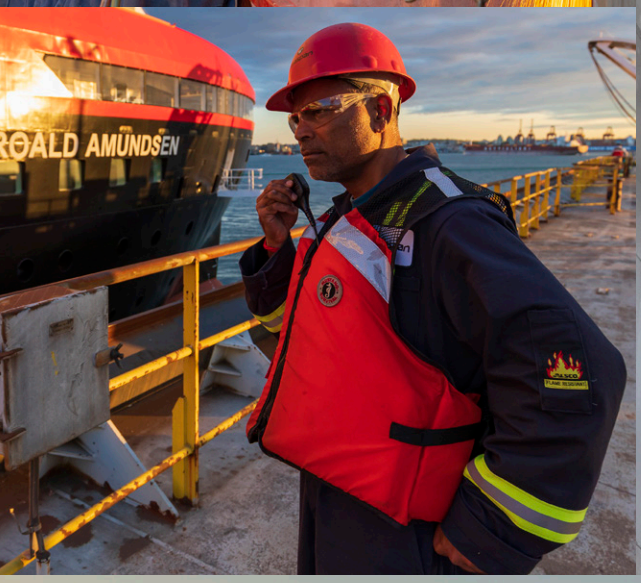
VANCOUVER DRYDOCK PROPOSED WATER LOT PROJECT INFORMATION GUIDE

PUBLIC COMMENT PERIOD
JUNE 25, 2021 TO JULY 30, 2021

seaspan SHIPYARDS


ROALD AMUNDSEN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SECTION 1:
HOW TO USE THIS INFORMATION PACKAGE

This booklet provides an overview of our current operations and our water lot project – what is being proposed and how our activities may affect the environment and community around us.

We thank you for taking the time to be a part of this process and invite you to learn more about Vancouver Drydock.

SHARING YOUR FEEDBACK

As part of our permit application to the Vancouver Fraser Port Authority (the port authority), we would like to hear from you. We ask that you share your feedback in writing where possible, to allow us to track and respond to community comments and questions.

There are several ways for you to share your feedback with us.

1. Complete our feedback form at drydockprojects.com
2. Email us at infodrydock@seaspan.com
3. Call us at 778-729-0288

You can provide your feedback at any time from **June 25, 2021 to July 30, 2021**.

LISTENING TO YOU

The port authority has set a 25-day public engagement period to hear comments and feedback about the proposed project from residents, businesses and others in the community. All feedback received by Vancouver Drydock during the engagement period will be recorded and provided to the port authority for their consideration as part of their review of our permit application.

You can also provide your comments directly to the port authority at portvancouver.com/drydockexpansion.

SECTION 2: PROJECT OVERVIEW

Vancouver Drydock is a full-service marine vessel service and repair facility. We work on everything from small tugs to ferries, coast guard vessels to large freighters, and everything in between. We are one of several Canadian companies owned by Seaspan that have provided maritime services on our coast for decades. Vancouver Drydock is part of Seaspan Shipyards which provides shipbuilding and ship repair services. Our sister company Seaspan Marine delivers coastal marine transportation, ship docking and ship escort services.

Legend

- Vancouver Fraser Port Authority Boundary

Proposed Project Features

- New Work Pontoon
- New 55m Drydock
- New 100m Drydock
- Relocated Existing Careen

0 25 50 100 m N

Scale: 1:4,000

VANCOUVER DRYDOCK TODAY

Our operations are centred around our two drydocks, which are used to lift vessels out of the water for service and repair. We also have a number of other facilities on site to support this work. We operate every day from 7:00am to 10:30pm, servicing on average 50 vessels each year.

Our operations include:

- Two drydocks, capable of lifting 36,000 and 30,000 tonnes respectively
- Two 40-tonne overhead cranes
- 200 employees (and a further 220 indirect jobs connected to our operations) many of whom live in North Vancouver
- 225+ local suppliers across the Lower Mainland
- $55M contribution to BC's GDP annually
- 2.65M+ into local community investment in 2021

Both of the existing drydocks are intended for larger vessels. When smaller vessels come to us, it requires significant planning and organization, which is one of the reasons why we are proposing to add two new smaller drydocks to our operations.

VANCOUVER DRYDOCK TOMORROW

The proposed Water Lot project would see us shift the position of our existing Careen floating drydock 40 metres south from where it sits today, away from the shoreline, and install two smaller floating drydocks and a work pontoon on the west side of our water lot, adjacent to the Careen.

Access to the new drydocks would be from the work pontoon, which would be permanently moored perpendicular to and west of the existing service pier. Up to four cranes would be installed on the mid-sized drydock with sufficient reach across both new drydocks.

We are also looking to extend our water lot west by approximately 40 m to accommodate the smaller of two proposed new drydocks. This is allowable, subject to a lease amendment approval from the port authority.

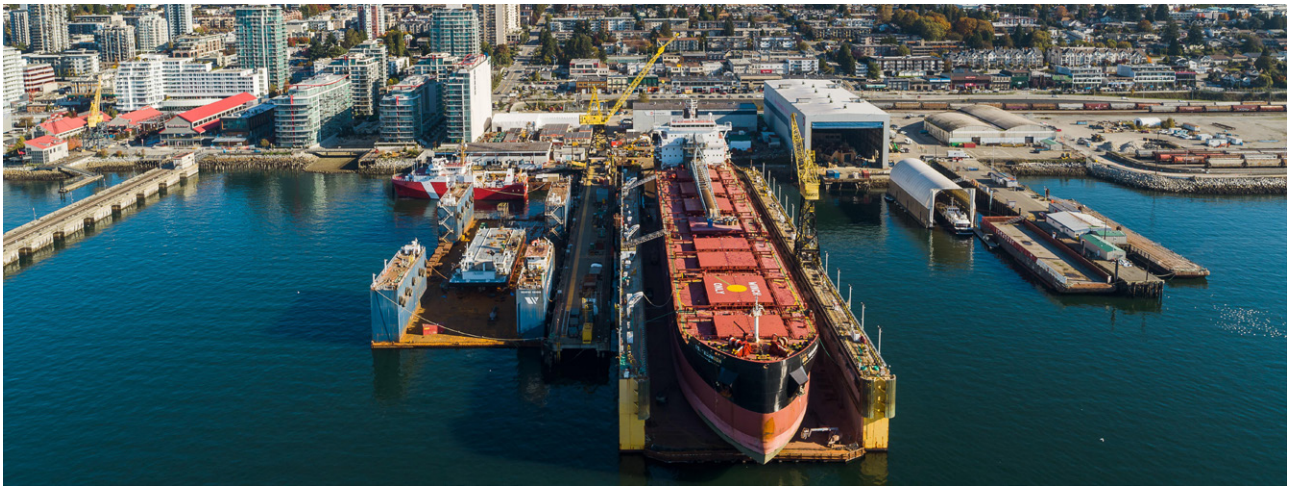
The project will add 100 new highly-skilled jobs (50% increase to our current workforce) to our current operations.

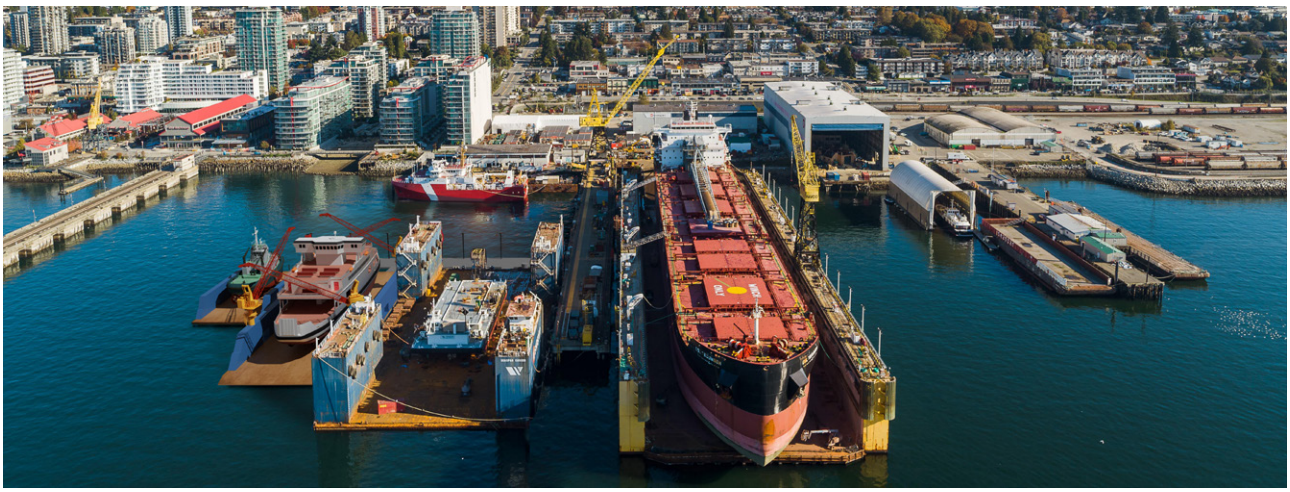
ABOUT THE NEW DRYDOCKS

The floating drydocks and work pontoon would be secured to six permanent support pilings. The drydocks would move vertically; submerging to give vessels access to the docks and re-floating to work on the vessel once it has been lifted out of the water. It is similar to a car repair lift, but on a larger scale.

The mid-sized drydock would be equipped with up to four cranes mounted on the sidewalls to transfer equipment from our main service pier and Careen to both drydock the work areas.

	EXISTING CAREEN	NEW MID-SIZED	NEW SMALL	NEW WORK PONTOON
Length	131m	100m	55m	98m
Width	48m	30m	22m	13m
Depth	23m	10m	8m	4m
Sidewall Height	15m	7m	6m	no sidewalls
Lift Capacity	30,000 tonnes	4,500 tonnes	1,200 tonnes	n/a



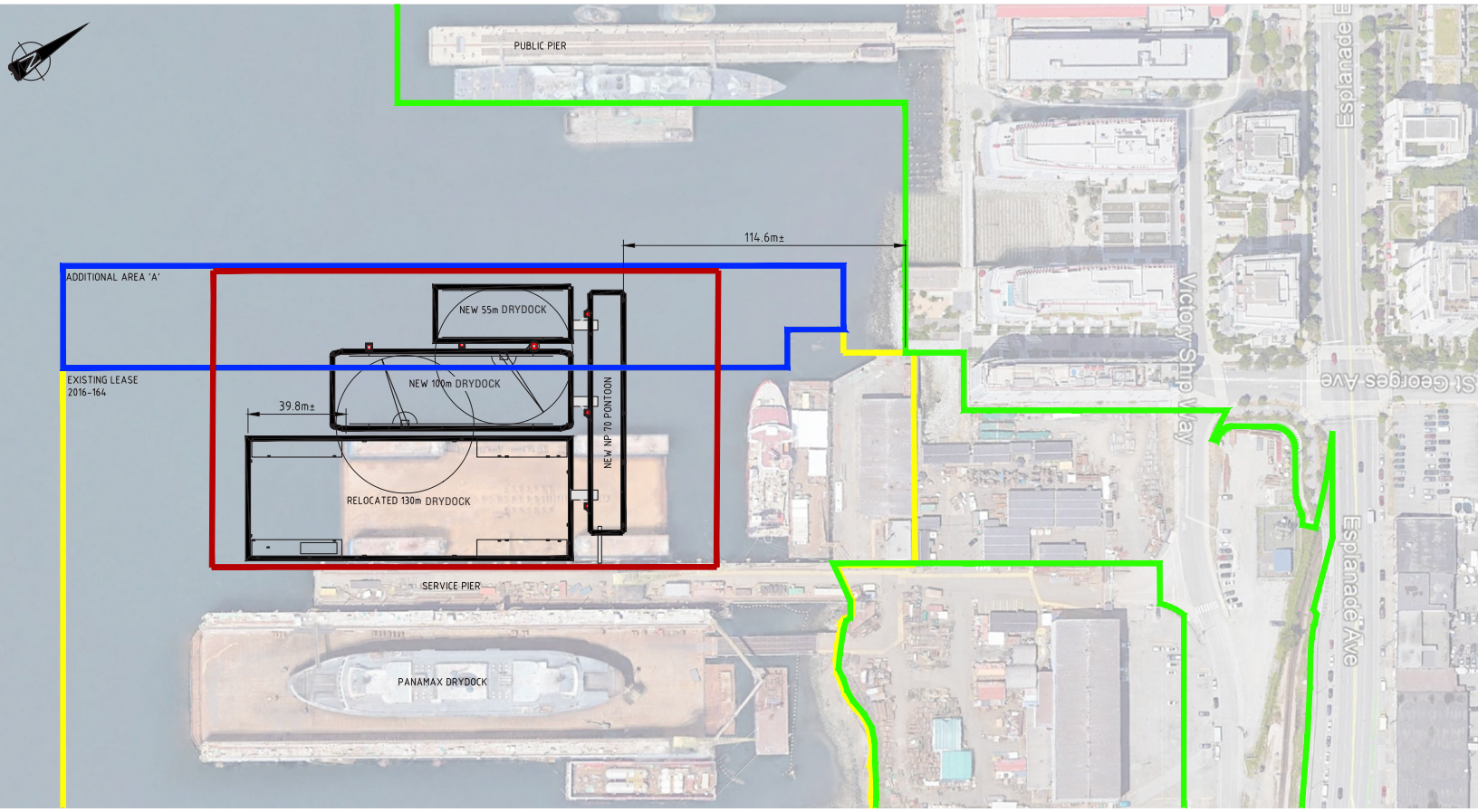


WATER LOT LAYOUT

We have looked at a number of options for how best to fit the proposed new drydocks into the footprint of our existing water lot and have determined that the existing water lot has limited available space to effectively house the new drydocks.

We need to have sufficient water depth to ensure safe access for vessels coming in and out of the drydocks. We also need to maintain direct water access for all of the repair and service facilities, which restricts where we can place the drydocks.

A review of the available working spaces determined the optimal positioning for safe vessel access, sufficient distance from the Burrard Inlet navigation channel and to maintain protection of fish and fish habitat is to position the drydocks and required work pontoon on the west of the existing service pier. This also allows us to avoid dredging and to increase the space between the drydock operations and our neighbours.



Legend

- Port Authority jurisdiction
- Existing lease & water lot
- Additional water lot
- Project area
- New & relocated equipment

WHY ARE WE DOING THIS PROJECT?

As a group of companies, Seaspan's goal is to build a multi-generational business that will create sustained jobs and economic activity in our local community for decades to come. To enable this, we are consolidating our repair and maintenance services at Vancouver Drydock and focusing our shipbuilding activities for the Canadian Coast Guard and Royal Canadian Navy at our Pemberton shipyard site.

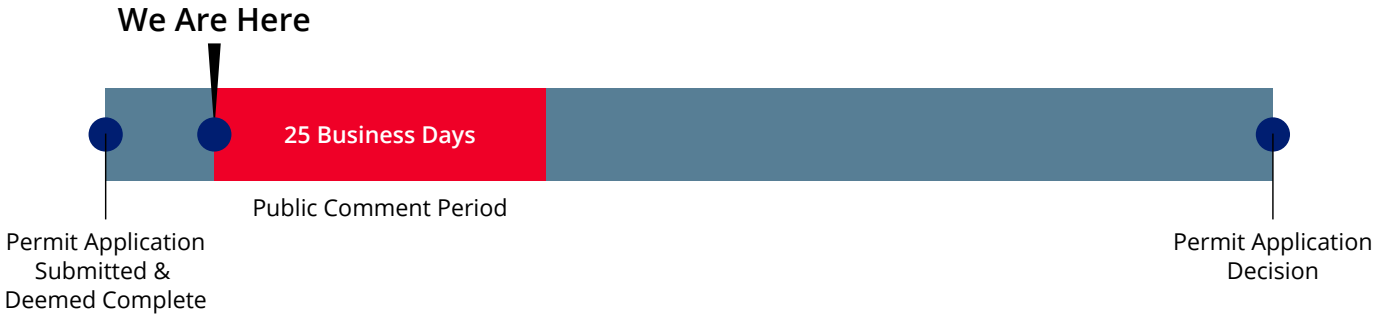
At Vancouver Drydock this means making improvements to better use our land and the space within our water lots. The changes we are proposing allow us to continue our ship repair and maintenance services more efficiently, to better serve our customers no matter what their vessel size, and to also support the national shipbuilding efforts.

HOW LONG WILL CONSTRUCTION TAKE?

The drydocks will arrive at our site fully assembled and ready for use, although we will need to make some minor adjustments once on site. The drydocks and work pontoon will be connected to six pilings, installed into the ocean floor. During construction, each pile will take about one week to install using vibratory hammers, or if necessary, impact hammers. During construction, each permanent pile may require up to four temporary piles to hold them in place while being installed. Should a permit be approved, we anticipate all of the necessary work will take four months to complete.

PORT AUTHORITY PROJECT APPLICATION REVIEW TIMELINE

REVIEW AND CONSIDERATION OF TECHNICAL STUDIES AND PUBLIC FEEDBACK
120 DAYS



SECTION 3: TOPICS OF INTEREST

In preparing our permit application for the port authority, Seaspan completed a number of technical assessments and studies to understand what impact the proposed new drydocks and work pontoon may have on the environment and nearby communities, in and around our site.

We have summarized the findings below and the full reports with the rest of our permit application documents are available at **drydockprojects.com** or **portvancouver.com/drydockexpansion**.

WATER

MARINE HABITAT

WATER MANAGEMENT

ON-WATER OPERATIONS

COMMUNITY

VIEWS & SHADING

LIGHTING

NOISE

AIR QUALITY

LAND

TRAFFIC & PARKING

EMERGENCY RESPONSE

WATER

MARINE HABITAT

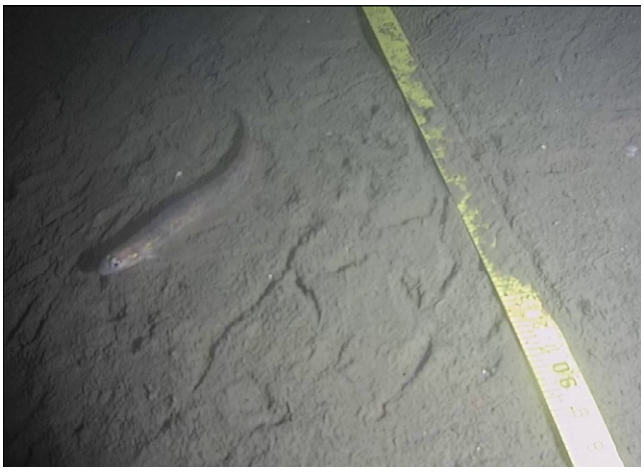
Existing studies from Burrard Inlet were reviewed and a dive-based habitat survey was conducted to assess the potential impacts of the project on the marine environment in the water lot area.

As construction and operations will be marine-based, potential effects primarily relate to fish, fish habitat, and marine mammals. Several kinds of marine mammals have been observed in Burrard Inlet, but only smaller ones like harbour seals are likely to be found in the water lot due to the shallow water depths there.

Activities that have the potential to cause adverse environmental effects on water quality and fish and fish habitat in a marine environment include: underwater noise and vibration from pile installation, increased turbidity and reduced water quality when filling piles with concrete, and shading of vegetation living on the seabed by the new floating structures.

During construction, underwater noise, vibration, and water quality will be monitored to ensure the marine environment is protected.

- There are not expected to be any impacts to wildlife, including fish and fish habitat as a result of the water lot project, as habitat quality has been assessed as relatively low in the project area.
- Habitat-forming algae, such as kelp, cannot grow on the seabed in this area because the sediment is too fine. Kelps need hard structures like cobble and rocks to grow on. The new structures will be installed in deeper waters, which are also not suitable for kelps or vegetation like eelgrass that might do well with fine sediments. Marine vegetation needs sunlight to photosynthesize; the seabed in this area is too deep for sufficient sunlight penetration through the water.
- Other organisms that were observed during the habitat assessment included sea anemones, sea stars, sea slugs, small fish, and crabs. These organisms will not be affected by shading from the new structures because they do not rely on sunlight for food.



Silty substrate and prickleback fish observed during the habitat assessment. (January 2021 dive video)

Sea slug (January 2021 dive video)

WATER MANAGEMENT

The drydocks will be self-contained, with any water collected and discharged to the existing wastewater processes. While a vessel is dry docked on the new structures, stormwater (from rain or snow) and vessel washwater will flow into a collection tank and pumped into a holding tank. If there is no vessel on the drydock, stormwater will drain to the Inlet.

From the holding tanks, water is then processed through a two-step treatment plant where particulates are first filtered out using sand then metals are filtered using activated charcoal. The water is then pumped to the sewer under a Metro Vancouver permit.

- Stormwater and washwater will be managed using the processes that are in use and permitted by Metro Vancouver today.

ON-WATER OPERATIONS

Dry docking and launching of the vessels will be done using tug assist and winching equipment on the drydocks. Seaspan's extensive knowledge of the local marine conditions and operations inside Burrard Inlet also plays an important role in finding the best windows to dry dock and launch vessels, minimizing potential impacts to the nearby harbour traffic.

- On-water operations will be done using the processes that are in use today.

COMMUNITY

VIEWS & SHADING

Seaspan considered several options for how to best position the new drydocks to enable efficient operations and minimize impacts to our neighbours. We are proposing to move the existing Careen drydock 40 metres south from its current position, away from the shoreline, and to align the proposed new drydocks similarly. The smallest, lowest profile drydock will be positioned closest to the public pier. While the two drydocks will add to the activities at our site, the repair work and vessels coming and going from our site will be similar to what we have today.

All new floating structures are relatively low in height and significantly lower than the adjacent Careen and Panamax drydocks. The side walls of the mid-sized drydock reach 8 m above the waterline, whereas the side walls of the Careen are about twice as high (15 m above the waterline).

- Shade impacts associated with the proposed water lot project have been assessed based on the surrounding private and public space. There is not expected to be any significant shade impact because the new structures are shorter than the existing ones.
- Given the open design and much lower profile of the new drydocks, the most notable sight from the shoreline will be the vessels that are on the drydocks for service and repair. The viewpoints of the water lot from the end of the public pier, Shipyard Square, and from Victory Ship Way have some visual impacts from ground level, as the new drydocks will be sited adjacent to the Careen. It is estimated the new drydocks will extend a further 55 m west from the Careen.
- The work pontoon deck level sits approximately one-half meter above the waterline and will not obstruct the view, although there may be equipment sitting on the pontoon that will be visible from the shoreline.

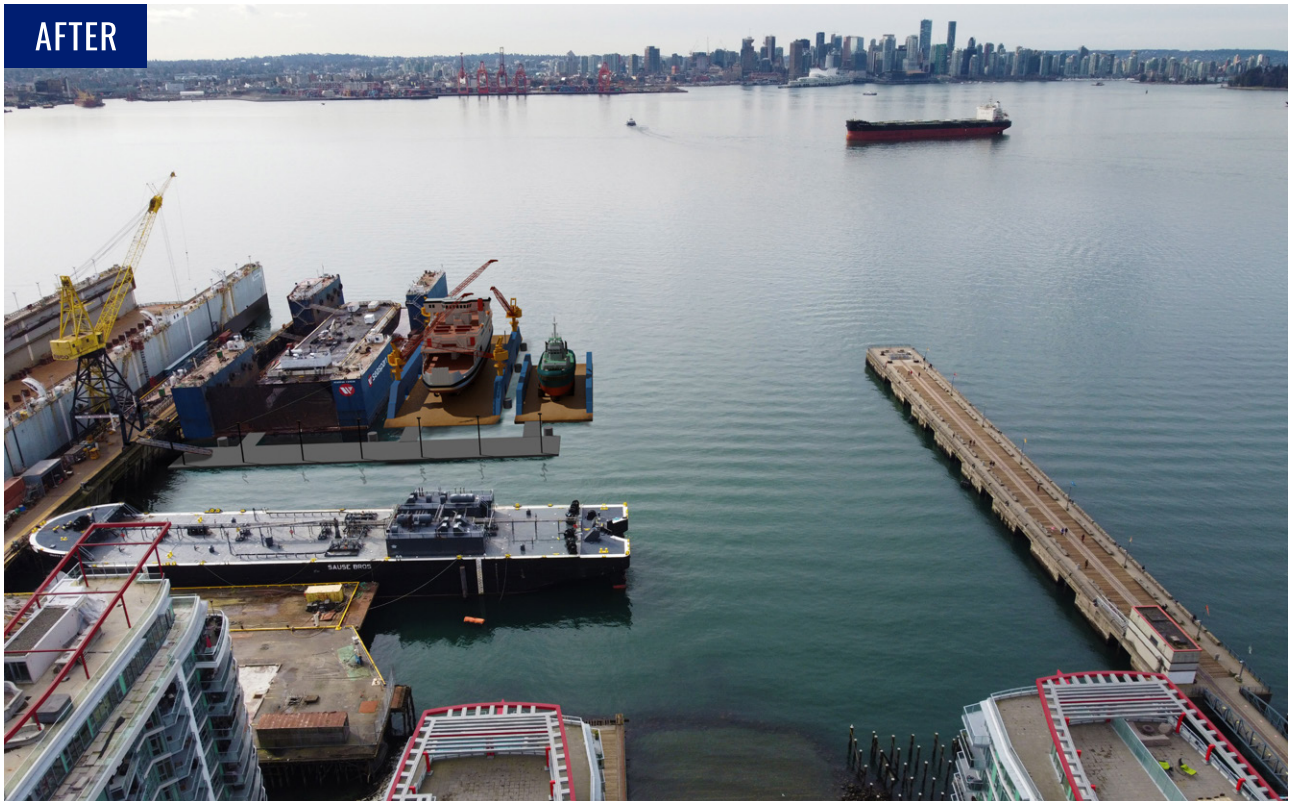
The renderings on the following pages are illustrative, as the two new drydocks and work pontoon have not yet been purchased, so the exact design and configuration of the structures are not known. The renderings show four large cranes on the mid-sized drydock, although it is more likely that the drydock will have fewer cranes. The smaller drydock will not have any cranes.

The renderings also show a variety of the types of vessels that may be serviced with the new infrastructure – in the drydocks and adjacent to the work pontoon. Of note, the scale of vessels serviced within the two new drydocks will be less than one-sixth of the size of those serviced in the existing drydocks.

Aerial view – looking south

BEFORE

AFTER



View from Victory Ship Way

View from waterfront walkway

BEFORE

AFTER

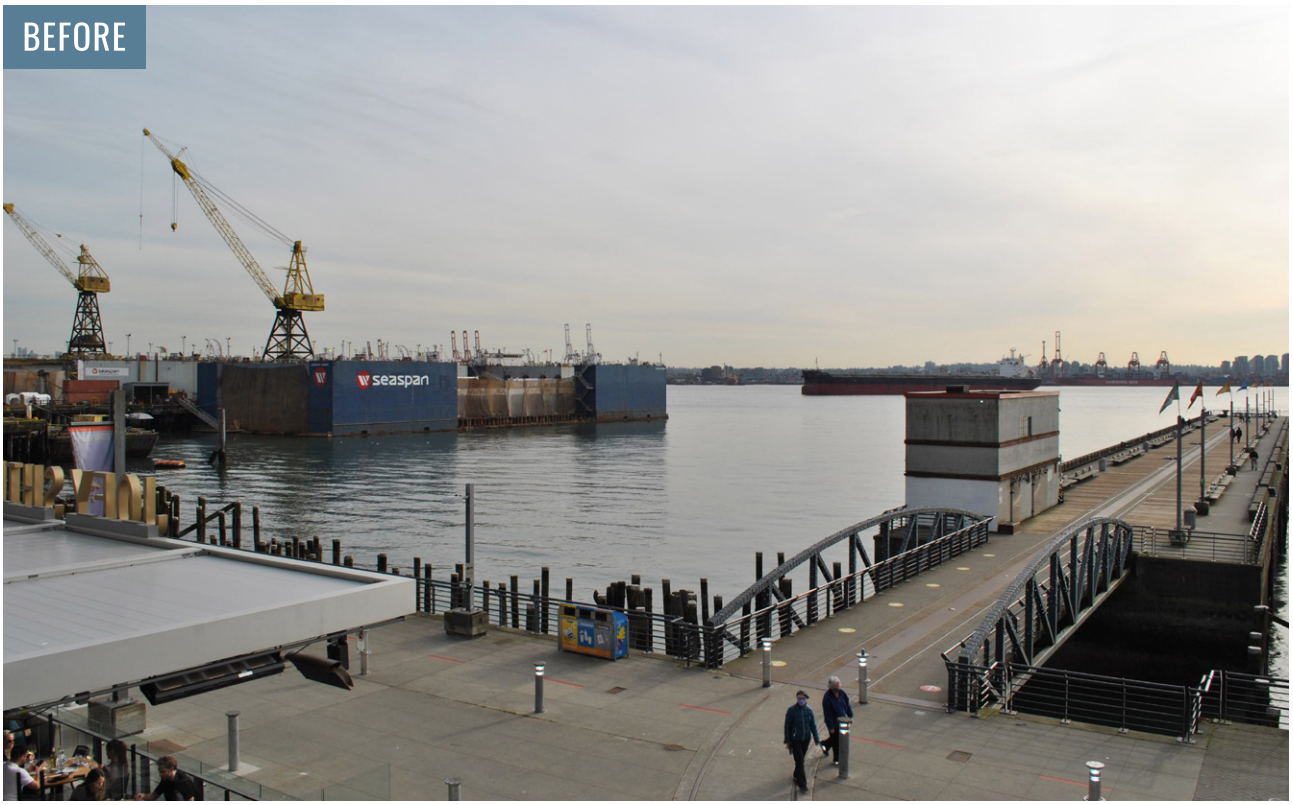
View from public pier

BEFORE

AFTER

Elevated view from Shipyard Square

BEFORE



AFTER

Elevated view from Shipyard Square at night

BEFORE

AFTER

View from Esplanade Avenue and St. Georges Avenue

BEFORE

AFTER

View from 5th Avenue and St. Georges Avenue

LIGHTING

The lighting has been designed to meet necessary safety requirements, while also minimizing glare in the marine environmental and towards the shoreline.

There will be no change to lighting on any of the existing Vancouver Drydock structures. The two proposed new drydocks will come with lighting to support work being carried out on vessels in the drydocks. These lights will be positioned to face inward and down to illuminate the interior of the drydocks.

On the work pontoon, seven 10-metre tall light poles will be installed along the north edge. Each pole will have two fixed-position lights installed on it, one area light on the south side and one floodlight on the north side.

To mitigate against light spread, the south-facing area lights will point directly down to illuminate the pontoon and the access ramps to the drydocks. These lights will be controlled by photocells for on/off control and will be fitted with a motion sensor to dim when no motion is detected. Because the lights are installed horizontally, there will be no light pollution to the sky (i.e., 'dark sky friendly'), no glare to passing vessels or to people on shore (light fall-off occurs 55m from shore).

The north floodlights will be tilted 30-degrees up from horizontal. These lights will be used to support vessel berthing and installation of access walkways to vessels moored to the north side of the new work pontoon. These lights will only be used when a vessel is moored to the north side of the work pontoon. When the vessel is there, it will act as a shield to block lights from the shoreline. These lights will have manual on/off controls and will also be fitted with motion sensors. The angle of tilt is minimized on these lights to avoid glare to shore.

- While the proposed lighting on the drydocks and work pontoon will illuminate the immediate operating areas, light spill will not reach the shoreline.
- Dark Sky Friendly certified lighting will be used throughout.
- Lights will be angled and equipped with motion-sensors to minimize light in the marine environment and towards the shoreline.
- The work pontoon lighting will provide for the safe movement of people and equipment, without affecting passing vessels in the inner harbour.

integrated bi-level motion sensor

NOISE

We recognize that we are part of a robust and diverse neighbourhood and we work to minimize noise from our operations as much as possible, without compromising the safety of our team. Noise from our operations comes from vessel arrivals and tugs, gantry crane movements, the pressure washing of hulls and other general site activities.

Much of the work we do includes cleaning and painting of hulls and exteriors. Occasionally, sections of steel require replacement, which involves cutting out and replacing relatively small areas of the hull or superstructure.

The most notable source of noise is Ultra High Pressure (UHP) washing, which uses compressors to provide water under very high pressure to remove debris and paint. The majority of the UHP noise occurs at the nozzles and where the water jets hit the steel hull or superstructure. UHP activities are generally limited to the daytime between 7:00 am and 6:00 pm, and at the existing drydocks, each project usually requires three to five days of UHP work.

The recently conducted environmental noise assessment, which considers the addition of the two new drydocks, has determined that:

- While there will be an increase in noise from the activities at the additional two drydocks, the increase will be small. Other drydock activity noise is anticipated to remain similar to what it is today.
- Noise will be mitigated by moving the drydocks further offshore, away from nearby residences.
- The new drydocks will service smaller vessels, therefore the UHP work in these drydocks will be less than the activity in the existing drydocks, at two or three days per project.
- The predicted low frequency noise at the nearest residences due to current UHP activities range from 69 to 74 dB. The predicted future range is estimated to be 1 to 3 dB higher, at 71 and 75 dB.
- During construction, the noisiest activity will be pile driving – anticipated to take six weeks. The construction plan includes mitigation measures and best management practices to minimize noise during construction.

AIR QUALITY

As the working, industrial component of the Shipyards District, Seaspan always works to minimize impacts from our operations on the neighbourhood.

Vancouver Drydock is currently working with Metro Vancouver to develop a permit for the air emissions associated with our existing operations. The permit will regulate volatile organic compounds (VOC), metals and particulate emissions from existing onsite emission sources which includes two floating drydocks, surface preparation shed and a paint shed. Should the project be approved, the air permit will be amended to include the new drydocks.

- The types of emissions from the proposed additional drydocks will be identical to the activities within the existing drydocks. It is projected that the annual emission rates in the Metro Vancouver permit will be sufficient to accommodate the new drydocks.

LAND

TRAFFIC & PARKING

Currently, Seaspan has approximately 200 people at our site each day across two shifts and with the additional drydocks, we anticipate that will increase to 300 people. All vehicles driven to our site are accommodated at our on-site parking lot on Victory Ship Way and we anticipate that will continue to be the case.

Some employees also live in the neighbourhood and are able to walk to work. Vancouver Drydock is also conveniently located within walking distance of the Lonsdale Quay transit hub.

- As we operate year-around over two shifts, we anticipate the additional workforce will be distributed over both shifts, and therefore, the potential increased traffic and parking requirements will be accommodated within the existing Seaspan parking lot.

EMERGENCY RESPONSE

Vancouver Drydock has a robust emergency response plan that links into the City of North Vancouver emergency response system. The plan has been reviewed and updated to include the additional proposed drydock operations.

- Emergency response procedures will be the same processes that are in use today.

SECTION 4: CONSTRUCTION ACTIVITIES

Construction is anticipated to begin in late 2021 and be completed by early 2022. In-water work activities and construction activities will be undertaken during the least risk window to protect fish and wildlife species and habitat in Burrard Inlet (i.e., August 16 to February 28 inclusive).

The new drydocks and work pontoon will be transported to site fully assembled. Six piles will be installed in the water to secure the drydocks and work pontoon in place. During construction, each permanent pile will take about one week to install and may require up to four temporary piles to hold them in place while being installed.

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. During installation, water levels inside the piles will be monitored and captured for safe disposal during infilling to ensure it does not spill over into the surrounding marine environment.

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.

While it is anticipated that impacts on the adjacent community during installation of the floating drydocks will be minimal and limited to the installation of the support pilings, in accordance with the port authority requirements, Seaspan will ensure sufficient notice is provided prior to any activity commencing.

COMMUNITY NOTIFICATION

Two weeks prior to the start of construction, notice will be provided to area residents and businesses by mail, through the local newspaper, on our website, and on the port authority website. Email notification will also be sent to anyone who has pre-registered for Vancouver Drydock updates.

48 hours prior to any additional incremental activity begins, further email notice will be provided, along with a website update.

SECTION 6: CONTACT US

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