Installation Guide.

Hardwood Domestic Decking

Mortim
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Introduction.

Hardwood Domestic Decking Install Guide – This guide is general information only, for the installation of Hardwood decks.

Hardwood decks are strong, naturally durable, and beautiful. A well-built timber deck will improve the lifestyle properties of your home and increase the value of your property.

Hardwood is available in a range of species, natural colours, and sizes. Bearers and joists come in a variety of stress grades and configurations.

This guide outlines key design and construction considerations for raised light domestic hardwood timber decks that are exposed to the weather.

For the design and construction of decks for commercial, industrial, or marine applications, or where a deck has to take heavier loads such as tiles, spas or even vehicles, a structural engineer must be consulted.

For detailed requirements consult the Wood Solutions Domestic Timber Deck Design Guide, which can be found here: https://www.woodsolutions.com.au/system/files/WS_21_TDG_9_15_LR_0.pdf

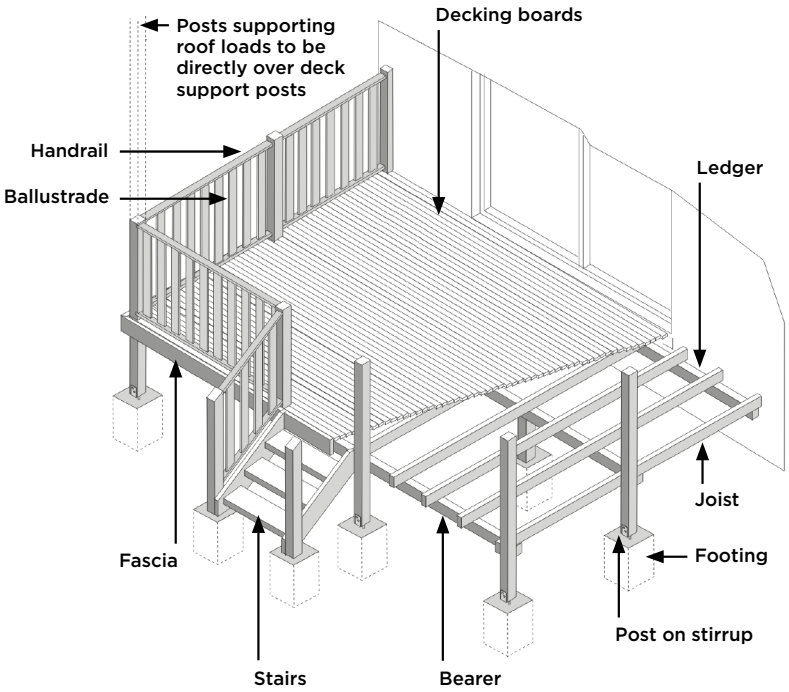


Figure 1.
Components that make up a timber deck

Further detail can be found in Australian Standard AS 1684 Residential Timber-framed Construction, and AS 2870 or AS 1684 for footings.

Preparation.

Preparing the area

- It is important that the ground beneath the deck is completely cleared of all building rubbish, garden debris and obstructions to water or air movement. Water must not be able to pool under the deck and the ground must be sloped away from the foundations of the house or other nearby buildings. Agricultural drainage pipes may be required in some instances so water can properly flow away from beneath the deck. Most problems with timber on decks occur where the site has not been prepared properly for water and air movement.
- When decking is less than 400 mm off the ground, additional consideration is required to ensure adequate performance and service life of the timber. This includes increased ventilation, sub-surface drainage, increased timber durability/preservative treatment and access for termite inspection and maintenance.
- Where any of the conditions described in the guide cannot be met, performance may be affected, and the service life of the deck will be reduced.
- Plastic sheeting acting as a waterproof membrane should be placed on the cleared ground if applicable.
- Ensure there is adequate cross ventilation.

Choosing hardwood decking timber

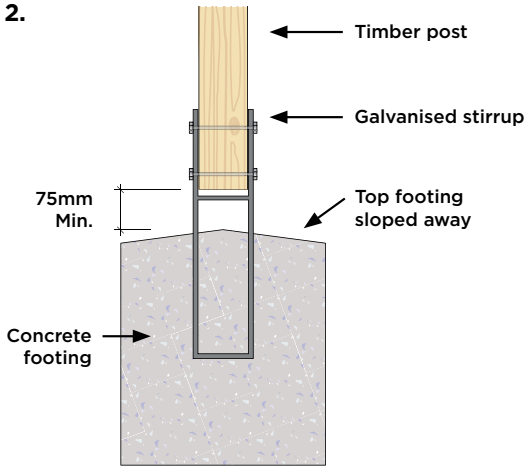
- Before choosing timber, familiarise yourself with the limitations on timber deck construction for the Bushfire Attack Level (BAL) in your area.
- Utilise termite-resistant timbers, preservative treated timber, or a termite barrier as per AS 3660.1 of the National Construction Code.
- Hardwood decking should be standard (medium feature) grade or select grade. Select grade is recommended in fully weather exposed situations.

Designing & building your deck.

Footings:
Raised timber decks

The most common method for footings supporting posts are concrete footings with galvanised stirrups embedded.

Figure 2.



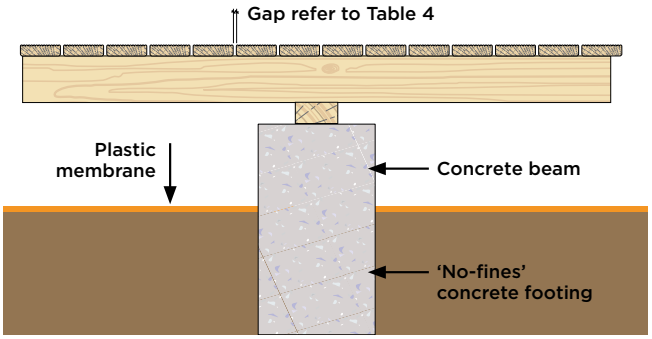
Instructions.

Footings:
Close to ground decks

For decks closer to the ground, footings can be managed as illustrated below.

1. Concrete beams, with joists sitting on top, with no need for bearers.

Figure 3.

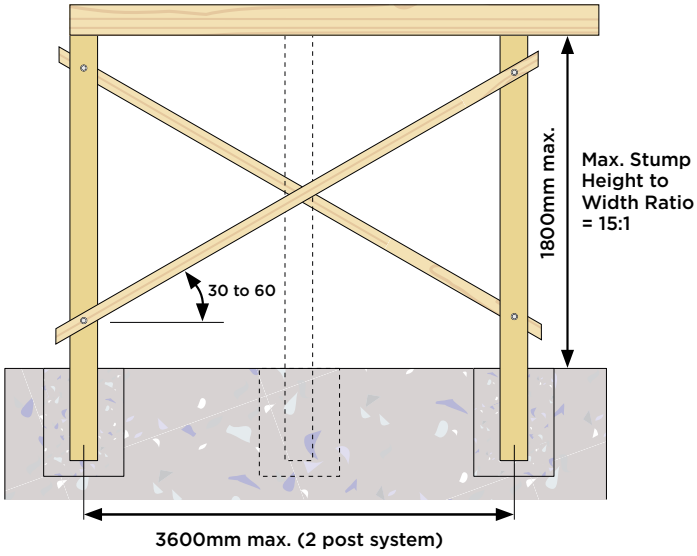


Posts:
Post bracing

Posts need to be natural above-ground durability Class 1 or 2 timber species. The maximum height of a deck above the ground for a given post dimension is 15 times the face width of the post.

Deck posts need to be braced.

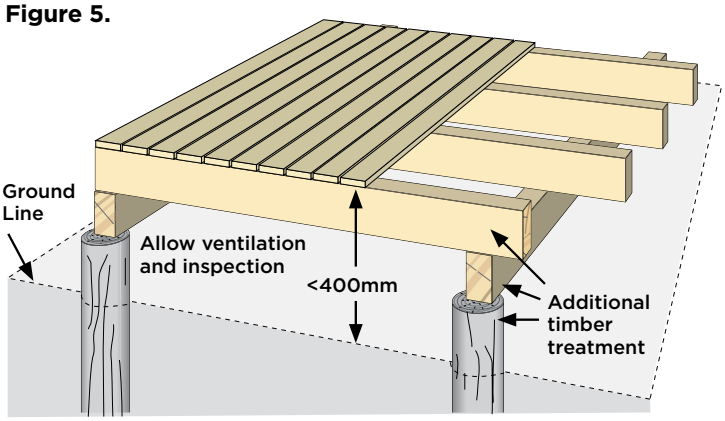
Figure 4. Post bracing



Posts:
Decks close to or on-ground

Decking closer to ground should be the minimum decking width available and have spacing between boards (long term) of 5 to 6 mm minimum to allow water to flow between the boards and ensure adequate ventilation.

Figure 5.



Instructions.

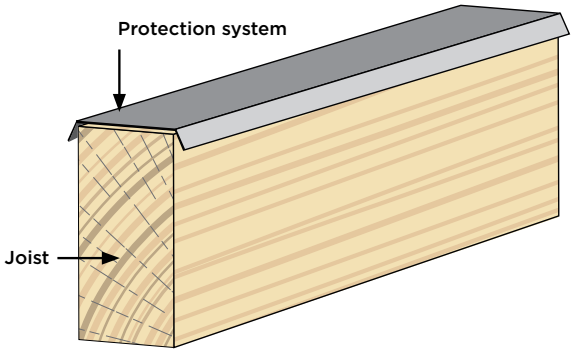
Joists:
Close to ground decks

Joists 45 mm wide (seasoned hardwood) or 50 mm wide (unseasoned hardwood) are recommended to avoid splitting when receiving nails or screws from placement of decking boards. This is particularly relevant where decking boards abut over the joist as the fixings can be placed further from the board's end. Joists of 35 mm or 38 mm wide are only suitable where proprietary deck fixings are fixed to the side of joists.

The recommended timber sizes for the bearers and joists are for when timber decking boards only are being used.

TIP:
Placing a layer of 110 mm malthoid dampcourse or proprietary protection strip on top of a joist will increase its service life (Figure 6).

Figure 6. Protection strip over deck joists

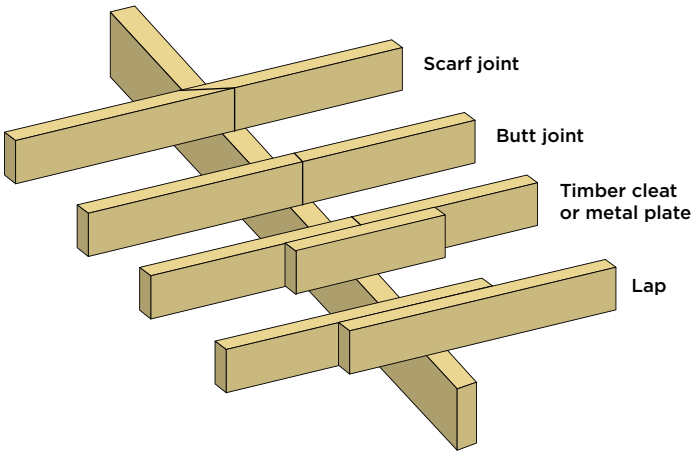


Joists:
Structural joints and connections

Bearers and joists, where possible, should be long lengths and continuous, spanning over at least three supports. Where joints in bearers are required, they must occur over supports and provide adequate bearing for each bearer. Joints in joists must be made over a bearer and have a minimum of 30 mm of bearing for each joist. Figure 7 illustrates methods to join joists, where they are required to be in line. Scarf or butt joints can be used with a minimum of 30 mm of bearing for each joist.

TIP:
Due to moisture potentially being trapped at the interface of crossing timber members, e.g., bearer and post connections, a timber sealer should be used between the interfacing elements.

Figure 7. Joints in deck joists



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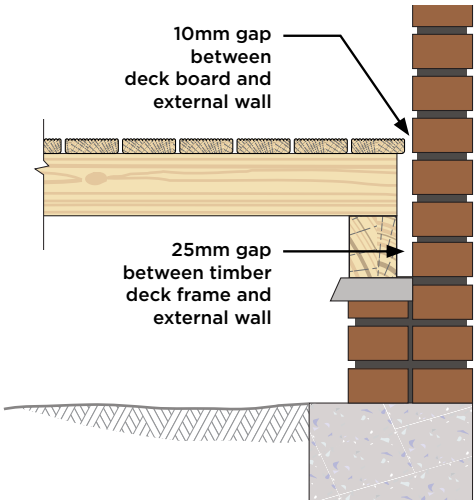
Joists:
Fixing the deck structure to existing buildings

Fixing of a deck sub-structure to existing structures is a common source of deck failure. It is recommended that the deck be self-supported on its own posts or piers off the exterior fabric of the building. Where this is not possible, advice from a structural engineer is required to ensure adequate fixing.

Decking boards should also be kept 10 mm clear of the building wall to allow a drainage gap between the building wall and the boards (Figure 8).

Figure 8. Decking Board kept away from walls



TIP:
Consider providing a barrier, such as a flashing, to prevent moisture entering the house.

Durability:
Connector and fasteners

All framing bolts, screws, nails, and other hardware should be hot dipped galvanised or stainless steel. Electroplated fasteners are not suitable due to early breakdown of the plating. Fixings within the splash zones (minimum 1.0 m from pool edge) of swimming pools or in coastal zones must be stainless steel.

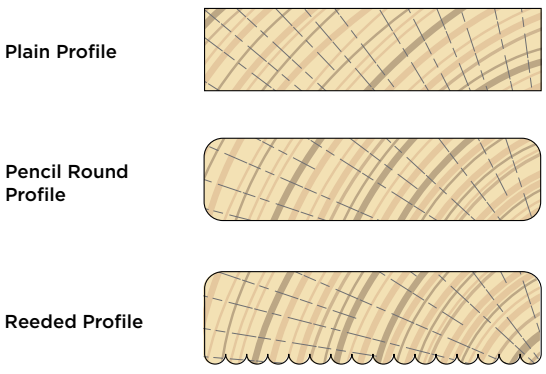
Decking boards:
Profiles

There are three main types of decking board profiles available: plain, pencil round and ribbed/ reeded.

Plain profile decking is not common as the square edges of the boards are more prone to splintering. Pencil Round has significantly less chance of splintering compared to plain boards and is the most common decking board available. Ribbed (or reeded) board profile can be used faced up or down.

TIP:
Where ribbed/reeded boards are used face up in moist areas, keep the boards free of mould and moss build up. Moss and mould can make them slippery.

Figure 9. Decking board profiles



Instructions.

Decking boards:
Board widths

Boards with a narrow width are recommended because it is easier for water to drain through the deck.

Joist spacing
For Medium Feature or Standard Grade hardwood (19mm thick) the maximum joist spacing is 500mm.

Board spacing
Decking boards need to be spaced to allow seasonal movement of the timber. A gap must be maintained in all conditions to allow water to drain freely. A gap of 3 mm to 4 mm is ideal over the long term.

TIP:
Where wider boards are selected, they will need to be thicker to reduce the possibility of cupping developing.

	Decking cover width (mm)	Seasoned or Unseasoned	Recommended decking gap
Hardwood	70-90mm	Seasoned	3-5mm
	125-140mm	Seasoned	6-8mm
	86-90mm	Unseasoned	2-3mm
	91-140mm	Unseasoned	2-3mm

Table 1 shows the recommended spacing at the time of decking board installation.

Decking boards:
Nail fixing

Each board must be fixed at each joist with at least two nails, which should be finished flush with the top of the boards (rather than punched) to prevent moisture being trapped. Where the fixing occurs, other than at the ends of the board, nails should be staggered across the joist to avoid the possibility of cracks caused by moisture movement in the decking (Figure 10).

To obtain a tight fit at joints for abutting boards, a slight under-cut is recommended (Figure 11). To reduce the splitting of the decking board, nails or screws must be kept a minimum of 12 mm from edges and the boards end. Holes should be predrilled to 80% of the nail diameter.

The minimum nails that can be used for fixing hardwood decking up to 22mm thick to hardwood joists is 50 x 2.5 flat or dome-head if machine driven and 50 x 2.8 bullet head if hand driven (2 nails per board crossing). T-nails should not be used.

TIP:
If you are opting to use machine-driven nails, ensure you reference the manufacturers specifications, while still adhering to the above capacities.

Figure 10. Illustration of nail fixing timber decking

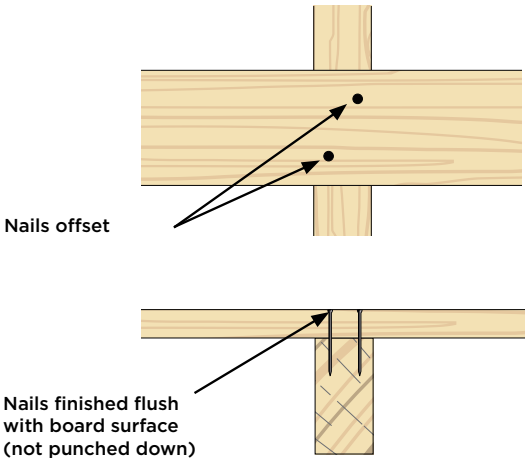
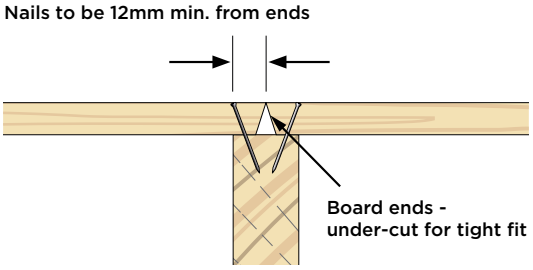


Figure 11. Nailing at board ends



Instructions.

Handrails and balustrades

If the deck is more than one metre off the ground, handrails or balustrades are required.

Timber Finishes

It is important that a suitable finish be applied and maintained to protect the surface of the timber from weathering and to maintain an attractive appearance. This protective finish of the timber surface will reduce the effects of weathering of any timber (treated or untreated) in an exposed situation. From a durability perspective, the main function of the finish is to slow down the rate at which the timber will take up or lose moisture. By slowing that rate down, the severity of any checking on the surface of the timber is considerably reduced. The finish should contain a fungicide to prevent mould growing on any sugars or starches that may be in the finish. Due to the wear expected with foot traffic, penetration finishes, such as water repellents, decking oils and decking stains, are better for decking boards than film-forming finishes like clear surface coatings.

As a minimum, a protective finish should be applied to all surfaces (including any freshly cut ends) of each decking board, preferably before fixing to the joists.

Some coating manufactures have products with anti-slip particles already included, while others have particle that can be added to common standard coating products.

Maintenance and wear

Timber is a natural product and, as deck timbers weather, small cracks (or checks) are likely to appear on the surface of the boards. These cracks are caused by the intermittent wetting and drying of the wood. They are part of the character of wood and have no structural effect. This natural ageing process can be slowed using finishes, as discussed above, which reduce moisture movements in timber.

At least once a year, or as indicated by the coating manufacturer, the deck should be thoroughly cleaned, and resealed or stained. The process involves the removal of dirt, algae, moss, and other organic matter.

Clean the deck by hosing it down with an appropriate deck-cleaning solution. The deck should then be scrubbed and rinsed. During this process, check for loose boards and nails or screws that stick up and make any necessary repairs. Also examine all areas where deck boards come into contact with any joists or any point that comes into contact with the ground. These areas are particularly susceptible to moisture damage.

Allow the deck to dry and then reseal it with the sealer or stain originally applied. Where a different finish is used to the original finish, check with the manufacturer about using different types of sealers or stains, as mixing them may prevent adhesion of the new coating.

Safe Work Practices

After handling timber, wash skin thoroughly with mild soap and regularly wash clothing. For any treated timber, do not burn offcuts or sawdust. Offcuts and sawdust should be disposed of by approved local authority methods.

To read the Wood Solutions Decking Guide in full guide go to: **https://www.woodsolutions.com.au/system/files/WS_21_TDG_9_15_LR_0.pdf**

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