

## Marine Borer

### Marine Borers

Marine borers attack a variety of timber in marine and brackish environments. These wood-boring organisms stem from two families including molluscan (e.g. shipworms, teredo “worms”) and crustacean (e.g. limnoriids). Vulnerability of timber to marine borer attack is heavily dependent on timber species and surface treatments.

Piles and beams in Australian waters commonly have marine borer activity affecting piers, wharves, marinas and other waterside infrastructure.



### Activity

Marine borer activity on piles is assessed by visual inspection and sample collection by professional divers and engineers. The level of activity is based on the number and size of holes observed and is commonly categorised as light, moderate, heavy or severe. Severe activity describes damage so significant that structural timber is likely breakable by the use of hand tools. Core samples are used to inspect internal damage and can be used to test for timber species.



### Treatments

Multiple treatments are available to protect or strengthen timber piles from marine borers with the most common being barrier wrapping, encasement or splicing.

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Barrier wrapping is suitable for piles with light borer activity. Other minor defects may also be present (e.g. slight necking, small cracks). Wrapping treatments are proprietary systems that typically consist of petrolatum surface priming and barrier tapes with an external protective outer wrapping (e.g. Denso SeaShield 70 Series). Extension of service life of piles from wrapping is commonly estimated for 10-15 years.

Encasement is suitable for piles with moderate to heavy borer activity. Heavy defects may also be present (e.g. hollowing and necking). Encasement treatments are proprietary systems that typically consist of a rigid encasing formwork, an internal reinforcing layer and a grout infill. Many variants exist for encasement systems. A system that is commonly used for structural repair of damaged piles include use of a fibreglass form, fibre-mesh reinforcement and cementitious grout (e.g. Denso SeaShield 400 Series). Extension of service life of piles from encasement is commonly estimated for 15-20 years.

Splicing is suitable for piles with severe borer activity. Other significant damage may also be present. Timber splicing treatment includes the partial removal of the damaged timber (typically from the top to seabed), installation of a replacement marine grade timber section and splicing of the new to old timber. Splice joint details vary but are commonly encased with 1.5 to 2m long steel or fibreglass forms. Extension of pile service life from splicing is commonly estimated for 15-25 years.

There are many instances where systems are combined as hybrid repairs where borer damage down pile lengths varies.



Wrapping



Encasement



Splicing