

Hardwood Decking Guide
v3.8

JSC

PREMIUM ARCHITECTURAL
& BUILDING SOLUTIONS

TIMBER DECKING:

WHAT TO EXPECT AND KEY DESIGN CONSIDERATIONS

WHAT TO EXPECT

A timber deck provides a natural and beautiful outdoor space but requires regular cleaning and maintenance to keep its longevity and appearance. If a coating is applied, periodic recoating will be necessary to maintain its integrity. Here is what to expect:

- Natural aging: Timber decks will weather over time. Regular exposure to sunlight and moisture changes will cause colour variation in the timber.
- Movement in service: Like most materials, timber moves. Timber is a natural material and responds to changes in moisture levels. This is an inherent characteristic of timber. Proper ventilation and drainage are essential to minimise movement in service.
- Black marks and spots: Keep your deck clean to avoid them. These can occur due to inherent timber characteristics or caused by site contamination. Some species, like Purpleheart, Garapa and Vitex may develop spots due to a reaction with alkaline substances or metal particles. Site-related contamination can occur from activities such as cutting fibre cement, brick, metal or concrete nearby, as the particles can react with the timber. Organic contamination can also occur, such as flowers or seeds falling onto the deck. These marks from contamination are more noticeable on light-coloured timber decking. Depending on severity, black marks may be cleaned using deck cleaners. Attend to the clean-ups immediately you see them developing.
- Surface checking: These checks are primarily cosmetic and do not affect the structural integrity or soundness of your deck. Fine lines in the timber are a natural occurrence as the timber adjusts to environmental conditions, such as moisture changes and UV light.

KEY CONSIDERATIONS

Timber decks are typically fully exposed to weather, leading to gradual deterioration due to ongoing wetting, drying and UV exposure. Key factors such as board span, spacing, framing, ventilation, and sealing, as outlined in this guide, help mitigate common moisture-related issues. To minimise moisture retention and ensure performance, consider the following:

- Prevent leaves and debris buildup, which can trap moisture and restrict airflow.
- Allow water to escape. Trapped moisture or ponding water can accumulate where there are no drainage gaps.
- Preventing moss and mildew growth reduces surface slipperiness and staining.
- Decks that receive little or no sunlight, such as those on the south side of a building are especially vulnerable.
- Proper sealing and ventilation help protect timber from prolonged moisture exposure, reducing the likelihood of decay.

Timber can release natural extractives when first installed, potentially staining nearby surfaces. Kwila is an example of high-tannin species. The extent and colour of the leaching depend on the timber species and weathering. For example, water-soluble Vitex run-off is less likely to cause permanent stains while Kwila run-off is darker and harder to remove. When installing timber decking near pools or porous surfaces like tiles, select low-tannin species to minimise staining risk. For advice on your specific scenario, contact JSC.



Cover image: JSC Vitex Hardwood Decking | The Dart | Studio John Irving Architects | Photo: Simon Wilson
This page: JSC Purpleheart Hardwood Decking | Rocky Ridge Te Anau Home | Fabric Architecture | Te Anau Homes Ltd | Stephen Goodenough & Douglas Thorne Photography

BUILDING ELEMENTS

INSTALLATION REQUIREMENTS

Deck Framing

JSC Hardwood decking should be installed over deck framing compliant with NZS 3604:2011.

BOARD THICKNESS

Board Span

Deck joists and bearers must be spaced to comply with NZS 3604:2011 requirements or specific engineered design.

The maximum joist spacing for normal loads required to install JSC Hardwood decking is as follows:

- 19–25mm deck board thickness: Maximum 450mm joist centres
- 32–42mm deck board thickness: Maximum 600mm joist centres

Board Spacing

The appropriate gap between decking boards depends on several factors, particularly timber dryness.

As a guide, JSC recommends spacing gaps as per table below:

Drying method	65-115mm wide profiles	125-145mm wide profiles
Kiln dried (KD)	4mm gap	6mm gap
Air dried (AD)	3mm gap	4mm gap

Table 1 - Board spacing

It is important that the moisture content of the decking boards is consistent. See Storage and Handling for proper storage.

Other key factors affecting board gaps:
- Board width: Wider boards require wider gaps. Refer to Table 1.
- Variation in seasonal conditions: Hot, dry, and cool, wet weather affects timber size depending on the extremes, variation and exposure.
- Species: Some species are more stable than others. Contact JSC for advice.
- Sun exposure.
- Sub-deck moisture: Poor ventilation can lead to moisture build-up. Ensure good airflow and drainage under the deck.

Always adjust spacing based on the implications of these conditions. Allowing adequate gaps between deck boards is essential for proper drainage, air circulation, and to allow for seasonal movement.

Install the decking across the joists. For improved slip resistance, position the decking boards across main direction of traffic.

When installing the deck boards:

1. Determine the recommended gap size based on Table 1 and environmental conditions.
2. Add the board width and the gap size together. This combined measurement becomes the basis for your layout.
3. Mark out the layout on the joists.

Instead of setting each board and gap individually, measure and mark the total spacing for a group of boards at a time (e.g., 4–5 boards).
As you install, periodically check your spacing to ensure consistency and make any small adjustments as needed.

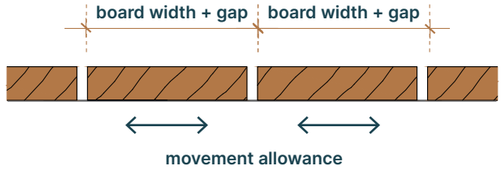


Fig. 1 - Boards layout

Ventilation and Drainage

Air circulation under the decking is very important to help minimise cupping and surface checking. Appropriate ventilation under deck reduces the potential difference in moisture levels between the top face and the underside of the board, improving the deck's long term performance and appearance.

The sub deck should have at least 450mm clearance from the ground. This, in conjunction with suitable board spacing, should allow for adequate ventilation and drainage. Refer to Fig. 2.

When enclosing the sides of a deck, ensure the space under the deck is well ventilated by installing slats with gaps between them.

To minimize moisture differentials, consider installing a ground-level vapour barrier with silt drainage under the deck, particularly in wet areas.

Applying a suitable wood oil to cut edges of the decking boards, as outlined in the sealing and coating sections of this guide will help to avoid moisture uptake.

In wet areas or over water, provide extra clearance to prevent moisture issues. Decks installed over membranes are considered a high-risk application. If proceeding with this installation, ensure substrate falls and thresholds meet E2/AS1 to allow drainage and avoid water pooling. Poor ventilation can distort and damage decking, especially over membranes.

In these circumstances, coating the back of boards before installation may help reduce moisture uptake. Always consult the membrane manufacturer's guidelines to confirm suitability and follow specific installation requirements of coating.

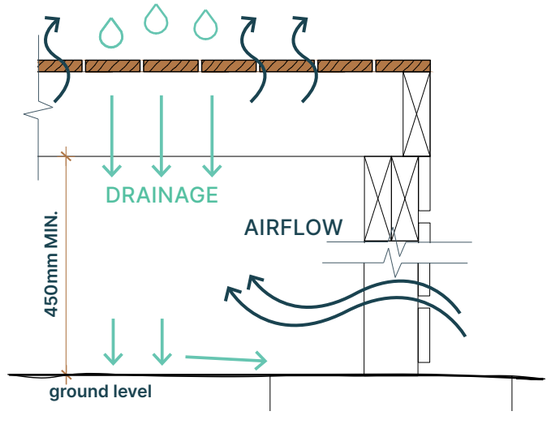


Fig. 2 - Ventilation and drainage

Remember that it is important that the perimeter of the deck is not fully enclosed and remains open to airflow.

Acceptable Solution E2/AS1 requires that slatted timber decks should have a 12mm minimum gap between the external wall cladding and the deck. Refer to Fig. 3.

Completely enclosing the sides of the deck will block ventilation and compromise its performance.

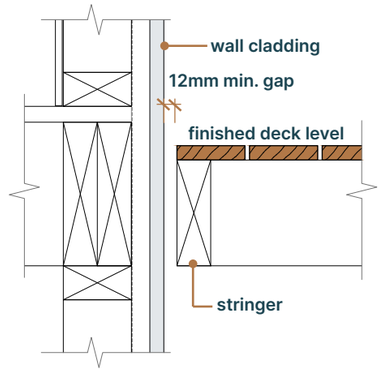


Fig. 3 - 12mm gap to wall cladding

PRE-INSTALLATION

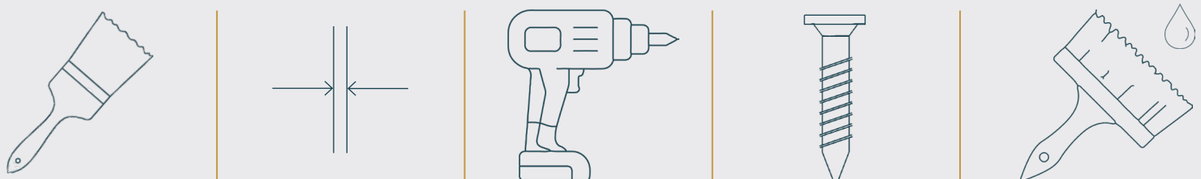
Storage and Handling

Decking should be kept dry and protected from the weather until installation. Decking boards must be stored off the ground on dry, clean bearers and covered to prevent exposure to sun, rain, and airborne contaminants. Direct sunlight can cause uneven fading and colour variations, while wet, block-stacked decking may stain, discolour, or develop mould. Proper storage is essential to achieve a well finished installation.

Decking should remain in its original packaging until just before installation. Do not open the packaging and leave the boards exposed for an extended period before or during installation. Protect packed decking from weather, as wet timber will shrink after installation.

Moisture content should be consistent across all decking boards before installation. If the packs are not stored properly, boards in the middle of a pack can have a different moisture level than those on the outside, leading to potential movement after installation. If the moisture content is inconsistent, some boards will shrink while others will expand, creating uneven gaps and affecting the overall deck layout.

INSTALLATION



1. Sealing

End sealing will help minimise splitting and checking at the ends of the boards. JSC recommends the boards to be end-sealed with wood oil, such as Dryden or Cutek CD50, as soon as possible after cutting and before final installation.

2. Board Spacing

Set up gaps as per factors mentioned on page 4 of this guide and as per Table 1.

3. Pre-drilling

Use the countersink drill bit to drill the holes in the decking boards, ensuring the holes penetrate only through the decking and not into the joists.

4. Fixings

It is essential that all screws points are pre-drilled and countersunk to reduce the risk of splitting and ensure a quality finish. Diameter of drill bit is relative to its fixing. Fixing placement to be 20mm from the edges of the boards.

JSC recommends that all hardwood decks are fixed using stainless steel countersunk screws.

Self drilling screws are not recommended. Their use will be at installer's own risk.

5. Coating

Hardwood decking typically does not require a coating. However, when the right coating is selected, correctly applied, and properly maintained, coating can help minimize surface checking, reduce cupping, and slow the silvering process.

If you want to coat your deck we recommend that a “clear” decking oil is used. Do not use linseed oil based products, as it can facilitate mould and fungal growth.

Clear oil coating won’t prevent decking from silvering/ greying-off.

JSC offers a factory-applied coating option to speed up application. Cut ends need to be coated during installation.

Boards should be free of all surface marks and stains before coating. **Always follow the manufacturer’s guidelines for cleaning, application, and drying.**

Clean and dry the deck thoroughly before application. Apply coatings along the entire length of each board to avoid overlap marks. Avoid thick applied coatings as this may prevent full absorption into the timber, also resulting in uneven finish. Never apply coating over visible contaminants, as this will trap them and make the surface harder to clean over time.

Decking Thickness	2 fixings per decking board, per joist (20mm from edges)		
19 - 25mm	12g x 65mm 316 Stainless Steel Hex Drive Countersunk Screw		
32mm		14g x 75mm 316 Stainless Steel Hex Drive Countersunk Screw	
42mm*			14g x 90mm 316 Stainless Steel Hex Drive Bugle Head Countersunk Screw

Table 2 - Fixings

* Consider using 3 fixings per board for wide decking profiles.

NB: JSC does not endorse the use of hidden fixing systems with this product.

FIXINGS AND ACCESSORIES

Decking Screw Options

- 12g x 65mm 316 Stainless Steel Hex Drive Countersunk Screw for 19 - 25 mm thick boards
- 14g x 75mm 316 Stainless Steel Hex Drive Countersunk Screw for 32 mm thick boards
- 14g x 90mm 316 Stainless Steel Hex Drive Countersunk Screw for 42 mm thick boards

Specifications:

- Premium T316 Grade Stainless Steel
- Type 17 Point

NB: When installing boardwalk decking use Stainless Steel Hex Drive Bugle Head Screws



Pre-drilling and Countersinking Tool

Designed specifically for use when installing hardwood decking with JSC Stainless Steel Hex Decking Screws.

NB: Pre-drilling and countersinking is essential when working with hardwood decking





JSC Vitex Hardwood Decking | Te Horo Beach House | First Light Studio | Pinnacle Construction | Andy Spain Photography

MAINTENANCE

Regular maintenance ensures your deck looks great, remains in good condition, extends its lifespan, and minimises repairs over time.

General Maintenance

- Regularly sweep or use a leaf blower to clear away dirt and leaf build-up. Pay special attention to maintaining gaps between boards, especially over joists, to prevent debris from accumulating and retaining moisture.
- Inspect at least annually, check for signs of wear, rot, or damage.
- Re-coat as recommended by the coating manufacturer, following their specified timeframes and application instructions.

To prevent moisture build-up that can lead to discolouration or rotting, move potted plants or objects placed directly on the deck periodically, or elevate them to avoid prolonged direct contact with the decking. These items can trap moisture underneath, preventing the timber from drying out properly.

Cleaning and Washing

Clean your hardwood deck annually using a brush with water and mild detergent, a bleach solution (1:10) or a proprietary deck cleaner. Do not direct high pressure water on any timber deck, as it can permanently damage the timber.

When cleaning your deck with a proprietary deck cleaner, always follow the manufacturer's instructions.

Typically, the cleaning process involves soaking the deck (avoiding direct sunlight), scrubbing it, focusing on grooves and gaps, and rinsing thoroughly. Ensure the deck is allowed to dry, but never let it dry with cleaning product residue on the surface.

Recoating

For coated decks, periodic recoating is essential to maintain the integrity of the finish.

Clean the surface before re-coating to remove dirt, mould, marks and any loose particles. Follow the cleaning process specified by the coating manufacturer to ensure the surface is properly prepared.

Never apply a new coat over contaminants, as this will trap them and make the surface harder to clean over time. Always follow the manufacturer's guidelines for cleaning, application, and drying.

NOTE: These guidelines should be read in conjunction with the New Zealand Building Code. Refer to the following when building a deck:

- NZS3602:2003 - Timber and Wood-based Products for Use in Building
- NZS3604:2011 - Timber-framed Buildings
- NZS3605:2001 - Timber Piles and Poles for Use in Building
- NZS3640:2003 - Chemical Preservation of Round and Sawn Timber
- BRANZ Bulletin 611 - Timber slat decks (2017)
- BRANZ Bulletin 583 - Waterproof Decks (2015)
- BRANZ Good Repair Guide - Timber Decking

DISCLAIMER: JSC's Hardwood Decking is manufactured with care and inspected to ensure quality. It is a natural wood product and subject to variations in weight, density, colour, grain and performance. Some swelling, shrinkage, movement and checking are normal occurrences in properties of timber decking.

When coating/re-coating the deck always follow coatings manufacturer's instructions for cleaning, application, and drying.

TIMBER SPECIES COMPARISON - *Typical Properties*

Species	Residential Standard Sizes (mm)	Marine / Commercial Size Range (mm)	Length Spread	Durability*	Typical Properties						
					Density (kg/m3)**	Modulus of Rupture (MPa)		Modulus of Elasticity (GPa)		Hardness (Janka/kN)	
						Green	Dry	Green	Dry	Green	Dry
Cumaru *(Dipteryx odorata)*	✔ Smooth (S4S/E4E) 21 × 90 / 145	✔ Typically 32 – 42 (thickness) × 90 – 200 (width)	Random Lengths	Class 1	1100	132	188	18.3	26.6	—	13.7
Garapa *(Apuleia leiocarpa)*	✔ Smooth (S4S/E4E) 19 × 90 / 140 32 x 140	—	Random lengths only ranging from 1.8m - 4.8m and longer in some cases	Class 2	900	—	128	—	15.88	—	7.3
Greenheart *(Chlorocardium rodiei)*	—	✔ Typically 32 – 42 (thickness) x 90 - 200 (width)	Random Lengths typically 1.8m - 5.7m	Class 1	1100-1200	140	180	16	22	8.4	11
Ipe - *Indent only* *(Handroanthus spp/ Tabebuia spp)*	—	✔ Typically 32 – 42 (thickness) x 90 - 200 (width)	Random Lengths typically 1.8m - 5.7m	Class 1	1100	—	166	—	22	—	15.6
Ironbark *(Eucalyptus Paniculata)*	—		Random Lengths typically 1.8m - 5.7m	Class 1	1125	114	138	18	20	11	14
Kwila *(Intsia bijuga/ Intsia palembanica)*	✔ Grip Tread/Smooth (GT1/E4E) 19 × 90 / 140	—	Random Lengths typically 1.8m - 5.4m	Class 1-2	830 - 870	103	115	15	15.4- 18	7.6	8.6
Purpleheart *(Peltogyne spp)*	✔ Smooth (S4S/E4E) 19 × 65 / 90 / 140 42 × 65 / 90 / 140 Drydek 20 × 140	✔ 42 (thickness) x 90 - 200 (width)	Random Lengths typically 1.8m - 5.4m	Class 2	900-1100	105	147	14	17	9.2	11
Tali *(Erythrophleum suaveolens)*	✔ Smooth (S4S/E4E) 19 × 140	✔ Typically 32 – 42 (thickness) x 90 - 200 (width)	Random Lengths typically 1.8m - 5.7m	Class 1	900	—	154	—	19.4	—	13
Vitex *(Vitex cofassus)*	✔ Smooth (S4S/E4E) 19 × 90 / 125 / 140 32 x 140		Random spread, heavily from 1.8m - 3.6m	Class 2	700-800	80	113	12	14	5.1	5.6

***Based on above ground applications; in-ground use reduces durability by one level. Durability classifications provide a useful comparative guide, however factors relating to specific installations and natural timber variation may result in some pieces falling outside the species' durability classification. Durability classification applies to heartwood only; sapwood is excluded.**

**** Density (kg/m3) is an average indication only, measured at 12% moisture content (dry condition) and actual density may vary from piece to piece.**

NOTES:

- **The timber properties provided in this document are intended as guidelines only. Actual properties may vary depending on the origin, growth conditions, and other environmental factors affecting the timber. JSC has not conducted specific testing on the timber properties referenced. The figures quoted are sourced from the references cited in this document and should be used as a general guide only.**
- **More species and custom sizes available upon request. Ask us about FSC® certified products. Contact us for more info at sales@jsc.co.nz.**

» S4S: Smooth Four Sides / E4E: Eased Four Edges / GT1: Griptread One Side

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