



## ROAM MARINE

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**Project:** Narrows Bridge Piling

**Client:** Leighton Contractors

**Contractor:** Marine & Civil

**Year:** 2005

**Contract period:** 4<sup>1</sup>/<sub>2</sub> months

**Project scope:**

Piling works for the construction of a rail bridge as part of the Metro Rail link connecting Perth to Mandurah. The bridge is flanked by two existing Narrows bridges across the Swan River with a 6m gap in between.

The piling works included 65 No. steel piles of 610mm to 914mm diameter. 51 of the piles were driven along the approaches, abutment and shore piers using a land based piling rig. 4 of the piles were driven at the head of the approaches using a mobile crane on the existing bridge in a flying leader setup with pile gates anchored to the deck. 10 of the piles were driven at the River piers using pile gates anchored to the existing bridges.

At all times during the works, there existed spatial restrictions and limitations on the existing bridges to handle crane and other loads, which provided an engineering challenge to the project team.

**Roam scope:**

Roam represented Marine & Civil as Site Engineer for the duration of the piling. Roam was also responsible for the concept, design, fabrication and on-site installation of the pile gates used at the river piers.

The pile gates were assembled at two levels to hold the piles in position whereby significant sideways forces were exerted during driving. At the bottom level the gates were anchored to the existing pilecaps. On the top level the gates were anchored to the newer existing bridge on one side and propped off the pile cap on the other side.

The pile gates had to be designed to account for the existence of timber piles below seabed that were used as temporary works for the construction of the initial bridge. The frequency, location and angle of these piles was unknown and the pile gates were fabricated with enough tolerance to re-position the piles if necessary.

