

CHAPTER 6: POTENTIAL TRANSPORTATION INVESTMENTS

INTRODUCTION

This chapter presents potential projects and investments that will keep people and goods moving through Ballard-Interbay. The range of investments includes packages of corridor-level projects and management strategies, location-specific projects, and programmatic, lower-cost projects, such as signal optimization at key intersections or wayfinding. Top investments result from an extensive goals-based evaluation (see Chapter 4) and the input of members of the public, stakeholders, and agency partners.

The project team evaluated more than 80 projects identified through public engagement, collaboration with stakeholders and agency partners, recommendations from previous planning efforts, scenario analysis, and analysis of Ballard-Interbay's existing and anticipated future (2042) mobility needs. Modeling of future mobility needs was conducted for multiple land use scenarios, including those that envision more transit-oriented development near light rail stations and dense mixed-use character for major redevelopment sites such as the Armory property. This was done to test system function and resilience should future rezoning occur to accommodate more intensive uses.

BIRT proposes a series of multimodal investments that complement the future replacement of the Magnolia Bridge and the Ballard Bridge and support the introduction of light rail transit to the study area. Because there are a number of stakeholders interested in the BIRT study outcomes, including those interested in specific neighborhoods, specific corridors, and certain modal systems, this chapter has been organized to describe proposed investments in multiple ways. They are as follows:

- **Bridge replacement alternatives:** While BIRT does not recommend a single replacement alternative for the Ballard or Magnolia bridges, it does narrow both to two options and describe key tradeoffs between the two most likely options.
- **Key investments:** These are the most beneficial multimodal projects that will support community goals and keep people and goods moving for decades to come. Figure 6-1 illustrates these projects.
- **Modal priorities:** Each modal system has specific needs, and a set of priority projects are identified and mapped for each. These priorities are described in the Modal Networks section.
- **Corridor improvements:** A few key arterial corridors carry most of the travel to and through the BIRT study area. Coordinated improvements are needed in each of these corridors. The Corridor Improvements section of this chapter highlights how capital and operational improvements come together to ensure reliable travel.
- **Small, low cost projects:** BIRT is a 20-year plan, but investments are needed sooner. This section identifies small, low cost projects that can be implemented independent of bridge replacement or rehabilitation.

The organization of this chapter means that some projects are discussed in multiple sections. Each project has a unique project number that is carried throughout.

What makes a priority project?

The BIRT study goals were introduced in Chapter 1. The graphic below includes the desired outcomes and the evaluation criteria associated with each goal that were used to score projects and identify priorities across the full list of potential projects. A complete list of projects and their associated scores for each evaluation criteria is included in Appendix G.



Improve mobility for people and freight: The BIRT evaluation framework elevates projects that most improve mobility for people and freight as measured by a project's ability to:

- Increase the capacity of the transportation system for more person trips
- Reduce or maintain freight travel times on key corridors and add available freight paths
- Increase the geographic area of those who can conveniently walk and bike to key destinations
- Increase the number of high-quality travel choices in the area through comfortable, connected options



Advance projects that meet the needs of communities of color and those of all incomes, abilities, and ages: High-ranking projects improve mobility for those that rely on multimodal travel options the most, including:

- Workers of color and low-income workers
- Residents of color and low-income residents
- People with disabilities



Provide a system that safely accommodates all travelers: High-ranking projects make it safer and more convenient to walk, roll, ride a bicycle, and take transit to and through Ballard-Interbay. These projects:

- Include safety countermeasures at locations with a history of collisions and locations with crash risk factors
- Limit conflicts between modes
- Provide facilities and roadway features that improve mobility for trucks and deliveries



Support timely and coordinated implementation: High-ranking projects are feasible, fundable, supported by agency partners, and address urgent needs. The BIRT evaluation framework elevated projects that:

- Minimize environmental, economic, and construction impacts
- Leverage coordination opportunities to deliver maximum value

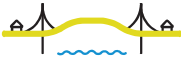

BRIDGE ALTERNATIVES

The Ballard Bridge and Magnolia Bridge alternatives discussed in Chapter 4 were included in the multimodal evaluation. Each bridge alternative was evaluated in conjunction with a range of land use scenarios. The BIRT study does not recommend a specific bridge alternative, but the analysis recognizes key tradeoffs associated with priority modes for moving people and goods. The Seattle City Council and the Mayor will ultimately decide which specific bridge alternatives to advance.

Many of the potential projects described in this chapter are applicable regardless of the bridge alternatives. However, some projects and corridor management strategies are dependent upon individual bridge alternatives. Applicable bridge alternatives per project are denoted in the following sections.



Each of the bridge alternatives is paired with improvements for pedestrians, bicyclists, transit, and freight. Table 6-1 and Table 6-2 summarize the modal elements included in each bridge alternative.

TABLE 6-1: MODE-SPECIFIC IMPROVEMENTS IN EACH BALLARD BRIDGE ALTERNATIVE

Bridge Alternative	Pedestrian and Bicycle	Transit	Freight ¹
 <p>Ballard Bridge Mid-Level <i>Included in Scenario 1</i></p>	<ul style="list-style-type: none"> • 14' shared-use path on the west side of bridge • New shared-use path access ramp from the north at 17th Ave NW/ NW Leary Way 	<ul style="list-style-type: none"> • New southbound on-ramp from 17th Ave NW/NW Leary Way serving transit along NW Leary Way • Northbound off-ramp at NW 49th St enhances potential transit connections to the future Ballard Link station • Single Point Urban Interchange (SPUI) on the southern end of the bridge at W Nickerson St/W Emerson St that could include enhanced bicyclist and pedestrian access to RapidRide D Line stations • SPUI could improve travel reliability for transit routes traveling through the interchange at W Nickerson St/ 15th Ave W 	<ul style="list-style-type: none"> • Northbound off-ramp at NW 49th St • Southbound on-ramp at 17th Ave NW/NW Leary Way • Longer on-/off-ramps from 15th Ave W at south end of bridge • SPUI at W Nickerson St/W Emerson St will improve travel reliability for trucks at a key interchange used by trucks entering and exiting Fishermen's Terminal and other parts of the BINMIC
 <p>Ballard Bridge Low-Level <i>Included in Scenario 2</i></p>	<ul style="list-style-type: none"> • Widened shared-use paths on both east and west sides of bridge for people walking and bicycling • Enhanced bicycle and pedestrian access at southern end via modified SPUI 	<ul style="list-style-type: none"> • SPUI at W Nickerson St/W Emerson St, including enhanced bicyclist and pedestrian access to RapidRide D Line stations • SPUI could improve travel reliability for transit routes traveling through the interchange at W Nickerson St/ 15th Ave W 	<ul style="list-style-type: none"> • SPUI at W Nickerson St/W Emerson St will improve travel reliability for trucks at a key interchange used by trucks entering and exiting Fishermen's Terminal and other parts of the BINMIC

¹ For the purpose of this study, freight refers to the movement of goods by truck on city streets with connections to rail and maritime.

TABLE 6-2: MODE-SPECIFIC IMPROVEMENTS IN EACH MAGNOLIA BRIDGE ALTERNATIVE

Bridge Alternative	Pedestrian and Bicycle	Transit	Freight
 <p>Magnolia Bridge In-Kind Replacement <i>Included in Scenario 1</i></p>	<ul style="list-style-type: none"> • 10' multi-use path on the south side of the new Magnolia Bridge for people walking and bicycling 	<ul style="list-style-type: none"> • Transit would operate much as it does today 	<ul style="list-style-type: none"> • The Magnolia Bridge is a first-/last-mile connector, so an In-Kind Replacement would operate much as it does today
 <p>New Armory Way Bridge <i>Included in Scenario 2</i></p>	<ul style="list-style-type: none"> • Multi-use path on the south side of the Armory Way bridge for people walking and bicycling • Provide a route that is less steep for people biking between Interbay and Magnolia • New elevated connection across the BNSF railroad tracks at W Armory Way 	<ul style="list-style-type: none"> • Potential joint-use freight and transit (FAT Lanes) on the Armory Way Bridge to support transit re-routing to the Armory Way Bridge and Thorndyke Ave W to serve southern part of Magnolia • Transit signal priority at key intersections including 15th Ave W/W Armory Way and W Armory Way/Thorndyke Ave W 	<ul style="list-style-type: none"> • Intersection improvements at 15th Ave W/W Armory Way, including elevated northbound-left movement • At-grade local access along W Armory Way • West Uplands Perimeter Rd improvements • W Galer St overpass and flyover improvements

KEY INVESTMENTS

Figure 6-1 summarizes the highest-ranking transportation system improvements to keep people and freight moving safely and efficiently to and through the Ballard-Interbay study area. Projects generally assume 2042 transportation networks and travel demand, though many projects are warranted based upon existing conditions at the time of this study. Potential investments are summarized by corridor and are presented in 3 ways:

1. Figure 6-1 on the following page presents the **top tier** of projects identified in the study
2. The Modal Networks section describes how potential projects help to complete key **modal networks** and/or address identified gaps
3. The Corridor Improvements section focuses on synchronized improvements that can improve multimodal travel in the area's most **critical mobility corridors**

Because BIRT is a technical transportation study commissioned by the Washington State Legislature, funding and implementation of the projects identified will require further coordination among agency partners along with further local decision making and prioritization through SDOT's capital improvement process. Strong funding support from state and agency partners will be necessary for the City of Seattle to advance bridge replacement and system investments. More detail about timeline and funding strategies is provided in Chapter 7.



15th Ave W is a critical mobility corridor in Ballard-Interbay

SIDEWALKS IN BALLARD

SIDEWALKS IN INTERBAY

W DRAVUS ST CORRIDOR

- Corridor signal optimization
- Improve bicyclist and pedestrian crossings at key intersections
- W Dravus St protected bike lanes (15th to 20th)
- Enhance the pedestrian experience along W Dravus St

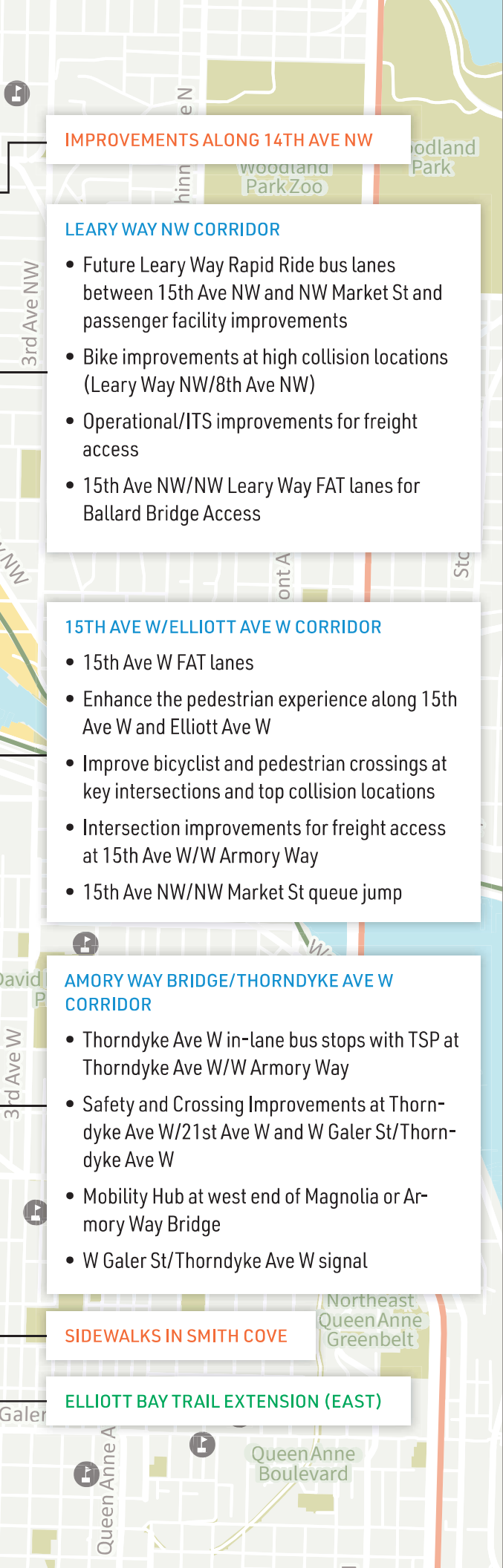
WHEELER ST BICYCLIST AND PEDESTRIAN BRIDGE

MAGNOLIA BRIDGE CORRIDOR

- Magnolia Trail
- Magnolia Blvd W/W Galer St protected bike lane
- Alaskan Way W/W Galer St and W Galer St Flyover Intersection Improvements



FIGURE 6-1: KEY INVESTMENTS



Modal Projects

- Pedestrian
- Bike and Pedestrian
- Transit
- Freight

Key Corridors

- Key Corridor

Multimodal Projects

- Intersection Improvement
- Ballard Bridge Mid-Level Alternative
- Ballard Bridge Low-Level Alternative
- Magnolia Bridge In-Kind Replacement
- Armory Way Alternative
- School
- Station Location*
- Light Rail Alignment*
- RapidRide
- Multi-use Trail
- Protected Bike Lanes
- Railroad
- Terminal
- Ballard-Interbay Northend MIC
- Armory

*The graphic depicts the Preferred Alternative identified by the Sound Transit Board for study in the Draft EIS for the West Seattle and Ballard Link Extensions project. The Draft EIS will also examine a "Preferred Alternative with Third Party Funding" and other alternatives and will be published in 2021. Final selection of the project to be built will follow publication of the Final EIS, anticipated in 2022.

BALLARD-INTERBAY MODAL NETWORKS

This section presents potential investments in the context of each travel mode and includes the projects needed to create complete, safe, and well-used networks for people and goods. Projects are presented with unique identification numbers. Several projects benefit multiple travel modes or apply to multiple corridors, and therefore may appear on more than one list.



People biking on 20th Ave W toward the Elliott Bay Trail (top left), the sidewalk on the Dravus St Bridge over 15th Ave (top right), a RapidRide bus and freight truck on 15th Ave W (left)



Priority Pedestrian and Bicyclist Projects

Priority bicyclist and pedestrian improvements detailed in Table 6-3 and Figure 6-2 fill network gaps, overcome physical barriers, and create a more enjoyable, safe, and comfortable experience for people walking and bicycling in Ballard-Interbay.

TABLE 6-3: PRIORITY PEDESTRIAN AND BICYCLIST PROJECTS

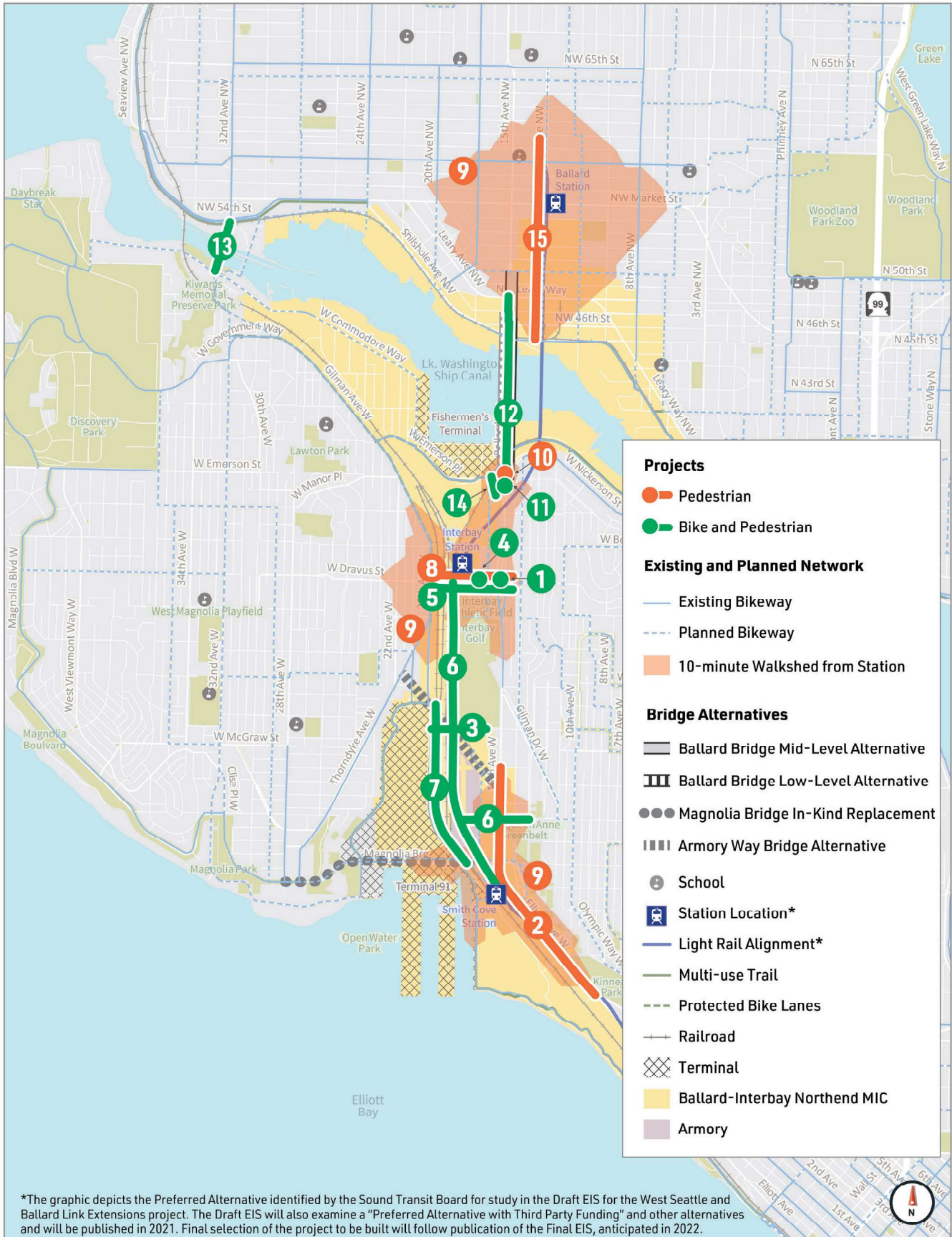
ID	Project Name	Project Description	Scenario	Scale
1	Dravus Bridge Replacements	Replace the W Dravus St bridges over the BNSF railroad tracks and 15 th Ave W, including widened sidewalks with buffers from traffic, improved lighting, protected bike lanes, and intersection improvements <i>Related project: W Dravus St Protected Bike Lanes (Project 5)</i>	1,2	Transformative
2	Improvements Along Elliott Ave W/15th Ave W	Enhance the pedestrian experience along Elliott Ave W and 15th Ave W from W Boston St to W Mercer Pl by widening sidewalks and adding landscaped buffer, ADA curb ramps, and pedestrian-scale lighting	1,2	Small
3	Wheeler St Pedestrian Bridge	Connect W Wheeler St (east) across the BNSF tracks with the Elliott Bay Trail/20 th Ave W via a new pedestrian and bicyclist bridge <i>Applicable only to the Magnolia Bridge In-Kind Replacement</i>	1	Transformative
4	W Dravus St/17th Ave Intersection Improvements	Evaluate existing right-of-way allocation at W Dravus St/17th Ave W to improve mobility for northbound and southbound vehicles, and make space for protected bike lanes. Options may include roadway rechannelization or expanding the Dravus St bridge west of the intersection. <i>Related project: W Dravus St Protected Bike Lanes (Project 5); Dravus Bridge Replacements (Project 1)</i>	1,2	Transformative
5	W Dravus St Protected Bike Lanes	Implement protected bicycle lanes (PBLs) on W Dravus St between 20 th Ave W and the Elliott Bay Trail Extension (East) with a future long-term connection to 14th Ave W (requires redesign of the 15th Ave W bridge and ramp intersections)	1,2	Transformative
6	Elliott Bay Trail Extension (East)	Create a parallel multi-use trail along the east side of the BNSF railroad tracks connecting people in the surrounding area to and from the future Smith Cove Link station at W Galer St and the future Interbay Link station at W Dravus St. Provide east-west connections at W Wheeler St, W Howe St, and W Garfield St	1,2	Transformative
7	Elliott Bay Trail Upgrades	Widen the narrow northern segment of the Elliott Bay Trail between the Magnolia Bridge and 20 th Ave W to allow shared-use travel in both directions	1,2	Transformative

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ID	Project Name	Project Description	Scenario	Scale
8	Improvements Along W Dravus St	Widen sidewalks where feasible along W Dravus St (especially between 20th Ave W and 17th Ave W) and add a landscaped buffer and pedestrian-scale lighting	1,2	Small
9	Sidewalks within a 10-minute walk of future Link stations	Construct new sidewalks and repair existing sidewalks within the BINMIC, within a 10-minute walk of the future Smith Cove, Interbay, and Ballard light rail stations, and adjacent to RapidRide stations along 15th Ave NW	1,2	Transformative
10	W Emerson St Pedestrian Bridge and Overpass Stairs	<p>Include a pedestrian bridge across 15th Ave W in the vicinity of W Emerson St with the SPUI design proposed with the Ballard Bridge alternatives. Add stairs and elevators to connect the sidewalks on 15th Ave W to the overpasses for people walking and rolling between the pedestrian bridge, sidewalk, and RapidRide stations along 15th Ave W.</p> <p><i>This project is only applicable to Ballard Bridge replacement alternatives. Related project: Interim 15th Ave/Emerson St Improvements (Project 11)</i></p>	1,2	Transformative
11	Interim 15th Ave and W Emerson St Improvements	<p>Improve the intersection of 15th Ave W/W Emerson St with underpass enhancements to address immediate mobility needs, understanding long-term Ballard Bridge replacement will include full intersection redesign</p> <p><i>Related Project: W Emerson St Pedestrian Bridge and Overpass Stairs proposes longer-term improvements to this intersection associated with the Ballard Bridge replacement. (Project 10)</i></p>	1,2	Small
12	Interim Ballard Bridge Improvements	<p>Improve the Ballard Bridge to address immediate mobility needs, understanding the Ballard Bridge will be replaced. Interim improvements could include wayfinding; pavement spot improvements; vertical delineation between the travel lanes and sidewalk; or adding wider sidewalks by cantilevering a walkway platform from the existing bridge.</p> <p><i>Related projects: Ballard Bridge low-level and mid-level alternatives</i></p>	1,2	Small
13	Ballard Locks Bike Connection	Build a bicycle connection through the Ballard Locks that can be used 24 hours a day, 7 days a week, and does not require bicyclists to dismount. Carefully consider impacts to Locks operations and Maritime Vessel Traffic priorities in design.	1,2	Transformative
14	Ship Canal to Thorndyke Ave Connection	Add a trail connection between the Ship Canal Trail and Thorndyke Ave W west of 15th Ave W/W Emerson St intersection for a direct connection to the future Interbay light rail station, multi-use trails, and neighborhoods	1,2	Small
15	Improvements Along 14th Ave NW	Widen or improve sidewalks along 14th Ave NW from NW Leary Way to Gemenskap Park with upgraded ADA curb ramps and pedestrian scale lighting. Enhance walking and biking priority along 14 th Ave NW to facilitate access to the future Ballard Link station.	1,2	Small

FIGURE 6-2: PRIORITY PEDESTRIAN AND BICYCLIST PROJECTS





Priority Transit Projects

Transit speed and reliability improvements promote efficient use of limited street space and enhance the transit experience. Table 6-4 and Figure 6-3 present high-priority transit investments. The BIRT evaluation framework elevated improvements to reinforce transit priority along frequent and high-capacity transit corridors serving multiple routes. Passenger facility upgrades will make it safer, more convenient, and more comfortable to take transit in Ballard-Interbay.

TABLE 6-4: PRIORITY TRANSIT PROJECTS

ID	Project Name	Project Description	Scenario	Scale
16	W Dravus St Signal Optimization	Optimize traffic signals on W Dravus St between 15 th Ave W and 20 th Ave W to ensure transit speed and reliability <i>Related project: Dravus Bridge Replacements (Project 1)</i>	1,2	Small
1	Dravus Bridge Replacements	Replace the Dravus St bridges over the BNSF railroad tracks and 15 th Ave W and include roadway upgrades and improved passenger facilities to enhance transit mobility <i>Related project: W Dravus St Protected Bike Lanes (Project 5)</i>	1,2	Transformative
17	Route 40 NW Leary Way Bus Lanes	Rechannelize NW Leary Way to include a bus-only lane in one or both direction(s) between 15th Ave NW and NW Market St. 10% design is complete and partially funded via SDOT's Route 40 Transit Plus Multimodal Corridor (TPMC) project <i>Related project: Leary Way Corridor Management Strategy (Project 44)</i>	1,2	Transformative
18	Transit Signal Priority (TSP) at Thorndyke Ave W/W Armory Way	Add transit signal priority/queue jumps at Thorndyke Ave W and Armory Way Bridge to allow buses to make a southbound left onto the Armory Way Bridge, and westbound to allow buses onto Thorndyke Ave W <i>Applicable only to the Armory Way bridge alternative. Related project: In-lane bus stops on Thorndyke Ave W (Project 20).</i>	2	Small
19	Mobility Hubs	Ensure adequate lighting, access to shared use mobility services, bike parking, and high-quality bus stop amenities (e.g., seating, weather protection, and real-time information signs) where multiple future routes will converge at multiple locations. Hubs are recommended at future light rail stations (Ballard, Interbay, and Smith Cove) and the west end of the Armory Way Bridge. <i>Armory Way Mobility Hub is applicable only to the Armory Way bridge alternative</i>	1,2	Small
20	In-Lane Bus Stops on Thorndyke Ave	Install transit islands on Thorndyke Ave W between W Blaine St and Armory Way Bridge to allow for in-lane bus stops and safe interface between buses and people riding in the protected bike lane <i>Related project: TSP at Thorndyke Ave/W Armory Way (Project 18)</i>	2	Transformative
21	15th Ave NW/NW Market St Queue Jump	Install a northbound queue jump from the business access and transit (BAT) lane/northbound right turn lane to allow buses to pass ahead of northbound through vehicles	1,2	Small

FIGURE 6-3: PRIORITY TRANSIT PROJECTS





Priority Freight Projects

As Ballard-Interbay continues to grow and land use evolves, more street uses and travel modes demand space on Ballard-Interbay streets. The elimination and prevention of conflicts between trucks, buses, and people walking and bicycling are critical to a safe, multimodal system. Freight access to the BINMIC, along with dedicated curb space for freight and delivery vehicles, will support reliable and efficient industrial and maritime operations. Consistent with Seattle’s Freight Master Plan, the priority projects listed in Table 6-5 focus improvements along designated truck streets and connectors.

TABLE 6-5: PRIORITY FREIGHT PROJECTS

ID	Project Name	Project Description	Scenario	Scale
22	15th Ave W/NW FAT Lanes	Allow for joint-use of bus-only lanes by transit and freight vehicles on 15th Ave W/NW from Denny Way to Market St NW during off-peak times. Freight can operate in bus-only lanes to bypass congestion, and benefits from transit priority treatments on the corridor such as queue jumps. <i>Note: Pending policy review</i>	1,2	Small
16	W Dravus St Signal Optimization	Optimize traffic signals along W Dravus St between 15th Ave W and 20th Ave W to support freight reliability with increased north gate traffic to and from Terminal 91 <i>Related project: Dravus Bridge Replacements (Project 1)</i>	1,2	Small
1	Dravus Bridge Replacements	Replace the W Dravus St bridges over the BNSF railroad tracks and 15th Ave W and include roadway upgrades <i>Related project: W Dravus St Protected Bike Lanes (Project 5)</i>	1,2	Transformative
4	W Dravus St/17th Ave Intersection Improvements	Evaluate existing right-of-way allocation at W Dravus St/17th Ave W to improve mobility for northbound and southbound vehicles, and make space for protected bike lanes. Options may include roadway rechannelization or expanding the Dravus St bridge west of the intersection. <i>Related projects: W Dravus St Protected Bike Lanes (Project 5); Dravus Bridge Replacements (Project 1)</i>	1,2	Transformative
23	15th Ave/W Dravus St Truck Turning and Signalization Improvements	Improve turn radii for trucks and enhanced multimodal operations at 15th Ave W and W Dravus St ramps, including pavement improvements to the bridge surface. Upgrade signal timing and hardware at ramp terminals to ensure vehicle queues on the bridge clear to allow trucks adequate space to turn at intersection. <i>Related projects: Dravus St Signal Optimization (Project 16); Dravus Corridor Management Strategy (Project 39)</i>	1,2	Transformative
24	15th Ave W/W Armory Way Intersection Improvements	Refine intersection operations at 15th Ave W/W Armory Way to improve pedestrian crossings, and accommodate frequent freight turning movements and freight access on at-grade roadways along W Armory Way	2	Small
25	Alaskan Way W/W Galer St and W Galer St Flyover Intersection Improvements	Improve intersection operations at Alaskan Way W/W Galer St, and at Alaskan Way W/W Galer St Flyover	1,2	Small

FIGURE 6-4: PRIORITY FREIGHT PROJECTS



*The graphic depicts the Preferred Alternative identified by the Sound Transit Board for study in the Draft EIS for the West Seattle and Ballard Link Extensions project. The Draft EIS will also examine a "Preferred Alternative with Third Party Funding" and other alternatives and will be published in 2021. Final selection of the project to be built will follow publication of the Final EIS, anticipated in 2022.



What's a Freight and Transit (FAT) lane?

Joint-use freight and transit lanes, also known as FAT lanes, allow freight trucks to operate in bus-only lanes during designated times. This allows freight to avoid traffic congestion in general purpose travel lanes but may subject freight to stops and delays at transit stops and stations, particularly during peak travel periods. FAT lanes are a relatively new concept. New York City launched a Truck and Transit priority lane on 14th St in Manhattan in 2019, and Portland, Oregon, is launching pilot Transit, Truck, and Turn lanes on SE Grand Ave and SE Martin Luther King Jr Blvd.



Freight truck leaving Terminal 91 on West Galer St Flyover; this street is freight's only entry point to Terminal 91

CORRIDOR IMPROVEMENTS

Five key transportation corridors connect people and freight through the Ballard and Interbay neighborhoods. Under future Scenario 2, a new Armory Way Bridge would create another key corridor. Given the constraints of water bodies, railroad corridors, and topography, people and goods traveling to or through the study area don't have nearby street alternatives, and rely heavily on these corridors. The corridors include:

- **15th Ave NW/W and Elliott Ave W:** NW Market St to W Mercer Pl
- **Magnolia Bridge:** 23rd Ave NW to Terminal 91 (Scenario 1)
- **Armory Way Bridge and Thorndyke Ave W:** to 15th Ave W via Armory Way Bridge (Scenario 2)
- **W Dravus St:** 20th Ave NE to 14th Ave NW
- **W Emerson St and W Nickerson St:** Gilman Ave W to 13th Ave NW2
- **NW Leary Way:** 17th Ave NW to 14th Ave NW

The BIRT team conducted transportation modeling in each of these corridors to identify corridor-wide management strategies to improve reliability for transit and freight vehicles. Corridor-wide management strategies include operational improvements such as traffic signal upgrades or timing improvements, use of technology to improve travel reliability or customer information, reallocation of lane space, and access management for areas where vehicles enter and exit the corridor.

These corridor-wide improvements complement key capital projects identified in the BIRT study. Strategies for each corridor are provided in more detail in Appendix F.

In some corridors, there is insufficient right-of-way to accommodate all modal priorities and projects. Determining priorities may require further study and conceptual engineering to affirm feasibility. For example, in the 15th Ave W corridor, there is strong public interest in providing a protected bicycle facility to connect to destinations east of the BNSF tracks. This corridor is also critical for bus transit and freight, and will be served by future Sound Transit Link light rail, which will lead to more people accessing destinations by transit. In this case, BIRT recommends a north-south oriented protected bicycle facility east of the BNSF tracks, but recognizes that it could be located along 15th Ave W or constructed as an off-street path in the light rail right-of-way.

FIGURE 6-5: MAP OF KEY CORRIDORS



15th Ave NW/W and Elliott Ave W Corridor

The 15th Ave NW/W and Elliott Ave W corridor is the most significant travel pathway serving Ballard-Interbay. It carries more people and freight than any other study area corridor. A major truck route and high-capacity transit corridor with dedicated bus lanes, the 15th Ave NW/W and Elliott Ave W corridor currently experiences southbound congestion in the AM peak and northbound congestion in the PM peak. Primary needs identified through the traffic operations analysis include:

- Improve accessibility and the experience of walking along 15th Ave NW/W and Elliott Ave W and provide a parallel bike facility to connect to the future Smith Cove and Interbay Link stations
- Improve transit and freight reliability with roadway design and operations measures to avoid impacts of traffic congestion, specifically southbound congestion in the AM peak and northbound congestion in the PM peak
- Reduce bottlenecks southbound through at all intersections during the AM peak and northbound through at all intersections during PM peak that cause more than 10 minutes of cumulative delay for freight and transit
- Corridor management strategies to address the primary needs along the 15th Ave W/NW and Elliott Ave W corridor include installation of adaptive signal systems and a suite of Intelligent Transportation System (ITS) strategies, conversion of bus-only lanes to freight and transit (FAT lanes), and consolidation of pedestrian crossings to reduce freight and transit delay at intersections

Key improvements along the 15th Ave W/NW and Elliott Ave W corridor include improvements to the 15th Ave W/W Emerson St intersection at the southern end of the Ballard Bridge, joint-use freight and transit lanes along 15th Ave W/NW to improve freight mobility, and extension of the Elliott Bay Trail east of the BNSF railroad tracks connecting the future Smith Cove and Interbay Link stations. Table 6-6 and Figure 6-6 present the 15th Ave W/NW and Elliott Ave W corridor management strategy paired with the potential improvements along the corridor, which will enhance the performance of each modal system.

TABLE 6-6: 15TH AVE W/NW AND ELLIOTT AVE W POTENTIAL INVESTMENTS

ID	Project Name	Project Detail	Scenario	Scale
A	Ballard Bridge Low-Level Alternative	The low-level Ballard Bridge alternative will be similar to the existing bridge but will include improved access for all modes at the south landing. Key elements of the Ballard Bridge low-level alternative include shared use paths on the east and west sides of the bridge, and a Modified Single Point Urban Exchange (SPUI) on the southern end of the bridge.	2	Transformative
B	Ballard Bridge Mid-Level Alternative	The mid-level Ballard Bridge alternative replaces the existing bridge with a new movable bridge that provides 60'-70' vertical clearance, a 14' shared use-path on the west side of bridge, new vehicle and shared-use path access ramp at 17th Ave NW/Leary Way NW, a vehicle ramp at NW 49th St/15th Ave NW, and a modified SPUI consistent with the low-level bridge alternative	1	Transformative
6	Elliott Bay Trail Extension (East)	Create a parallel multi-use trail along the east side of the BNSF railroad tracks connecting people in the surrounding area to and from the future Smith Cove Link station at W Galer St and the future Interbay Link station at W Dravus St. Provide east-west connections at W Wheeler St, W Howe St, and W Garfield St.	1,2	Transformative
22	15 th Ave W/NW FAT Lanes	Allow for joint use of bus-only lanes by transit and freight vehicles on 15th Ave from Denny Way to Market St NW during off-peak times. Freight can operate in bus-only lanes to bypass congestion, and benefits from transit priority treatments on the corridor such as queue jumps. <i>Note: Pending policy review</i>	1,2	Small
21	15th Ave NW/ Market St Queue Jump	Install a northbound queue jump from the business access and transit (BAT)/northbound right turn lane to allow buses to pass ahead of northbound through vehicles	1,2	Small
2	Improvements Along Elliott Ave W/15th Ave W	Enhance the pedestrian experience along Elliott Ave W and 15th Ave W from W Boston St to W Mercer Pl by widening sidewalks and adding landscaped buffer, ADA curb ramps, and pedestrian scale lighting	1,2	Small
26	Crossing Improvements at High Priority Signalized Intersections	Improve crossings for people walking and bicycling at priority signalized intersections: 15 th Ave NW/NW Market St, 15 th Ave W/W Dravus St, 15 th Ave W/W Wheeler St, 15 th Ave W/W Garfield St, Elliott Ave W/W Galer St Flyover, Elliott Ave W/W Galer St, and Elliott Ave W/W Mercer Pl <i>Related project: Dravus St/17th Ave Intersection Improvements (Project 4)</i>	1,2	Small

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ID	Project Name	Project Detail	Scenario	Scale
27	Safety and Crossing Enhancements at High Priority Unsignalized Locations	Evaluate the potential for signalized crossings and enhancements to existing crosswalks at unsignalized intersections and mid-block locations: 15 th Ave W/W Bertona St, Elliott Ave W/W Lee St, and 15 th Ave W between W Armory Way and W Wheeler St	1,2	Small
28	Pedestrian Improvements at Top Collision Locations	Make improvements at locations with a history of collisions involving people walking (15 th Ave NW near Leary Way NW) and locations with crash risk factors as defined in SDOT's Bike and Pedestrian Safety Analysis	1,2	Small
24	15 th Ave W/W Armory Way Intersection Improvements	Refine intersection operations at 15 th Ave W/W Armory Way to improve pedestrian crossings, and accommodate frequent freight turning movements and freight access on at-grade roadways along W Armory Way	1,2	Transformative
29	15 th Ave W/Gilman Dr W Intersection Improvements	Improve intersection operations at 15 th Ave W/Gilman Dr W	1,2	Transformative
30	15 th Ave W/W Howe St Intersection Improvements	Improve intersection operations at 15 th Ave W/W Howe St	1,2	Transformative
31	15 th Ave W/NW and Elliott Ave W Signal Optimization	Install adaptive signal system and a suite of ITS strategies	1,2	Transformative

FIGURE 6-6: 15TH AVE W/NW AND ELLIOTT AVE W POTENTIAL INVESTMENTS



*The graphic depicts the Preferred Alternative identified by the Sound Transit Board for study in the Draft EIS for the West Seattle and Ballard Link Extensions project. The Draft EIS will also examine a "Preferred Alternative with Third Party Funding" and other alternatives and will be published in 2021. Final selection of the project to be built will follow publication of the Final EIS, anticipated in 2022.

Magnolia Bridge Corridor

If the Magnolia Bridge were to be replaced in-kind, the Magnolia Bridge corridor would continue to serve as a critical network connection for residents and workers traveling between the southern end of Magnolia and the 15th Ave W/NW and Elliott Ave W corridor and Interbay. The Magnolia Bridge is a minor arterial that carries over 20,000 vehicles per day and serves 3 transit routes. Primary needs for the Magnolia Bridge corridor identified through the traffic operations analysis include:

- Improve transit and freight reliability with roadway design and operations measures to avoid impacts of traffic congestion
- Provide clear intersection control at 23rd Ave NW/Magnolia Bridge eastbound on-ramp, and at Terminal 91 and the westbound off-ramp

Corridor management strategies to address the primary needs along the Magnolia Bridge corridor include updates to roadway channelization and striping to provide clearer intersection control at key intersections. Joint-use freight and transit (FAT) lanes could be implemented but may not be merited given projected transit volumes. Table 6-7 and Figure 6-7 present the Magnolia Bridge corridor management strategies along with the recommended improvements along the corridor, which will enhance the performance of each modal system.

TABLE 6-7: MAGNOLIA BRIDGE POTENTIAL INVESTMENTS

ID	Project Name	Project Description	Scenario	Scale
C	Magnolia Bridge In-Kind Replacement	One-to-one replacement of the existing bridge. Improvements include a 10'-wide multi-use path on the south side for pedestrians and bicyclists.	1	Transformative
25	Alaskan Way W/W Galer St and W Galer St Flyover Intersection Improvements	Improve intersection operations at Alaskan Way W/W Galer St, and at Alaskan Way W/W Galer St Flyover	1,2	Small
33	Signal at W Galer St/Thorndyke Ave W	Signalize W Galer St /Thorndyke Ave W to enhance transit mobility	1	Transformative
34	Magnolia Trail and Neighborhood Greenway	Build a bicyclist and pedestrian connection in Magnolia that connects W Galer St to W Marina Pl along the waterfront to facilitate accessing the Elliott Bay Trail. Install a neighborhood greenway on 32nd Ave W, W Galer St, and W Marina Pl to connect the new trail to the Elliott Bay Trail	1,2	Small
35	W Galer St and Magnolia Blvd Protected Bike Lane	Install protected bicycle lanes (PBLs) on W Galer St and Magnolia Blvd W from the Magnolia Bridge to W Howe St per the Bicycle Master Plan	1,2	Small
36	Magnolia Bridge Corridor Management Strategies	Incorporate channelization/roadway and capital improvements to efficiently move motorized vehicles through the corridor between W Galer Flyover and Thorndyke Ave W	1	Small

FIGURE 6-7: MAGNOLIA BRIDGE CORRIDOR POTENTIAL INVESTMENTS



WHOLE FOODS
MARKET

adobe
COFFEE



Armory Way Bridge and Thorndyke Ave W Corridor

The Amory Way Bridge and Thorndyke Ave W corridor will play a significant role in mobility for both Magnolia and Interbay if the Armory Way Bridge alternative for Magnolia Bridge replacement is implemented. If constructed, it will create a new connection across the BNSF railroad tracks along the W Armory Way alignment, and transit serving the southern portion of Magnolia would be re-routed along the new Armory Way Bridge. Primary needs for the Armory Way Bridge and Thorndyke Ave W corridor identified through the traffic operations analysis include:

- Implement transit priority features at Thorndyke Ave W/W Armory Way along with operational changes on 15th Ave W to address freight and transit congestion and mitigate future congestion as mobility patterns shift from the current Magnolia Bridge
- Modify roadway channelization and striping to remove geometric constraints for large vehicles
- Reduce bottlenecks at eastbound W Blaine St/Thorndyke Ave W in both peak hours, southbound W Galer St left turn in AM peak, and westbound W Armory Way left turn in AM peak. Mitigate similar bottlenecks along 15th Ave W from W Amory Way along shared corridor segment connecting to the W Galer St flyover.

Table 6-8 and Figure 6-8 present the Armory Way Bridge and Thorndyke Ave W corridor management strategies along with the recommended improvements along the corridor, which will enhance the performance of each modal system.

TABLE 6-8: ARMORY WAY BRIDGE AND THORNDYKE AVE W POTENTIAL INVESTMENTS

ID	Project Name	Project Description	Scenario	Scale
D	Armory Way Bridge (Magnolia Bridge replacement)	This bridge alternative constructs a new street connection along W Armory Way with a bridge and a new Magnolia Bridge segment to Alaskan Way with new West Uplands Perimeter Road and improvements to 20th Ave W. The bridge alternative as proposed includes a multi-use path on the south side for pedestrians and bicyclists. Joint-use freight and transit (FAT) lanes could be implemented but may not be merited given projected transit volumes.	2	Transformative
37	FAT Lanes: Thorndyke Ave W/W Blaine St	Add joint-use bus/freight lanes on Thorndyke Ave W and W Blaine St <i>Note: Pending policy review. Related project: In-lane bus stops on Thorndyke Ave (Project 20)</i>	2	Transformative
33	Signal at W Galer St/Thorndyke Ave W	Signalize W Galer St/Thorndyke Ave W to enhance transit mobility	1	Transformative
18	Transit Signal Priority (TSP) at Thorndyke Ave/W Armory Way	Add transit signal priority/queue jumps at Thorndyke Ave W/ Armory Way Bridge to allow buses to make a southbound left onto the Armory Way Bridge, and westbound to allow buses onto Thorndyke Ave W <i>Related project: In-lane bus stops on Thorndyke Ave W (Project 20)</i>	2	Small
19	Mobility Hubs	Ensure adequate lighting, access to shared use mobility services, bike parking, and high-quality bus stop amenities (e.g., seating, weather protection, and real-time information signs) where multiple future routes will converge at multiple locations. Hubs are recommended at future light rail stations (Ballard, Interbay, and Smith Cove) and the west end of the Armory Way Bridge.	1,2	Small
20	In-Lane Bus Stops on Thorndyke Ave	Install transit islands on Thorndyke Ave W between W Blaine St and the Armory Way Bridge to allow for in-lane bus stops and safe interface between buses and people riding in the protected bike lane <i>Related projects: TSP at Thorndyke Ave/Armory Way (Project 18)</i>	2	Transformative
27	Safety and Crossing Enhancements at High Priority Unsignalized Locations	Evaluate the potential for signalized crossings and enhancements to existing crosswalks at unsignalized intersections and mid-block locations: Thorndyke Ave W/21 st Ave W/W Armory Way	1,2	Small
38	Armory Way Bridge Corridor Management Strategy	Incorporate signal operations improvements, traffic control, roadway striping/channelization, and capital improvement enhancements to efficiently move motorized vehicles on the Armory Way Bridge and Thorndyke Ave W between W Galer St and W Dravus St	2	Transformative

FIGURE 6-8: ARMORY WAY BRIDGE/THORNDYKE AVE W POTENTIAL INVESTMENTS



W Dravus St Corridor

W Dravus St is a principal arterial that connects Magnolia, Interbay, and Queen Anne spanning both the BNSF railroad tracks and 15th Ave W with 2 bridges. Bicyclists, pedestrians, transit, and freight all converge and compete for space on this crucial east/west corridor. Primary needs identified through the traffic operations analysis include:

- Replace W Dravus St bridges to improve bicycle and pedestrian facilities. Current facilities are insufficient and right-of-way constraints imposed by the bridges make it challenging to improve these facilities without significant tradeoffs to transit and freight reliability.
- Modify roadway channelization and striping to remove geometric constraints for large trucks, which are often unable to make turning maneuvers in lane at intersections with 15th Ave W ramps.
- Reduce bottlenecks at W Dravus St/20th Ave W and the 15th Ave W ramps coinciding with AM peak hour travel toward Downtown and PM peak travel away from Downtown
- Improve transit and freight reliability with roadway design and operations measures to avoid impacts of traffic congestion during both the AM and PM peaks
- Implement access management strategies at frequent and busy driveway access points to improve corridor reliability

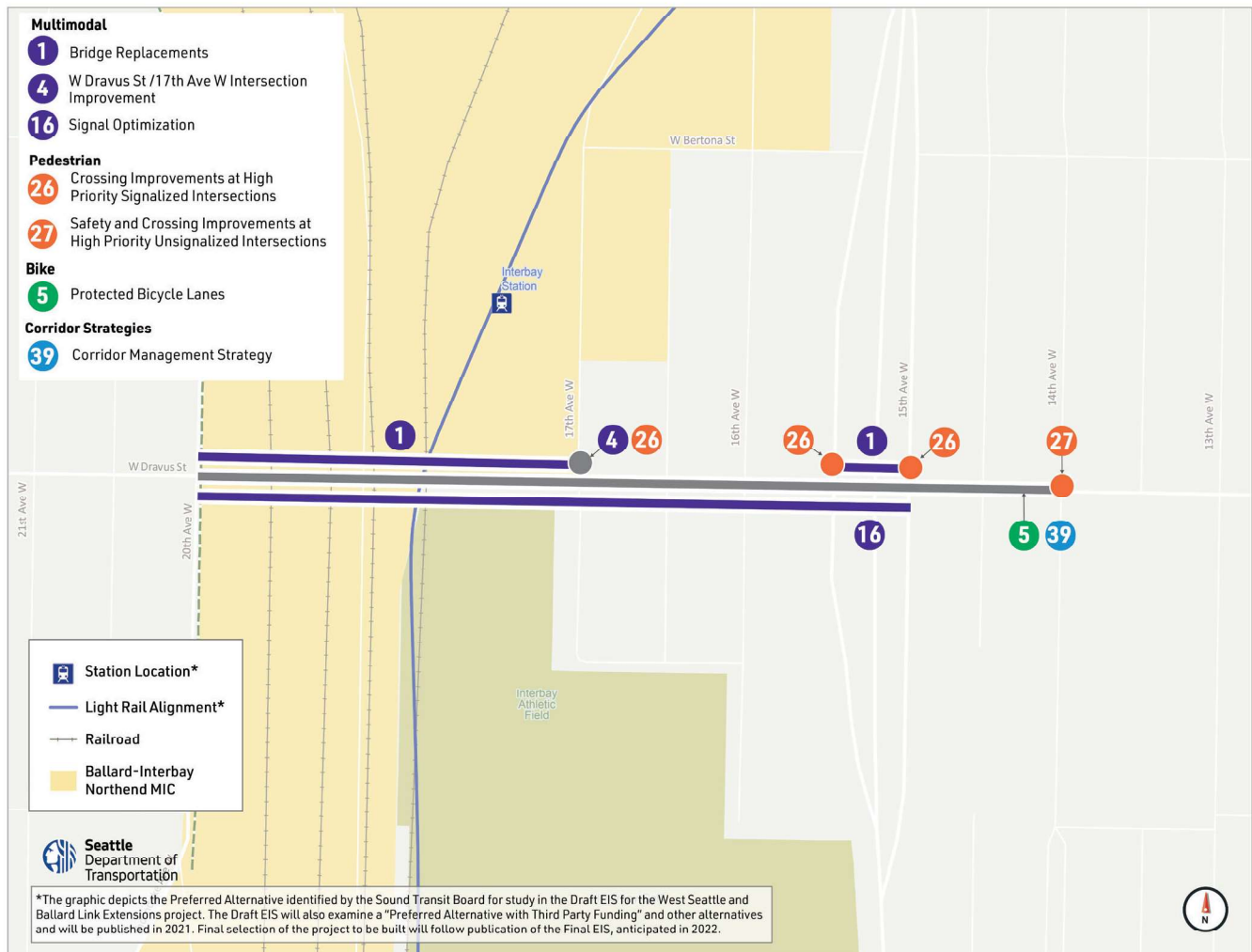
BIRT recommends a suite of projects to address these operational issues and improve corridor use for all travelers. Table 6-9 and Figure 6-9 present the W Dravus St corridor management strategy along with the recommended improvements along the corridor, which will enhance the performance of each modal system.

TABLE 6-9: W DRAVUS ST CORRIDOR POTENTIAL INVESTMENTS

ID	Project Name	Project Description	Scenario	Scale
1	Dravus Bridge Replacements	Replace the W Dravus St bridges over the BNSF railroad tracks and 15th Ave W, including widened sidewalks with buffers from traffic, improved lighting, protected bike lanes, intersection improvements, improved passenger facilities and roadway upgrades to enhance transit and freight mobility <i>Related project: W Dravus St Protected Bike Lanes (Project 5)</i>	1,2	Transformative
4	W Dravus St/17th Ave Intersection Improvements	Evaluate existing right-of-way allocation at W Dravus St/17th Ave W to improve mobility for northbound and southbound vehicles, and make space for protected bike lanes. Options may include roadway rechannelization or expanding the Dravus St bridge west of the intersection. <i>Related project: W Dravus St Protected Bike Lanes (Project 5)</i>	1,2	Transformative
16	W Dravus St Signal Optimization	Optimize traffic signals along W Dravus St between 15th Ave W and 20th Ave W to ensure transit speed and reliability and support freight reliability if traffic to and from Terminal 91 increases <i>Related project: Dravus Bridge Replacements (Project 1)</i>	1,2	Small
26	Crossing Improvements at High Priority Signalized Intersections	Improve crossings for people walking and bicycling at priority signalized intersections: W Dravus St/17th Ave W and W Dravus St/15th Ave W <i>Related project: W Dravus St/17th Ave Intersection Improvements (Project 4)</i>	1,2	Small

ID	Project Name	Project Description	Scenario	Scale
27	Safety and Crossing Enhancements at High Priority Unsignalized Locations	Evaluate the potential for signalized crossings and enhancements to existing crosswalks at unsignalized intersections and mid-block locations along W Dravus St and 14th Ave W	1,2	Small
5	W Dravus St Protected Bike Lanes	Implement protected bicycle lanes (PBL) on W Dravus St between 20th Ave W and the Elliott Bay Trail Extension (East) with a future long-term connection to 14th Ave W (requires redesign of the 15th Ave W bridge and ramp intersections)	1,2	Transformative
39	W Dravus St Corridor Management Strategy	Incorporate signal operations improvements, ITS strategies, roadway striping/channelization, and access management enhancements to efficiently move motorized vehicles through the corridor between 14th Ave W and 20th Ave W <i>Corridor management strategies are not dependent upon Magnolia and Ballard bridge replacement alternatives</i>	1,2	Small

FIGURE 6-9: W DRAVUS ST CORRIDOR POTENTIAL INVESTMENTS



Leary Way NW Corridor

Leary Way NW is an important travel pathway connecting Ballard and Fremont and providing access to the industrial and maritime uses along the north side of the Ship Canal and Salmon Bay. King County Metro plans to upgrade the existing Route 40 to RapidRide by 2027 in coordination with SDOT's Transit-Plus Multimodal Corridor (TPMC) improvements. As a principal arterial carrying over 21,000 vehicles per day, the primary need for the Leary Way NW corridor is to increase mobility for people and goods through closely spaced, signalized, high-access locations. Specific needs include:

- Improve safety for bicyclists at locations with collision history (Leary Way NW/8th Ave NW)
- Reduce corridor delay for drivers on Leary Way between 17th Ave NW and 14th Ave NW during peak hours
- Improve transit and freight reliability with roadway design and operations measures to avoid impacts of traffic congestion

Table 6-10 and Figure 6-10 present the Leary Way NW corridor management strategy along with the recommended improvements along the corridor, which will enhance the performance of each modal system.

TABLE 6-10: LEARY WAY NW CORRIDOR POTENTIAL INVESTMENTS

ID	Project Name	Project Description	Scenario	Scale
17	Route 40 TPMC NW Leary Way Bus Lanes	Rechannelize NW Leary Way to include a bus-only lane in one or both directions between 15th Ave NW and NW Market St. 10% design is complete and partially funded via SDOT's Route 40 Transit Plus Multimodal Corridor (TPMC) project. <i>Related project: Leary Way Corridor Management Strategy (Project 44)</i>	1,2	Transformative
40	15th Ave NW and NW Leary Way Rechannelization	Rechannelize southbound 15th Ave W to include a FAT lane for efficient bus and freight access across Leary Way NW and for buses to merge onto the Ballard Bridge after serving southbound RapidRide/express stop <i>Related project: 15th Ave W/NW FAT Lanes (Project 22)</i>	1	Small
41	RapidRide Leary Way NW: Passenger Facilities	Enhance passenger facilities in support of future RapidRide implementation on Leary Way NW. This generally includes upgrading existing Route 40 stops to RapidRide stations and their related amenities.	1,2	Transformative
42	Leary Way NW Corridor Freight Master Plan (FMP) Improvements	Reconstruct and make operational/ITS improvements to the Leary Way NW and N 36th St corridor to better facilitate freight per the Freight Master Plan	1,2	Small
43	Bicycle Improvements at Top Collision Locations	Make improvements at locations with a history of collisions involving people biking (Leary Way NW/8th Ave NW) and locations with crash risk factors as defined in SDOT's Bike and Pedestrian Safety Analysis.	1,2	Small
44	Leary Way NW Corridor Management Strategy	Incorporate signal operations improvements, ITS strategies, roadway striping/channelization, access management, and capital improvements to efficiently move motorized vehicles through the corridor between 14th Ave NW and NW Market St.	1,2	Small

FIGURE 6-10: LEARY WAY NW CORRIDOR POTENTIAL INVESTMENTS





SMALL, LOW COST PROJECTS

As is described in Chapter 7, it could take over a decade to complete the replacement of the Ballard and Magnolia bridges once the City decides on a preferred bridge alternative and determines to pursue funding opportunities. SDOT is entering a period of major fiscal constraint caused by reduced revenues resulting from the COVID-19 pandemic. While some BIRT priority projects are tied to the bridge replacements or will require extensive funding to implement, others are lower cost and could be implemented with other planned investments.

Table 6-11 and Figure 6-11 present projects that are generally lower-cost, simpler to implement, and offer important improvements to safety, efficiency, or reliability. Some of the projects in this list are also included in the project lists above; some are projects that were not selected as Key Investments or top modal network priorities.



People walk across NW Market St in Ballard

TABLE 6-11: SMALL, LOW COST PROJECTS

ID	Project Name	Project Description
26	Crossing Improvements at High Priority Signalized Intersections	Improve pedestrian and bicyclist crossings at priority signalized intersections
27	Safety and Crossing Enhancements at High Priority Unsignalized Locations	Evaluate the potential for signalized crossings and enhancements to existing crosswalks at unsignalized intersections and mid-block locations
28	Pedestrian Improvements at Top Collision Locations	Make improvements at locations with a history of collisions involving people walking and locations with crash risk factors as defined in SDOT's Bike and Pedestrian Safety Analysis
43	Bicycle Improvements at Top Collision Locations	Make improvements at locations with a history of collisions involving people biking and locations with crash risk factors as defined in SDOT's Bike and Pedestrian Safety Analysis
46	Stay Healthy Streets in Ballard, Interbay, Queen Anne, and Magnolia	Build permanent Stay Healthy Streets along planned neighborhood greenways and potentially along other roadways with high pedestrian activity and outdoor dining, such as Ballard Ave NW
47	Wayfinding to WSBLE stations	Add wayfinding to the future light rail stations for people walking and bicycling along multi-use trails, Ballard Bridge, Magnolia Bridge, W Galer St Flyover, Terminal 91, and Queen Anne hill climbs
48	20th Ave W Protected Bike Lanes	Convert the sharrows on 20th Ave W to two-way, all ages and abilities bike lanes on the east side of the road between the Elliott Bay Trail and Thorndyke Ave W
45	21st Ave W/W Emerson Pl Intersection Improvements	Reconstruct the 21st Ave W/W Emerson Pl intersection to improve safety for people walking and bicycling, and improve truck access (e.g. modify curb radii, design a new trail crossing consistent with upgraded curb ramps, change push button placement, and evaluate pedestrian crossing time)
22	15 th Ave W/NW FAT Lanes	<p>Allow for joint use of bus-only lanes by transit and freight vehicles on 15th Ave W/ NW from Denny Way to Market St NW during off-peak times. Freight can operate in bus-only lanes to bypass congestion, and benefits from transit priority treatments on the corridor such as queue jumps.</p> <p><i>Note: Pending policy review.</i></p>
49	W Emerson St-W Nickerson St Corridor Management Strategy	<p>Incorporate signal operations improvements, ITS strategies, and traffic control for more efficient motorized travel between Gilman Ave W and 13th Ave W</p> <p><i>Some corridor management strategies are only applicable to certain Ballard Bridge alternatives while some are not dependent on bridge replacement alternatives</i></p>

FIGURE 6-11: SMALL, LOW COST PROJECTS



