

**Guidelines for the Design of
Boat Launching Facilities
in Western Australia
below the 25th Parallel**



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Introduction

The Department of Transport (Transport) performs a design and construction role for State Government maritime facilities in Western Australia. This function has evolved since the beginning of the State's settlement and has been carried forward by successive transformations of the original Public Works Department.

Today, Transport delivers best practice for recreational boating facilities. Transport's Coastal Infrastructure business unit has extensive design experience and knowledge of the coastal issues and processes influencing the successful development of maritime structures in WA. Examples of Transport's project-managed work include:

- Hillarys and Fremantle Fishing Boat Harbours
- Coral Bay Boat Launching Facility
- Woodman Point Recreational Boating Precinct
- Albany Marina.

Transport also funds numerous Recreational Boating Facilities Scheme grants to local governments and eligible agencies for similar projects throughout WA.

Transport has had considerable input into the development of a number of Australian Standards (AS) for maritime developments such as marinas, boat ramps, jetties and breakwaters. AS 3962-2001 (Guidelines for the Design of Marinas) reflects many aspects of the Transport's experience in the development of maritime facilities. AS 4997-2005 also specifies the special needs of structures built in the maritime environment.

Transport has developed these *Guidelines* to assist those who intend to construct maritime facilities in WA below the 25th parallel. Tidal and cyclonic conditions for areas north of this require additional design considerations, and designers of facilities for these areas are encouraged to liaise with Transport to obtain more details.

About 90 per cent of recreational boats registered in WA are kept on trailers and require the use of a boat launching facility or boat ramp to launch. Transport has trialled and developed a range of boat ramp construction types both within and outside sheltered boat harbours. Over the past five or more decades it has built up a wealth of knowledge and experience on design for optimum functionality, durability and cost.

Transport has identified common problems with boat launching facilities established in areas subject to open ocean conditions. These facilities often experience conditions unsafe for launching, structural failure of the ramps, and lead to adverse impacts on the coastline. Experiments by others have delivered the same unsatisfactory results. It has been clearly shown that ramps are unsafe to use in wave conditions greater than those stated in AS 3962 and that safe boat launching cannot be achieved without man-made improvements to the wave climate at the boat ramp site. It has also been shown that ramps crossing sandy shorelines which experience littoral drift will be difficult to build, costly to maintain and will adversely influence the stability of down-drift shores. Effectively this means that open shore sites require a sheltering harbour, and in some cases sand bypassing, which are both typically expensive and permanent.

Functional Characteristics

Providing the site has adequate shelter, the following are desirable characteristics of a boat launching facility.

Ramps shall be designed to AS 3962, and in particular should:

- Be constructed of concrete, graded at a 1:8 slope, with a toe at a minimum of 0.6m (1 to 1.5m is preferable) below Lowest Astronomic Tide (LAT).
- Have a 'waffle pattern' surface, comprising intersecting grooves of at least 25mm depth, angled at 45° to the main axis. As the main function of these macro-grooves is to provide a sound footing to people handling the boat, on or off the trailer, they should be of a scale suited to that purpose and have smoothed upper edges. A 'broomed finish' surface is also beneficial for vehicle traction.
- Be 4m (wide) between kerbs, which should comprise substantial barrier kerbs on each ramp edge.
- Be supported by a compacted rubble base which is wholly contained at the sides by a revetment designed to be stable under a 20 year recurrence storm wave. The ramp toe shall have a designed stabilising revetment with a top sufficiently smooth to allow trailer wheels to cross it. In some circumstances a piled (jetty type) ramp may provide a better solution.
- Preferably have an intercepting drain across the top of the 1:8 ramp to divert drainage from the approach pavements into a gross pollutants trap or infiltration basin.

Any associated boat holding jetty should:

- Be of a sufficient length for at least three boats to lie in line at each ramp lane.
- Have a deck at least 1200mm wide between kerbs or chafers (whichever are the narrower).
- Have a deck level at about 0.5m above Mean Higher High Water (MHHW). For sites north of Carnarvon, a graded or stepped deck level may be appropriate.
- Have chafers every 2m along each lane face, extending from 0.3m above LAT to 1m above MHHW, and ladders every third chafer each side extending from LAT to deck level.

The associated approach roads and parking area should:

- Be at least 500mm above Highest Astronomic Tide (HAT).
- Be above the 20-year flood level of rivers.
- Approach the ramp with a suitable vertical curve as prescribed in AS 3962.
- Have a marked approach 'slot' for each ramp lane, where a backing trailer can be aligned before reversing. Ideally this will be 30m long, with painted lines to guide the reversing driver.
- Have at least the trailer parking capacity nominated in AS 3962, with at least 50 per cent paved.

In addition, it is recommended that:

- Stormwater is captured and pollutant traps are used to limit runoff back into adjacent waterways.
- Approach and exit lanes incorporate lay-by parking for rigging and de-rigging boats on trailers.
- An overflow trailer parking area is identified to accommodate peak, or future increases in, demand.
- Unsealed or overflow trailer parking areas are landscaped to guide orderly parking in busy periods.
- The addition of future ramp lanes is considered in the design. Note that double ramps can be built at a relatively minor additional cost compared to another single ramp at a later date.

Design Requirements

Boat ramps and associated structures shall be designed in accordance with the recommendations of AS 3962, and for service and durability in accordance with AS 4997. Visit the [Australian Standards website](#) to purchase these Standards if necessary.

Parking and manoeuvring areas for boat trailers must be of the appropriate dimensions to allow for a standard-sized car towing a 6.5m trailer with boat and motor. Visit the [Austroads website](#) if you wish to purchase Design Vehicles and Turning Path templates to assist with your design process.

Facilities should be designed for a functional life of at least 25 years, with an expectation that the structures will be adapted in the future to match actual user needs and physical conditions of that future. Pre-cast concrete slabs can potentially be reused due to the high quality concrete required by AS 4997.

Design Guides

Transport has developed boat launching facility design guide drawings based on the above principles which can provide effective and economic facilities for sandy shore sites. All locations will require site-specific design details to address local wave climate and tide characteristics, ramp length and levels, earthworks and containing revetments, as well as site-specific onshore access roads and parking facilities.

It is a requirement of the *Jetties Act 1926* that all boat ramps and jetties are licensed, and anyone applying must demonstrate that their proposal reflects the above standards and guides. Transport also assesses requests for maritime facilities grant funding against the above.

For more information, contact:

New Coastal Assets

9216 8875

newcoastalassets@transport.wa.gov.au

PO Box 402, Fremantle 6959