walls.

(j) Whether there are other restrictions to airflow such as the presence of stored goods or the presence of central heating ducting.

E3.10 Subfloor ventilation in practice

In theory, the subfloor ventilation will be adequate if the clearance for airflow is adequate and if there is what is deemed to be adequate area of ventilation airspace per linear metre of perimeter wall (e.g. a minimum of 6000 m^2 of free airspace per linear metre, averaged for the perimeter of the dwelling, is deemed to be adequate for a dwelling in coastal zone, Zone B, in the absence of an impermeable soil cover, in Australia; see Section 3.4.1 of the BCA). However, if the subfloor soil is wet, e.g. because of inadequate subfloor drainage, even with theoretically adequate subfloor ventilation; the ventilation in practice may not be able to keep the floor frame dry.

It is therefore advantageous if at the time of inspection it can be determined whether or not the subfloor ventilation is adequate in practice. The aim of subfloor ventilation is to create a subfloor environment where the floor frame is kept dry.

It is possible to determine, with a suitable moisture meter, the moisture content of the floor frame. The lower face of a sample number of the joists, or the lower face of a sample number of the bearers, are easily accessible in those areas of the subfloor which are unobstructed to inspection. With these sorts of measurements, an inspector is looking to see if there is variation, so it is a good idea to spread the sample area sufficiently wide in order to include any areas of the subfloor where variations have been noted (e.g. where variations in clearance, and variations in abundance of ventilators exists, where variation exists due to obstructions to airflow, where any dead pockets for air-circulation have been noticed, both near to and away from any moist areas which were noticed in the subfloor soil).

Spiders webs have their own inherent moisture, and if they are over the surface of timber being tested it is possible to obtain a ‘false’ reading for the underlying timber of 17% or 19% (even though the timber beneath may actually have a reading of, say, 14%). Therefore spiders webs should be removed from the timber surface before the moisture meter is used, and not removed with sweaty palms (which could inadvertently result in the inspector temporarily increasing the moisture level on the surface of the timber).

While it is possible to use the capacitance-type moisture meter in the subfloor; somewhat more accurate readings can be obtained with a resistance-type meter. The resistance meter has two metal prongs, which can be pushed into the timber (with practice) to a uniform depth. It is normal to insert the probes along the direction of the grain of the timber, rather than across the direction of the grain (unless the instruction booklet for the particular model of meter states otherwise).

Insertion of the probes to a uniform distance practiced by the inspector (e.g. within a range from 1 mm to 3 mm, because of the difficulty of inserting pins further into a hardwood timber) is a suitable uniform approach (while, again, making sure that spiders’ webs are not present on the surface of the timber to give a potential false reading). While some persons may consider the use of a resistance-type moisture meter to be an invasive procedure, the operator is making few holes and none of the holes are deep and there is an insignificant effect on the structural integrity of the sampled timber. In areas protected from the weather where the inspector is not destroying any surface coatings the procedure can give some very meaningful information.

APPENDIX F

STRATA AND COMPANY TITLE PROPERTY INSPECTION

(Informative)

F1 GENERAL

Pre-purchase inspections and inspections for other reasons on strata and company title buildings and similar forms of community title are subject to particular issues that can result in problems between the client and inspector.

Probably the most common problem is the failure of the client to appreciate the significance of the difference between individual and common property.

Sometimes, pre-purchase inspections are not requested because of an assumption that an examination of the strata records alone will adequately inform the purchaser of potential building defects and timber pest issues. Body corporate records will only disclose those building defects and timber pest issues that have been brought formally to the attention of the body corporate. The records will not necessarily reveal all the building defects or timber pest issues.

F2 SCOPE OF INSPECTION

With strata and company title properties, the inspection is limited to the interior and the immediate exterior of the particular residence to be inspected, as that is the extent of the individual property. The inspection does not include review of body corporate or similar records nor an inspection of other individuals' property nor the common property.

An inspection of all strata and company title property, including the interior and exterior of every unit and all common property, would need to be carried out to determine if any building defects or timber pest issues exist and if so, the extent of any such building defects or timber pest issues. Where clear evidence of any timber pest issue is apparent during the inspection in accordance of this Standard, the inspector should advise the client to obtain an inspection of all common areas and all other units and buildings and structures within the property boundaries.

The need for timeliness and urgency in carrying out inspections and any relevant repairs and maintenance and pest control, in order to protect the property, concerning not only the unit indicated by the client but other units, buildings, structures and landscaping within the property boundaries, should be clearly outlined to the client.

F3 LIABILITY FOR MAINTENANCE COST

A prospective purchaser should be aware that their liability for the cost of repairing building defects and timber pest issues is not restricted to the particular unit which they are proposing to purchase, but may include contribution to the whole of the common property including other people's units. Thus, an inspection of the particular unit and its immediate surrounds may be of limited assistance to the prospective purchaser as an indicator of the total extent of their overall liability to contribute to the cost of repairs.

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