

Marine Piling

New Sydney Fish Market



Marine piling at new Sydney Fish Market

Why is marine piling needed?

With much of the new Sydney Fish Market being built over Blackwattle Bay, marine piles are critical to support the structure of the new building.

What is marine piling?

Marine piling is the process of setting deep foundations into the bedrock below sea level to support nearshore and offshore based structures. On the new Sydney Fish Market project this is to be achieved by driving in steel tubular piles which will support the new building.

The piles are designed to carry compression load to rock. Each pile is approximately 24 metres long and when in place requires 5m³ of concrete to form a plug at the top of the pile.

What equipment is being used for marine piling?

The Junttan HHx300 pile driver is the latest technology in hydraulic steel piling, and is being used for the first time in Australia on the new Sydney Fish Market project. A key feature of Junttan HHx300 pile drivers is their improved structural solutions and accessories, making the machine more efficient and reducing noise pollution.

The machine weighs approximately 42.6 tonne and can deliver 50-120 blows per minute and up to 300KNm of energy to each building pile. This level of productivity significantly reduces the length of time needed to achieve sufficient piling depths, helping to minimise noise impacts.

How long will marine piling activity be happening on site?

Marine piling commenced mid-November 2021 and is anticipated to take 10 months. Piling is restricted to specific hours, ensuring respite periods each day to reduce noise impact.

What is being done to mitigate noise while marine piling is happening?

Managing noise impact is a top priority for the project team, and marine piling is one of the louder construction activities.

Noise from marine piling will be managed in a number of ways:

- Utilising the latest technology in hydraulic pile driving;
- Installing an acoustic jacket on the marine piling equipment that can reduce noise output by up to 5dBa;
- Scheduled respite periods to manage and limit noise impact;

- Providing physical noise barricading where practicable, such as establishment of timber hoarding around the land based portion of the construction site;
- Utilising an offsite facility at Glebe Island to carry out works where feasible (e.g. preparatory works).

How is noise being monitored throughout piling activity?

Noise from piling is monitored in real time from the locations indicated in the Noise Monitor Locations diagram below around the site of the new Sydney Fish Market. This monitoring will assist in management of disruption and noise levels based on data from the sensitive receivers.



Noise monitor locations

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How loud will marine piling be?

All construction activities, including marine piling, are conducted in keeping with the parameters set out in the new Sydney Fish Market Construction Noise and Vibration Management Plan (CNVMP). The CNVMP includes detailed noise level and noise performance criteria which

are required for this project and they take into account the impacts on local residents and stakeholders.

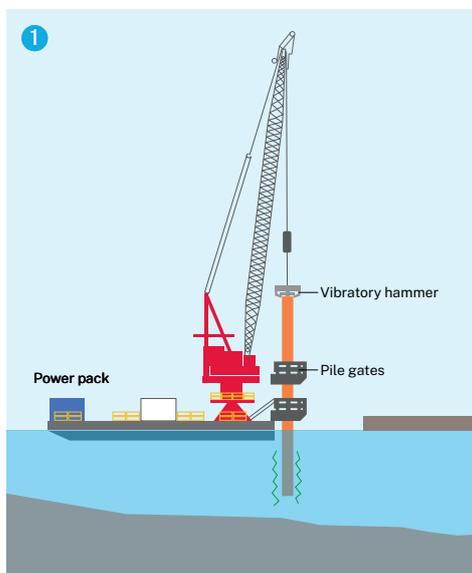
Noise monitoring completed to date during the piling activities has indicated that noise levels have not exceeded 87dBa at the nearest sensitive receivers, over a 15 minute

time period as pile driving occurs intermittently. The on-site recorded data is in line with the Project's CNVMP, which predicts noise levels up to and including 87dBa from piling equipment during impact piling at locations of the nearest sensitive receivers.

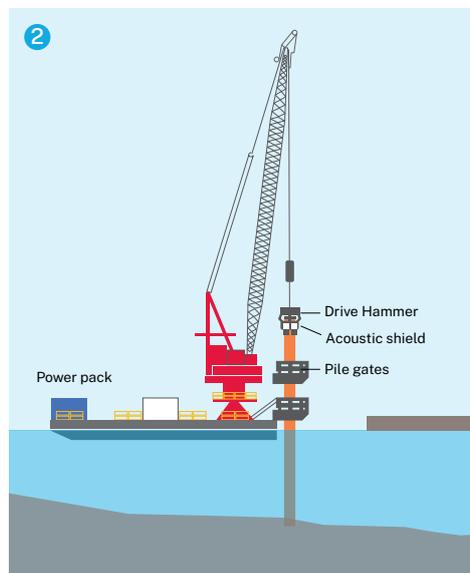
NOISE COMPARISON (dB)



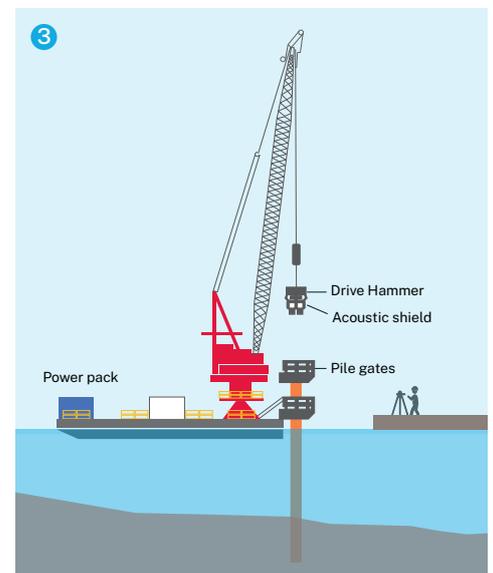
How marine piling works



Pile lifted from the barge deck, lowered to rest on the seabed, then vibrated into the seabed until refusal. As much piling as possible is done using the vibratory hammer to minimise noise.



Crane replaces vibratory hammer with drive hammer. The pile gates open as the hammer passes through. An acoustic wrapping has been applied to the hammer to reduce noise.



Hammering continues until the required embedment depth within the seabed is reached. A surveyor on land monitors the pile drive period and achieved depth.

Where can I find out more information about marine piling noise?

The new Sydney Fish Market project website contains the Construction Noise and Vibration Management plan which outlines further details about all construction noise including marine piling for construction of the new Sydney Fish Market. Scan the QR code for a direct link.

<https://www.infrastructure.nsw.gov.au/projects-nsw/new-sydney-fish-market/>

If you have any further questions:
T: 1800 271 114
E: nsgm.community@multiplex.global



Construction Noise and Vibration Management Plan