

Engineered for Success:

Preventing Common Issues In Engineered Timber Flooring Installation



INTRODUCTION

In Australia, timber remains one of the most popular flooring materials. According to the Australasian Timber Flooring Association (ATFA), timber flooring represents approximately 25% of the flooring market – a figure that is steadily growing.¹ Engineered timber flooring specifically has become more commonplace as it offers several advantages over solid timber, including its inherent stability, durability and greater resistance to temperature and moisture fluctuations.²

However, installation issues with engineered timber flooring can occur without the right level of skill, experience and preparation. This can be attributed to several factors such as the varying quality of engineered timber flooring products; the choice of installation methods (some of which have a small or no margin for error); and detrimental site conditions including uneven sub-floor and excess humidity, moisture or heat.

Product not suitable for the application or poorly-installed engineered timber flooring can create a headache for clients, installers, specifiers and suppliers. Moreover, problems can occur at any point during an installation – at the beginning, middle or end of the process. Sometimes installation issues only become apparent sometime after installation, leaving clients with little recourse for dealing with the defective floor.

It is critical that all involved in the selection of engineered hardwood flooring -- from architects, interior designers, specifiers, builders and installers -- each understand the factors that contribute to issues during engineered timber flooring installation and how to prevent such issues from occurring.



THE COSTS OF POOR FLOORING INSTALLATION

The impact of a poorly-installed engineered timber floor should not be understated. Poor installation can lead to underperforming and unattractive looking floors, a situation that can easily be avoided when time and attention is given to avoiding careless and unnecessary pitfalls. Some of the issues that can be avoided include floorboards swelling, bouncing, squeaking, warping and twisting, cracks and separation between floorboards, buckling in the floor, and inconsistent colour and appearance. Poor storage and handling can also

result in the flooring product being damaged before it is even fully installed.

Installation issues in relation to engineered timber flooring can cause project delays and incur extra costs for replacement and/or repair. In the worst cases, flooring must be removed and re-installed involving significant cost and inconvenience. For building professionals, these types of issues can lead further to disputes with clients that can harm their business reputation.



ABOVE PROJECT: Bischoff Residence. LOCATION: NSW. DESIGNER: Tom Mark Henry. PHOTOGRAPHER: Pablo Veiga.
HAWWOODS PRODUCT: HW1390 Versailles Natural. **COVER PROJECT:** O'Briens Lane, Templestowe Home. DESIGNER: Patricia La Torre.
PHOTOGRAPHER: V Style Imagery.

COMMON INSTALLATION ISSUES: CAUSES AND WARNING SIGNS

Ability of the installer

It is mandatory for installers to have the required skills and experience in engineered timber flooring. Without the relevant skills and experience, installation will often run into the unnecessary issues mentioned above. Not only do installers need to have general experience with timber floor installation, they should also be experienced in the specific product and installation method needed for the project. Some installation methods, such as parquetry installation, have no margin for error.

Poor planning and preparation

Poor planning and preparation can also cause problems. For example, if the installer does not pre-lay the timber before fixing down, there is an increased risk that the natural knots and patterns of the wood will not be evenly spread throughout the floor. Particularly with parquetry flooring, the way planks are laid along the long joins can have a huge impact on the final look and feel of a space.

The installer also needs to understand how humidity, direct sun light and heat in the space will affect the product. Conditions such as humidity, high temperatures and excess moisture can cause flooring to swell, warp and buckle. While engineered wood is more resistant to temperature and moisture fluctuations, poorly-prepped sub-floors and products ill-suited for the installation conditions will lead to issues during and post installation.

Inferior flooring product

Inferior or poorly-specified products will also contribute to installation problems. Products must be sourced from known and reputable suppliers to ensure the product is up to the required Australian standard and fit for purpose. Low-quality products can leave installers with negative preconceptions about working with engineered timber flooring despite its performance and aesthetic benefits.

Client expectations

If installation expectations are not managed from the outset, the client may receive an unsatisfactory floor even if the product itself is not defective. The client should be made aware that colour variation can occur between showroom samples and production batches.³ There can also be natural colour variation between boards of the same species.⁴ It is also of great importance that the client understands that a character grade timber will have varying size knots and general features such as gum vein, sapwood and cracks. Such characteristics are a part of nature and not to be regarded as defective material.

Where customer expectations or preferences cannot be met, this must be clearly communicated early in the installation process.⁵

Poor product storage and handling practices

Inappropriate site storage of the product can lead to issues during the install. For example, flooring products stored in conditions with excess moisture can compromise the stability and performance of the floorboards. Similar issues will be encountered if the flooring product is stored in conditions unlike the site conditions in which the floor will be installed and used. Poor or careless handling practices can also damage the flooring product.



AVOIDING THE PITFALLS: KEY CONSIDERATIONS BEFORE INSTALLATION

Before selecting and installing engineered timber flooring products, reference should be made to ATFA's *Engineered Timber Flooring Industry Standards*. This publication provides a manual for the installation of engineered timber flooring laid as floating floors or by direct adhesive fix to structural sub-floors.⁶ Below are some of the key considerations to be made before installing engineered timber flooring.

Choosing the right product

There are a variety of engineered timber flooring products on the market, including straight plank, herringbone, or chevron floorboards, and pre-assembled, mixed or bespoke solutions. There are no standard board sizes and widths as they vary between manufacturers.⁷

When selecting a flooring product, its performance profile and material properties should be carefully assessed. Key characteristics include the product's stability in humid conditions and the amount it expands and contracts depending on changes in the environment. Compliance with the National Construction Code should be checked, particularly whether the product meets the relevant fire performance and slip resistance requirements.

Most engineered timber flooring is prefinished in the factory, resulting in a high standard finish.⁸ Some products are available unfinished, meaning they can be sanded and coated on site, but this process is prone to imperfections.⁹

Product grade, features and colour variation should also be considered. "Grade" refers to the size and number of features present on the boards.¹⁰ "Features" refer to gum veins, knots, borer activity and other natural markings present on the floorboards.¹¹ As noted earlier, there may be natural variations within floorboards of the same species and between showroom products and production batches.

Whether the flooring product is to be installed as a floating floor or by direct adhesive fix, it is important to note the type of installation as it will impact other considerations such as the preparation of the sub-floor. Engineered timber flooring is available in different profiles, such as click-and-lock joint systems ideal for simple and quick floating installation or tongue and groove profiles specially designed to enable fast, quality direct fix installation. It is important to understand that the installation methods available to you can depend largely on the profile of the product. For example, tongue and groove profiled products often cannot be installed as a floating floor.

Choosing an accredited installer

A lack of correct site preparation and incorrect installation may void the product warranty. It is advised to choose an ATFA-accredited installer, who will have the requisite skill and experience in engineered timber flooring to reduce the risk of installation issues.

Assessing site conditions

Before installation, consider the layout of the room and the direction long edges or patterns should follow. Expansion joints and expansion space around the perimeter should also be planned to avoid issues when the flooring expands or contracts due to temperature and moisture fluctuations.¹²

A flooring product's suitability for the installation environment is critical to success. Some products and installation methods are better suited to different localities and environments than others.¹³ Accordingly, before installing an engineered timber floor, environmental factors in the dwelling should be assessed. This includes the specific climate of the installation site, particularly the expected levels of humidity, temperatures and direct sun exposure. The impact of cooling and heating systems should also be considered to determine the conditions the floorboards will likely encounter over its service life.

Extreme temperatures can be detrimental to flooring performance and appearance and need to be anticipated. A special case is where flooring is to be installed on a site with underfloor heating, which causes regular temperature fluctuations in the floor. In such cases, the engineered timber flooring product must be suitable for use with underfloor heating and the manufacturer's installation recommendations must be followed to avoid disappointment.

Site storage and acclimatisation

Flooring products should be handled carefully, stored in dry conditions and elevated from the ground.¹⁴ Some products require "acclimatisation" (also referred to as "acclimation"), meaning they need to be stored in the installation environment for a period of time so that the moisture content of the wood can adjust to that environment.¹⁵

Sub-floor preparation

Regardless of type, sub-floors should be flat, clean and dry and suitable to receive the engineered timber flooring system and, in the case of direct adhesive fix applications, free from contaminants that could compromise the effectiveness of the adhesive.¹⁶

The risk of moisture absorption is an important aspect of sub-floor preparation. If slab moisture is not effectively managed, flooring laid over concrete sub-floors can be prone to moisture absorption from the sub-floor which causes swelling, adhesive failure, cupping and crowning.¹⁷ Slab moisture should be assessed using the relevant measuring equipment, and any excess moisture addressed before installation.

Excess moisture in the sub-floor can be managed in a variety of ways. A vapour barrier can be added between the concrete and flooring. Minimum 200um vapour barrier backed underlays can be used as an intermediate layer between the floor and sub-floor and act as a moisture vapour retarder.¹⁸ (Underlays can also be used to enhance acoustic performance.) Sub-floor drainage and ventilation may also be considered to further protect the sub-floor from moisture.

Timing of installation

The timing of installation can have a significant impact on a floor's longevity and performance. In higher humidity conditions, internal conditions are more likely to reflect external conditions during the building phase.¹⁹ In such cases, it is advisable to commence floor installation towards the end stages of the building process so the installation conditions are as close as possible to the actual in-service environment.²⁰

HAWWOODS

With over 40 years' experience and a passion for ensuring our customers receive high-quality, fit-for-purpose wood products, Havwoods is the leading supplier of engineered timber flooring and cladding for residential, commercial, high-volume retail and hospitality projects around Australia.

With more than 200 products sourced from around the world and product ranges certified by FSC® (C009500) and PEFC™, Havwoods is committed to driving innovation, outstanding product expertise and superior customer service.

Reinforcing their belief in the high-quality performance of their products, Havwoods offers warranties for all their products when installed to the manufacturer's installation recommendations (which vary depending on the product and application). To ensure successful installation, Havwoods recommends using only ATFA-accredited installers.

Havwoods Engineered Timber Flooring

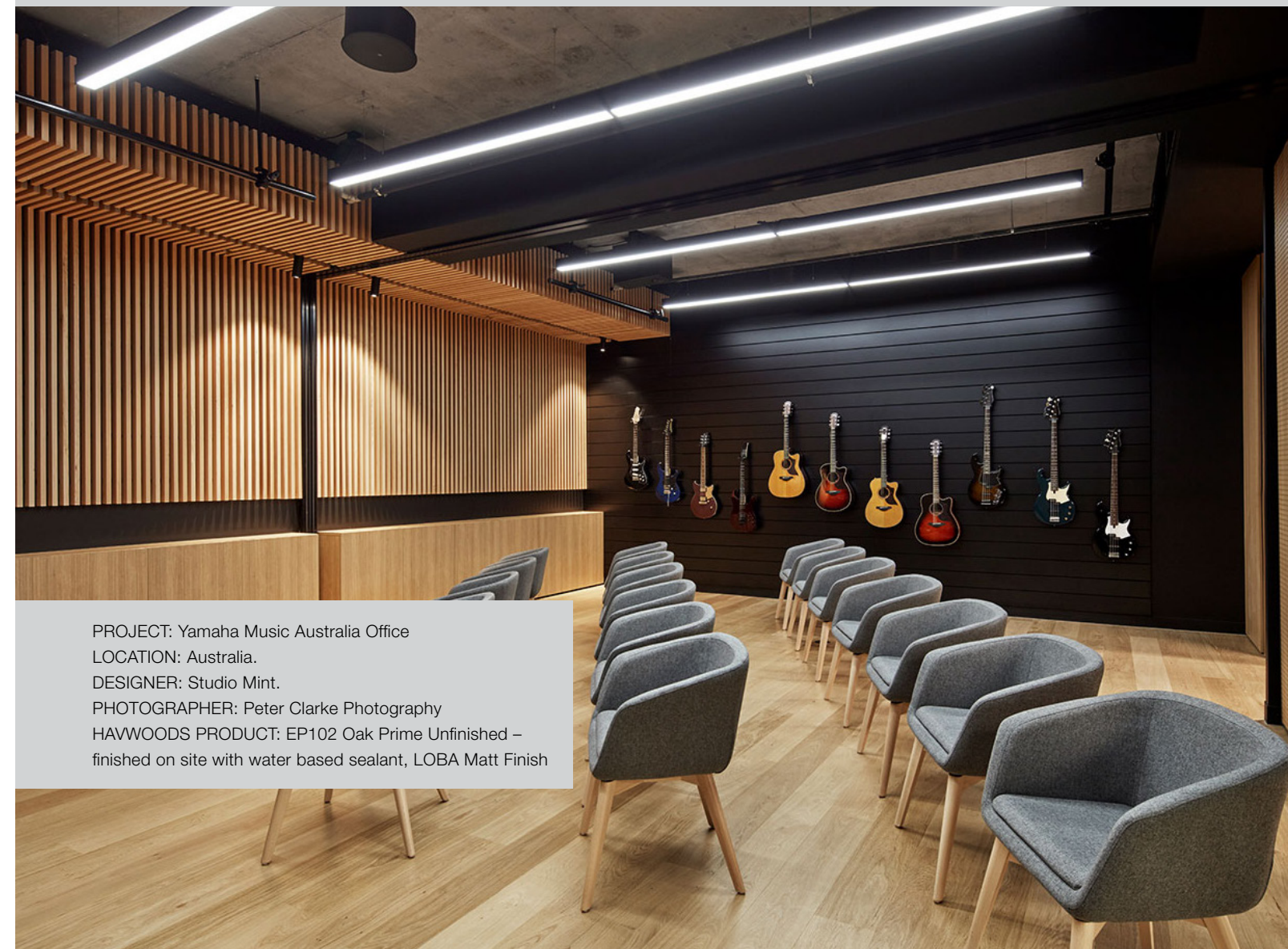
The Havwoods collection features a range of high quality, pre-finished and unfinished engineered timber flooring, from herringbone and chevron blocks to textured, genuine reclaimed and reproduction reclaimed planks. With a product for any style or application, these precisely-manufactured flooring solutions are available in a range of designs, colours and finishes including natural wood finishes and intricate European-style patterning.

Made in exceptional factories to the highest standard, Havwoods flooring is easy to handle and install, with a variety of profiles, including click system and tongue and groove, delivering fast, quality installs. Some of Havwoods flooring products do not require acclimatisation and excel in terms of performance, maintenance of colour and sustainability. When installation instructions are followed, Havwoods products offer flexible, easy-to-use solutions that cut down on time and cost of installation while delivering premium aesthetics and functionality.

In most cases, Havwoods engineered timber flooring can be used over underfloor heating. This is dependent on the type of underfloor heating system. Havwood's team of industry experts can offer advice on this and all other aspects of floor installation, including the methods and types of install required for each product.

Lunch & Learn

Havwoods offer Lunch and Learn presentations that enable industry professionals to collect CPD points and ensure they are up-to-date with the latest standards and industry information. Engaging, informative and conducted by industry experts, these sessions cover a range of topics including how to correctly specify and/or install engineered timber flooring, quality control, care and maintenance, and sustainability.



PROJECT: Yamaha Music Australia Office
LOCATION: Australia.
DESIGNER: Studio Mint.
PHOTOGRAPHER: Peter Clarke Photography
HAWWOODS PRODUCT: EP102 Oak Prime Unfinished – finished on site with water based sealant, LOBA Matt Finish

References

- ¹ Australasian Timber Flooring Association. "About ATFA." ATFA. <https://www.atfa.com.au> (accessed 21 January 2020).
- ² Pugel, Anton D. "Seeing the benefits of engineered wood." The Construction Specifier. <https://www.constructionspecifier.com/specifiers-guide-benefits-engineered-wood> (accessed 21 January 2020).
- ³ Australasian Timber Flooring Association. Engineered Timber Flooring Industry Standard. Version 2. Australia: ATFA, 2018.
- ⁴ Ibid.
- ⁵ Ibid.
- ⁶ Australasian Timber Flooring Association. "Engineered Timber Flooring Industry Standards ebook." ATFA. <https://www.atfa.com.au/shop/engineered-flooring-industry-standards> (accessed 21 January 2020).
- ⁷ Above n 3.
- ⁸ Ibid.
- ⁹ Ibid.
- ¹⁰ Ibid.
- ¹¹ Ibid.
- ¹² Australasian Timber Flooring Association. "Providing for floor expansion." ATFA. https://www.atfa.com.au/wp-content/uploads/2015/08/57_Providing_for_floor_expansion.pdf (accessed 21 January 2020).
- ¹³ Above n 3.
- ¹⁴ Ibid.
- ¹⁵ National Wood Flooring Association. "Chapter 2: Acclimation and Conditioning of Wood Flooring." In Wood Flooring Installation Guidelines and Methods. Chesterfield, Missouri: NWFA, 2012.
- ¹⁶ Above n 3.
- ¹⁷ Ibid.
- ¹⁸ Ibid.
- ¹⁹ Ibid.
- ²⁰ Ibid.

All information provided correct as of January 2020.