

Should the project receive a permit, the new drydocks and work pontoon will be transported on water to Vancouver Drydock's site fully assembled, with some minor retrofitting required once on site. Once at Vancouver Drydock, six piles would need to be installed in the water to secure the drydocks and work pontoon in place.

To protect fish and wildlife species and habitat in Burrard Inlet, in-water work and construction activities will occur during Fisheries and Oceans Canada (DFO) 'least risk' window of August 16 to February 28, which is the time of year when work may be carried out with the lowest risk to fish and wildlife species and habitat.

Construction Equipment

Access to the area and most of the project work will be marine-based on barges and/or other vessels resulting in no land-based activities or traffic. The staging area will also be entirely marine-based.

Two marine rigs, a derrick or crane barge and a scow barge to hold materials, will be on site during the pile installation. This equipment will be mostly stationary for the duration of the construction. Small skiffs will be used to move workers around the water, as needed.



Crane Barge

Construction-Related Noise



Bubble Curtain Example

Of all the activities required during construction to install the drydocks and other peripheral components, pile driving is the one that generates the most noise. Pile driving requires significant set up time and other break periods during installation that do not generate disruptive noise.

Efforts will be made to minimize the impact of noise such as muffling engines, timing operations within daylight hours, and adopting quieter installation techniques for pile driving such as using vibratory hammers, installing bubble curtains and using 'soft start' procedures, which involve the gradual increase in hammer energy at the start of pile driving.

Pile Installation

Pile installation is anticipated to take six weeks – three to six days for each of the six piles. Piles will be driven into the substrate using vibratory hammers and, if necessary, impact hammers on barge-mounted cranes.

Drilling out material inside the pile is necessary for concrete infill and may be required to assist when driving the piles to depth. DFO has strict requirements that no spillover is permitted into the marine environment.

As a result, water inside the piles will be monitored and collected, and treated at the onsite water treatment facility to protect the surrounding marine environment.

Environmental Management During Construction

Prior to construction getting underway, Seaspan's **Spill Contingency Plan** will be reviewed and updated to include any additional measures to address the potential increased spill risk associated with marine construction. This plan aligns with the requirements outlined within the **BC Environmental Management Act**.

As part of its Spill Prevention and Response Plan, Vancouver Drydock has two spill booms strategically located for rapid deployment. Spill kits are also readily available throughout the site, including on the service pier and on both of the existing drydocks. Vancouver Drydock personnel undergo regular spill response training in accordance with the plan and would be available to assist in the event of an accidental spill during construction.

Marine Habitat Protection

The impact to marine wildlife and habitat is strictly controlled by DFO and safe practices will be implemented in accordance with all regulatory requirements.

A professional third-party Environmental Monitor will be on site throughout the construction period to oversee all environmental aspects of the project, including measuring underwater noise and observing wildlife use of the area to ensure wildlife are protected. If marine mammals get too close to the construction works and a condition arises which potentially threatens their safety, work will be halted until the safety of the marine mammals can be demonstrated.

Soft start procedures also assist in keeping marine mammals away from the activity before the full volume of underwater noise is reached. This method reduces noise exposure and therefore potential risk of injury by activating an avoidance response in aquatic mammals and giving them time to clear the area. Soft start procedures and other environmental management activities are further detailed in the **Construction Environmental Management Plan**.