

# SEATTLE DEPARTMENT OF TRANSPORTATION HARBOR ISLAND CONTINGENCY ACCESS PLAN



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# INTRODUCTION



## Background

Harbor Island is an industrial island in Seattle, Washington's Elliott Bay. Built in the early 1900s, the 420-acre island contains no private residences and is heavily industrialized, supporting businesses that conduct commercial and industrial activities, including ocean and rail transport operations.<sup>(1)(2)</sup>

Over the years, activities on Harbor Island have included shipbuilding and repair, lead battery recycling, lead smelting, petroleum fuel farm storage, metal fabrication, and containerized cargo shipping.<sup>(2)</sup> The island also hosts several offices and warehouses, laboratories, a public use marina and industry tracks operated and maintained by BNSF Railway Company and Union Pacific Railroad. By 1983, lead contamination from a variety of industrial sources caused the U.S. Environmental Protection Agency (EPA) to place Harbor Island on the National Priority List of polluted sites.

<sup>(1)</sup> Island use and Superfund designation, the East Waterway is the last of six operable units to be cleaned up, has limited most recreational uses of the Waterways surrounding the island.

## Why does Harbor Island need a contingency access plan?

When the West Seattle High-Rise Bridge closed in March 2020, there was concern that we might have to limit use of S Spokane St, the Low Bridge, and surrounding areas underneath the bridge. The Seattle Department of Transportation (SDOT) developed an emergency evacuation plan in coordination with agency partners using three planning scenarios to re-direct travelers away from the area. The bridge was stabilized in the first phase of repair, and without the threat of an emergency evacuation, it was determined that Harbor Island should be looked at for its own contingency access plan with a specific focus on land transportation.

The Harbor Island Contingency Access Plan is an emergency access framework to respond to an interruption of access to or from the industrial lands via the Klickitat Bridge, SW Klickitat Way, SW Manning Street, and SW Spokane Street. The premise is that should a portion of the transportation network be

damaged for any reason – earthquake, tsunami, landslide, flood, wind or snowstorm, fire or explosion, transportation incident and building or structure failures – this contingency access plan can be utilized to describe the type(s) of access and proposed timelines to get access and business back online to minimize regional impacts of any closure for any duration.

## Our Goal

The Harbor Island Contingency Access Plan will define contingency access to 16th Ave SW, 13th Ave SW, SW Hanford St, and 11th Ave SW and describe impacts to restricted or limited access based on input from existing Harbor Island businesses.



# Our Approach



## Engaging Harbor Island Businesses

In 2021, SDOT began outreach to the maritime, industrial, and commercial businesses located on Harbor Island with the goal of establishing a baseline need, especially during the critical first 24-hours for personnel and equipment to reach Harbor Island.

Outreach started with phone calls to an initial eighty-three (83) business license holders with operation addresses located on the island. This first round of calls eliminated those businesses no longer on the island, in Seattle or in Washington state. This reduced our outreach contacts to forty-nine (49) businesses currently engaged in operations on the island. Of those 49 businesses, eight participated in the interviews.

Of the eight respondents, one performed critical customs enforcement actions; one provided berthing and ship repair to the Department of the Navy; two were self-contained warehouse operations with on-going incoming/outgoing shipments; one provided fueling service for Port and trucking operations; one provided fuel shipments throughout the greater Puget Sound; one provided machined parts in support of industrial activities on and off the island; and one provided financial services to the industrial and maritime industries.

We asked these eight businesses a series of questions covering main safety contacts, business operations days/times, number of employees onsite during a given shift, number of employees that drive personal vehicles in to work, number of indirect staff (shipping, maintenance, etc.), and asked them to describe the potential business impacts due to access closures of 0 to 24 hours; 1-5 business days; and 6+ business days.

# WHAT WE LEARNED



## Input From Businesses

The conversations we had with the eight business participants were especially timely for the Harbor Island Contingency Access plan. What we gained from these interviews are highlighted below:

- Department of Defense (DOD) maritime industrial contracting on Harbor Island is sensitive in nature and scheduling. Operational interaction is governed by the General US Government Flow Down Provisions
- It is currently unknown what the Navy would want to do with their onsite personnel should evacuation be required
- Fuel distribution for the entire Puget Sound region is centered on Harbor Island with filling station customers all along the I-5 corridor south to Portland and east along I-90 to the Cascades
- Fuel pipelines continue to move fuel to the finite storage tanks on Harbor Island; overcapacity fuel farm tanks will be an emergency situation for the provider.
- Fuel distribution disruptions will be felt immediately and may cause widespread hoarding behavior
- Existing West Seattle High Bridge closure, S Spokane Street Bridge access restrictions and Terminal 18 drayage traffic greatly impacts Harbor Island employee commutes, timely shipping and receiving activities and all ingress/egress on the island
- Businesses with critical business functions onsite are not able to move operations to “remote.” This includes maritime customs inspections, intermodal activities, warehousing, and fueling stations
- No onsite food and beverage provisions for island employees aside from vending
- Approximately 2,000 persons on Harbor Island at any given time – onsite direct employees, onsite indirect employees (subcontractors, maintenance personnel, common carriers), drayage truck drivers and DOD personnel
- Large maritime industry may be able to assist with overwater evacuation/point of contact for water access

# UNDERSTANDING THE POTENTIAL IMPACTS



Immediate impacts identified based on the interviews and potential closure timelines:

## **POTENTIAL EFFECT(S) DUE TO CLOSURE OF ACCESS TO/FROM BUSINESS (0 To 24 Hours)**

- a. No major impacts to many non-essential businesses; office work may continue remotely, but any onsite production/activities will be impacted
- b. There is absolute urgency to complete restoration/repair work for those working under DOD contract(s)
- c. There is absolute urgency to continue US Customs inspection of incoming ships in berth
- d. Fuel tank farm expects to mitigate any closure impacts within 24-48 hours to maintain regional fuel availability
- e. Filling station customers (~200 trucks daily) would be redirected to alternate fueling locations (4th and S Spokane, South Park, Tukwila)
- f. Loss of power would close fueling station

pumps/card readers

- g. Immediate disruption to warehouse shipping/receiving retail/wholesale business
- h. Immediate disruption to common carrier businesses

## **POTENTIAL EFFECT(S) DUE TO THE CLOSURE OF ACCESS TO/FROM BUSINESS (1-5 business days)**

- a. No access to/from Harbor Island would be economically devastating
- b. US Customs inspections would need to continue; ships may be redirected to other locations, but not ideal as Customs inspectors need to return to SODO area to file documentation
- c. Leaving Naval ship in dry dock for an extended amount of time is NOT ACCEPTABLE
- d. Naval emergency action plan is unknown
- e. Anecdotal petroleum industry evidence

indicates that closures of three days or longer will cause fueling disruption through the Puget Sound:

- i. Finite tank farm storage; pipeline never stops
  - ii. Alternate filling station locations would soon become impacted
  - iii. Harbor Island backup generators may be impacted; critical support services disrupted
- d. Small businesses that rely on online retailers could be penalized for late shipments; customer satisfaction becomes an issue
  - e. Ongoing issues for common carriers

### **POTENTIAL EFFECT(S) DUE TO CLOSURE OF ACCESS TO/FROM BUSINESS (6+ business days)**

- f. Major issue for finite petroleum storage tank farm
- g. Diesel generators would run out of fuel and critical systems would be impacted
- h. Filling stations will be impacted; public hoarding likely
- i. Small business accounts may be closed; onsite stock may be damaged if left exposed to the elements/theft; major issues with business model
- j. Closures as long as 30-days will require business disruption insurance to kick in



# EXISTING ACCESS



## Public and Private Access

Public access to Harbor Island is made from SW Spokane Street. Westbound traffic enters Harbor Island via a one-way portion of SW Spokane Street, north of the Spokane Street Swing Bridge. Eastbound traffic turns south onto 11th Ave SW before heading west onto Klickitat Ave SW. These approaches begin east of the Swing Bridge and meet immediately before the Klickitat Ave Bridge.

There is also private access via a structure south of the West Seattle Bridge that crosses over the east fork of the Duwamish Waterway and adjoins parcels owned by the Port of Seattle, including the Harbor Marina Corporate Center (HMCC). This bridge structure parallels railroad tracks jointly controlled by BNSF Railway Company and Union Pacific Railroad which provides rail service to businesses along West Marginal Way SW, Terminal 5, Terminal 18, and Harbor Island.

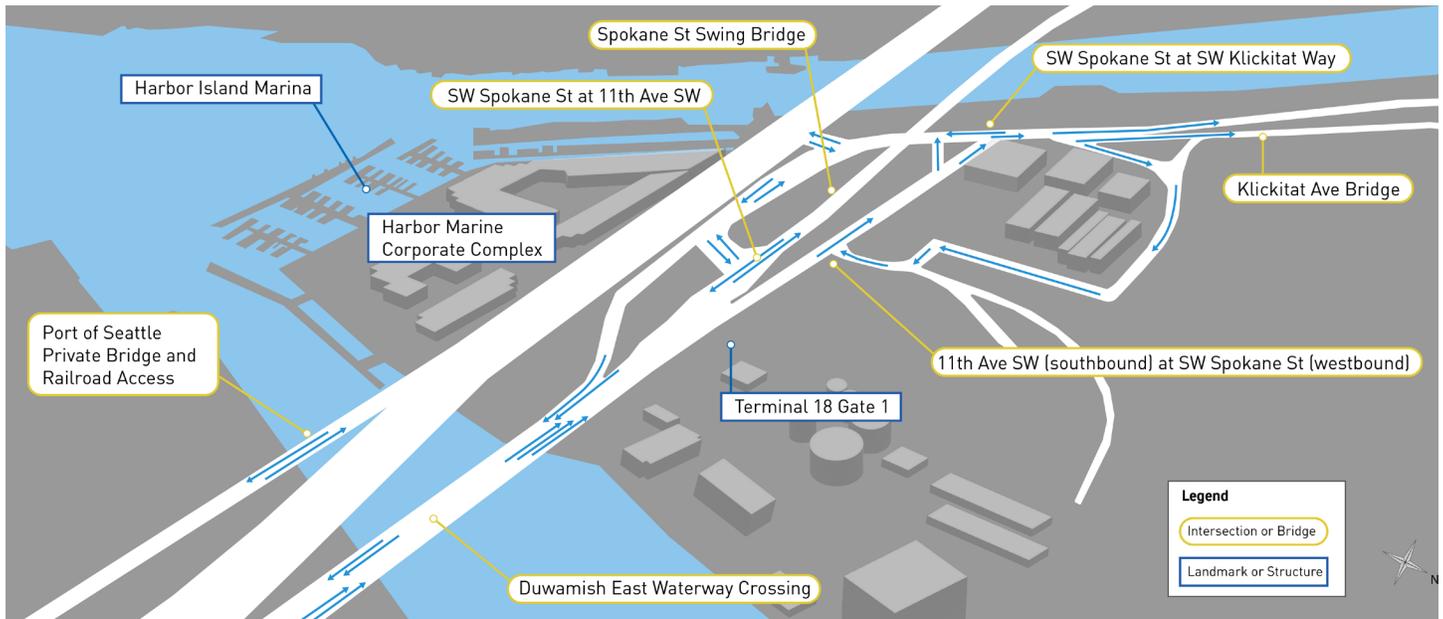
All ingress and egress points for Harbor Island cross at least one structure over water, are in proximity to the high- and low-level bridges, and parallel to rail and utility lines - As such, Harbor Island access requires bridges and intersections to operate in various combinations.

## Access Limitation Considerations

Many scenarios exist that could limit or block access to Harbor Island for varying lengths of time, and it is not possible to accurately predict all events that could cause critical access or infrastructure blockages. This document is designed to inform Emergency Management and Incident Command personnel of the critical infrastructure and intersections so they can prioritize how to best reestablish the transportation network under SDOT control.

As with all incidents, safety and incident stabilization is the primary concern. Afterwards, depending on the type of incident and the impact to signals and power, clearing debris, installing stop signs, a temporary signal, and potential one-lane two-way operations such as those seen on construction sites would need to be employed.

# CRITICAL ASSETS, INTERSECTIONS, SIGNALIZATION



## Key Assets

Given the limited access points and waterway crossings required to maintain the transportation network to and from the island, the following structures are key assets.

1. Spokane Street Swing Bridge
2. Duwamish East Waterway Crossing
3. Port of Seattle private access to HMCC
4. Klickitat Ave Bridge

Each of the above noted structures carry vehicle traffic to parts of Harbor Island and Klickitat Ave Bridge was built as an emergency response route. Should any single access point or segment become unusable, others become alternate routes until the affected portion is managed. However, should multiple segments become unusable simultaneously, access to Harbor Island could be severely restricted or eliminated.

## Key Intersections and Signalization

There are three signalized intersections associated with ingress/egress to Harbor Island

1. SW Spokane St at SW Klickitat Way
2. SW Spokane St at 11th Ave SW
3. 11th Ave SW (one way southbound) at SW Spokane St (one way westbound)

Each of these are important to Harbor Island access, but SW Spokane St at SW Klickitat Way is a key functional intersection that manages almost all ingress/egress. Should any one of these intersections be compromised, access to Harbor Island would be severely impacted.

There are several groupings of structures and intersections that can move vehicles to/from Harbor Island. The following chart notes those combinations.

## CRITICAL ASSETS, INTERSECTIONS, SIGNALIZATION

STRUCTURE	SIGNAL(S)
Spokane St Swing Bridge	SW Spokane St at SW Klickitat Way
	SW Spokane St at 11 <sup>th</sup> Ave SW <b>AND</b> SW Spokane St at SW Klickitat Way
	11 <sup>th</sup> Ave SW (one-way SB) at SW Spokane St (one-way WB)*
Duwamish East Waterway Crossing	SW Spokane St at SW Klickitat Way
	SW Spokane St at 11 <sup>th</sup> Ave SW <b>AND</b> SW Spokane St at SW Klickitat Way
	11 <sup>th</sup> Ave SW (one-way SB) at SW Spokane St (one-way WB)*
Port of Seattle private access to HMCC	SW Spokane St at SW Klickitat Way
Klickitat Ave Bridge**	Redundancy facility to support life-safety and aid car access on Harbor Island (here for completeness only)

*\*Requires two temporary signals to function as an ingress and egress point*

*\*\*Not critical to reestablish access*

# IDENTIFYING ACCESS ROUTES



## Intersection Considerations

Should intersections be unavailable due to significant damage, the priority becomes creating any type of access. Assuming there are no physical blockages, any intersection can also be converted to all-way stop control if signals are otherwise out of commission and cannot be repaired/maintained quickly. Conversion to all-way stops would maintain Harbor Island access but would significantly limit peak volume throughput. Should the roadway surface be significantly damaged, it may still be possible to use the intersections with reduced lane usage.

For example, 11th Ave SW (one way southbound) at SW Spokane St (one way westbound) is a 'T' intersection with one-way operations which could feasibly be configured to operate as a one-lane two-way intersection and allow limited vehicle access without having to rely on other intersections.

This would require up to two temporary signal pairs to manage traffic flow, but it could allow access to maintain critical functions if other intersections' signals or infrastructure are significantly damaged.

## Infrastructure Considerations

Harbor Island access requires travel over at least one bridge, and if all structures are compromised, SDOT will have to perform engineering analysis to determine the structures that can be repaired and returned to service in the shortest timeline and those which may be weight-limited, restricting the number and type of vehicles, equipment and materials that can be moved onto or off the island.

Incident Management personnel would focus on maintaining access for critical functions, likely from across the water. The goal would be to focus efforts on the structure that can bring greatest access via the roadway network to Harbor Island in the shortest timeframe.

Where access is unavailable or weight-restricted, multiple services to Harbor Island will be impacted. Thus, cooperation with island businesses and partners such as the Port of Seattle will be necessary to determine how to first maintain safety and then determine what access can be restored. SDOT would first determine critical needs on Harbor Island and then work to develop alternate access.

# PREPARING FOR EMERGENCY



## Reestablishing Access

Reestablishing minimum roadway access to Harbor Island requires at least one intact structure and one functional intersection. The combination of structures and intersections is complicated because at least one structure is private (Port of Seattle private access to HMCC) and will require an interlocal agreement.

Similarly, one intersection (SW Spokane St at 11th Ave SW) requires a second intersection (SW Spokane St at SW Klickitat Way) to also be functional to maintain access.

Should movement on or off the island be limited by infrastructure, it may also be beneficial to set a circulation pattern on Harbor Island. Communication with business, Port partners, FEMA and Coast Guard personnel will also play a key role in establishing priorities when access is critically limited. Customs enforcement, Department of Defense activities, fueling, import/export, warehousing, and other functions

all require varying large vehicle access.

It is also probable that water access will play a role in at least evaluating and maintaining roads and businesses, and it may also be necessary to support ongoing access should structures need significant repair or replacement. Such actions will also be managed to ensure tribal treaty rights and fishing access on the Duwamish Waterway are maintained.



## Putting this Plan into Action

This plan is a combination of maintenance of property and return to normal operations which identifies access routes that can be used to establish Harbor Island access after the primary life-safety efforts are completed during any emergency or access limitation. Most events in which access is limited will also involve loss of utilities. This can compound regional issues because Harbor Island supplies fuel to the region and supports industries from shipbuilding to international terminal operations.

The review of businesses and their potential impacts to various lengths of restricted access underscores the need to quickly identify in emergent situations which routes provide critical short-term access and lead to a return to full Harbor Island access. As with any incident, the response is tailored to the need, and this plan offers an initial review of which key SDOT assets should be reviewed and in which combination so that the region can benefit from the critical work on Harbor Island.

## REFERENCES:

(1) EPA Superfund Cleanup Sites – Harbor Island, Seattle, WA Island businesses.

<https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=1000949>

(2) Port of Seattle Harbor Island and East Waterway Superfund Clean up

<https://www.portseattle.org/projects/east-waterway-cleanup>

(3) Emergency Response Plan

<https://www.ready.gov/business/implementation/emergency>

## ADDITIONAL RESOURCES:

- Washington State Department of Natural Resources, Geologic Events

<https://www.dnr.wa.gov/programs-and-services/geology/geologic-hazards-and-environment>

- Resources for Protective Actions for Life Safety

<https://www.ready.gov/business/implementation/emergency>

- Exit Routes and Emergency Planning – U.S. Occupational Safety & Health Administration (OSHA) 29 CFR 1910 Subpart E

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910SubpartE>

- Evacuation Planning Matrix – OSHA

<https://www.osha.gov/emergency-preparedness/evacuation-matrix>

- Evacuation Plans and Procedures eTool – OSHA

<https://www.osha.gov/etools/evacuation-plans-procedures>

- Maritime Definitions

<https://www.aapa-ports.org/advocating/content.aspx?ItemNumber=21500>