bbi wood products
Endless possibilities.

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Installation Guide for Hardwood Decking

90-190mm Wide Kwila Decking

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Fixing Guide for 90mm, 140mm and 190mm Wide Kwila Decking

bbi's range of selected timber hardwood species are ideally used as an exterior timber decking solution for both residential and commercial applications.

The following information is a general guide for installation of hardwood decking that can be followed unless otherwise specified by a suitably qualified professional or engineer. It is not intended as a substitute for professional advice.

Product Range

bbi Wood Products has a range of timber species, colours, grains, profiles, and overall differing aesthetic qualities of hardwood decking options to suit wherever timber hardwood is preferable—including our standard profiles, 140x19mm Reeded, and 190x22mm Edge Laminated & Finger Jointed (EL & FJ) Kwila. Our hardwood timber decking range can be easily identified by the packet labelling and signature blue coating found on the timber ends.

Hardwood decking is a natural wood product, and will have some degree of variation in weight, density, colour, grain, and performance that is to be expected. Some species may bleed or stain other materials in and around the timber deck area. Care must be taken in the selection, application, and maintenance of all the hardwood decking products range.

Sustainability

bbi Wood Products sources and imports hardwood products from sustainably managed forests from Asia, South America, and Africa that are recognised under the global benchmark Forest Stewardship Council® (FSC®).

This provides assurances that bbi Wood Products is committed to ethically sourced hardwoods and gives customers the confidence about the sustainability of our hardwood products range.

The unique FSC® trademark license code of bbi Wood Products Ltd is **FSC®-C122807 / SGSHK-COC-510009.**



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1.0 | Design Considerations and Compliance

1.1 | New Zealand Building Code

All building work, whether or not it requires a building consent, must comply with the New Zealand Building Code (NZBC).

Before undertaking any building work, it is advised to seek professional advice from relevant building professionals or consult with your local building consent authority to determine whether a building consent is appropriate or if the building work is considered exempt work. For further information on exempt building work, see the guidance for Schedule 1 of the Building Act 2004: Building work that does not require a building consent.

1.2 | Structure

Installation of hardwood decking is required to be detailed and constructed on timber framing in accordance with NZS 3604, and/or a proprietary system compliant with the NZBC or by way of specific design as detailed by the specifier of the project.

1.3 | Durability

External unroofed hardwood timber decking such as Vitex and Kwila which can be easily replaced does not require a level of treatment to NZS 3640 or AS/NZS 1604 when supplied as dressing heart grade or edge-laminated/finger-jointed heartwood.

All hardwood decking requires maintenance. The serviceable life and durability of a hardwood decking timber depends upon the regular and ongoing maintenance by the building owner. Refer to Section 3.0 (Care and Maintenance Guidance) for further information.

1.4 | Timber Board Spans

Timber deck joists and bearers should be detailed and constructed to comply with NZS 3604 or a supporting structure in accordance with the NZBC or specific design.

It is recommended that maximum joist support centres be **450mm centres** for standard 19mm and 22mm thick hardwood decking products.

1.5 | Ground Clearances

Timber decks should be detailed and constructed to have at least **450mm clearance** from the ground.

Good ground clearances assist in providing adequate subfloor ventilation, preventing moisture accumulation, unwanted mould buildup, and differential swelling or warping.

1.6 | Expansion Gaps

Expansion gaps are essential in providing subfloor ventilation and allowing for the lateral movement of hardwood timber subject to cycles of seasonal moisture change (expansion and contraction) when exposed to its environment.

The cycle of shrinkage or swelling varies depending on board width, thickness, profile, climate exposure, and orientation to the sun. Wide boards (such as 140mm and 190mm Kwila) exert powerful lateral expansion forces when wet and require proportional expansion gaps.

1.7 | Ventilation

Timber decks are strongly affected by moisture change, specifically differential moisture content between the top (sun/rain exposed) and bottom (shaded/moisture exposed) faces of the boards.

Adequate ventilation is critical to the serviceable life and structural stability of wide hardwood decking. Air circulation underneath the deck assists in minimising cupping, edge crushing, warping, and mould buildup.

1.8 | Slip Resistance

Smooth faced hardwood decking profiles are not recommended for installation where high slip resistance is required without specific design. Good detailing can minimise the risk of slipping when using hardwood timber decking.

Using a profiled/reeded face (such as 140x19mm Reeded Kwila) and positioning boards perpendicular to the direction of travel on stairs, verandas, and access routes assists in reducing slipping risk. The use of smooth faced hardwood decking (such as 190x22mm Smooth) where slip resistance is required is subject to specific design by the project specifier.

1.9 | Storage and Handling

Hardwood decking should be stored under cover or shelter, in a well-ventilated area away from sources of heat, flames, or sparks, protected from weather elements (sun, rain, wind, snow), and placed where it will not be exposed to mechanical damage while awaiting installation.

Prior to installation, all hardwood lengths must be stacked flat, clear of the ground, and supported on at least three to four evenly spaced bearers. Failure to properly support hardwood lengths may result in distortion or bow. Exposure to sun or rain prior to installation causes discolouration, uneven weathering, early face checking, and surface splitting.

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1.10 | Kwila & Tannin Leaching

Kwila hardwood decking is a naturally dense, reddish-brown timber containing high levels of water-soluble natural tannins. Left uncoated or unprotected, Kwila will leach dark reddish-brown dye during early rain cycles and weather to a silver-grey finish, increasing face checking.

If finished surface appearance is important, application of a protective coating system is essential. Rapid installation and coating application prevent adverse weathering effects.

To minimise tannin staining on surrounding concrete, paving, house walls, or pool coping, use protective drop sheets during construction and wash cycles. Sealing all four sides and cut ends with a quality coating system or end-wax sealer as soon as practically possible significantly reduces tannin release.

2.0 | Installation of Hardwood Decking

2.1 | Pre-Installation Inspection

Prior to installation, examine and inspect all hardwood timber lengths for visual defects or natural imperfections. Hardwood products are subject to natural characteristics such as spike knots, intergrown knots, sloping grain, resin pockets, surface roughness, and colour variations.

2.2 | Preparation

Sort all timber boards to optimise length usage and cut out any undesirable defects or arrange short lengths efficiently. Ensure the supporting subfloor framing structure is free from debris, loose fibres, and dirt prior to fixing.

2.3 | Pre-Coating and Sealing of Ends

Pre-coating hardwood timber prior to installation minimises warping, end-checking, and face checking.

- **4-Side Pre-Coating:** Apply at least 1 coat of high-quality penetrating oil, stain, or protective coating to all four sides of every board prior to fastening.
- **Mandatory End-Sealing:** Immediately seal all raw cross-cut ends with a penetrating timber end-sealer before screwing down to prevent end-grain splitting and moisture ingress.

Coating selection and ongoing maintenance are the responsibility of the building owner to ensure compatibility and aesthetic longevity. Apply all coatings strictly in accordance with the manufacturer's instructions.

2.4 | Pre-Drilling and Countersinking

Pre-drilling and countersinking are 100% mandatory across all Kwila decking installations.

Hardwood forced over softwood joists without pilot holes will split board edges, split joist timber, or snap screw heads cleanly off under thermal expansion. Always use a dedicated countersinking pilot tool (e.g., Smart-Bit®) matched exactly to the screw gauge.

2.5 | Fasteners & Screw Specifications

All bbi hardwood timber decking must be fixed with high-quality **Grade 316 Stainless Steel decking screws**. bbi is not responsible for fastener failure, localized corrosion, or timber staining resulting from non-316 grade fixings.

Table 1: Fastener Specifications

Board Profile	Fastener Specification	Target Joist Thread Penetration
90x19mm	10G x 65mm 316 Stainless	46mm
140x19mm	10G – 12G x 65mm 316 Stainless	46mm
190x22mm (EL & FJ)	12G x 65mm or 75mm 316 Stainless	43mm – 53mm

- **14G Fasteners Avoidance:** Do not use 14G (6.3mm diameter) screws on standard 19mm–22mm decking. Oversized shanks create radial timber strain, reduce edge clearance, and increase the risk of edge splitting and joist splitting.
- **Thread Embedment:** Fasteners must achieve a minimum of **40mm thread penetration** into the softwood joist to resist leverage forces exerted by wide boards.

2.6 | Fastener Placement & Screw Quantity

- Standard Edge Distance: Position screws **20mm to 25mm** in from the long edges of the board.
  - *Minimum*: Never fix closer than **20mm** from the edge (risks shearing/splitting).
  - *Maximum*: Never fix further than **30mm** from the edge (risks edge lifting/cupping).
- **End Distance:** Position end screws **25mm to 30mm** back from the cut end.
- **Screw Placement Rule for 190mm Wide Boards:** Install exactly **2 screws per joist crossing** at the outer edges. **Do not install a 3rd screw in the centre of 190mm boards.** Leaving the centre un-anchored allows natural stress relief across the wide span, preventing internal tension buildup, edge splitting, or shearing along finger-joint lines.

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2.7 | Butt-Joint Framing & Joining Ends

When joining two ends of hardwood boards together over subfloor framing:

Cut board ends clean and square, applying a 2–3mm edge chamfer to conceal slight thickness variations.

Sister Block Framing Detail: Where two board ends meet over a joist, **install a 300mm long x 90x45mm treated timber sister block (cleat)** fixed flush alongside the main joist. This provides a wide, 90mm solid landing face, allowing correct 20–25mm edge clearances for both board ends without splitting the subfloor framing. Never attempt to fit four screws into a single 45mm joist face.

2.8 | Expansion Gaps

Hardwood decking requires deliberate spacing between boards to accommodate expansion and contraction. Wide board profiles expand significantly across their width during wet cycles.

Board Profile	Minimum Expansion Gap	Ventilation Allowance
90x19mm	4mm gap	Standard airflow
140x19mm	5mm – 6mm gap	Continuous subfloor cross-ventilation
190x22mm	8mm – 10mm gap	~5% of total board width + cross-ventilation

Caution: Installing 190mm wide Kwila with standard 4mm or 5mm gaps could cause adjacent boards to crush edges during wet expansion, closing gaps entirely, trapping surface water, and causing the deck floor to buckle upwards.

2.9 | Coating

Following installation and pre-coating:

- Apply 1–2 topcoats of high-quality penetrating oil or stain to the upper surface in accordance with the coating manufacturer's specifications.
- Regular maintenance coats are required to retain natural timber colour and prevent silvering.
- If left uncoated, long-term aesthetic appearance decreases, surface checking increases, and the risk of splinters rising elevates over weather exposure cycles.

3.0 | Care and Maintenance Guidance

3.1 | Maintenance

All decking timber requires regular maintenance. Ongoing care by the building owner ensures durability and visual performance throughout the deck's serviceable life.

At a minimum, follow these maintenance procedures:

- **Regular Washing:** Wash the deck at least annually using a soft brush and mild timber-cleaning solution to remove surface dirt, debris, mould, moss, sap, pollen, and sea spray residue. Ensure the cleaning product is specified for hardwood timber.
- **Coating Recoats:** At the first signs of coating depletion or water-repellency loss, re-apply surface oil or stain per manufacturer instructions.
- **Planters & Objects:** Regularly move potted plants, doormats, or heavy outdoor items to prevent moisture entrapment, dirt accumulation, and localized timber decay.
- **No Pressure Washers: Do not use high-pressure water blasters on hardwood decking.** High pressure gouges hardwood fibres, destroys natural surface finish, and induces severe checking.
- **Drying Protection:** Do not allow cleaning chemicals or residues to dry in direct sunlight on the timber face.

3.2 | Face Checking

Face checking is a natural timber characteristic resulting from wood fibres expanding and contracting during cyclic wet/dry environmental exposure. Checks are fine, lengthwise surface separations along the grain. They vary with weather orientation and sun exposure and are minimised by maintaining an active penetrating oil coating worked into the timber grain.

3.3 | Mould, Mildew & Algal Growth

Mould and mildew thrive under combinations of moisture, warmth, low airflow, shade, and organic spore accumulation. Routine cleaning and maintaining clear subfloor ventilation gaps prevent mould buildup.

3.4 | Recoating Process

When weathering, face checking, or coating wear appears, thoroughly scrub the deck surface with a timber cleaner, rinse, allow to dry fully, and apply 1–2 coats of quality exterior hardwood oil/stain.

4.0 | References

- **NZS 3602:2003** Timber and Wood-based Products for Use in Building
- **NZS 3604:2011** Timber-framed buildings
- **NZS 3631:1988** New Zealand Timber Grading Rules
- **NZS 3640:2003** Chemical Preservation of Round and Sawn Timber
- **AS/NZS 1604.1:2021** Preservative-treated wood-based products