Seattle Department of Transportation

BALLARD-INTERBAY REGIONAL TRANSPORTATION STUDY

Transportation Methods & Assumptions

This is a high-level overview of the transportation analysis approach for the Ballard-Interbay Regional Transportation System (BIRT) study. This overview was informed by the Interagency Team (IAT) members following the March 18, 2020 meeting.

Study Area Roadways & Intersections

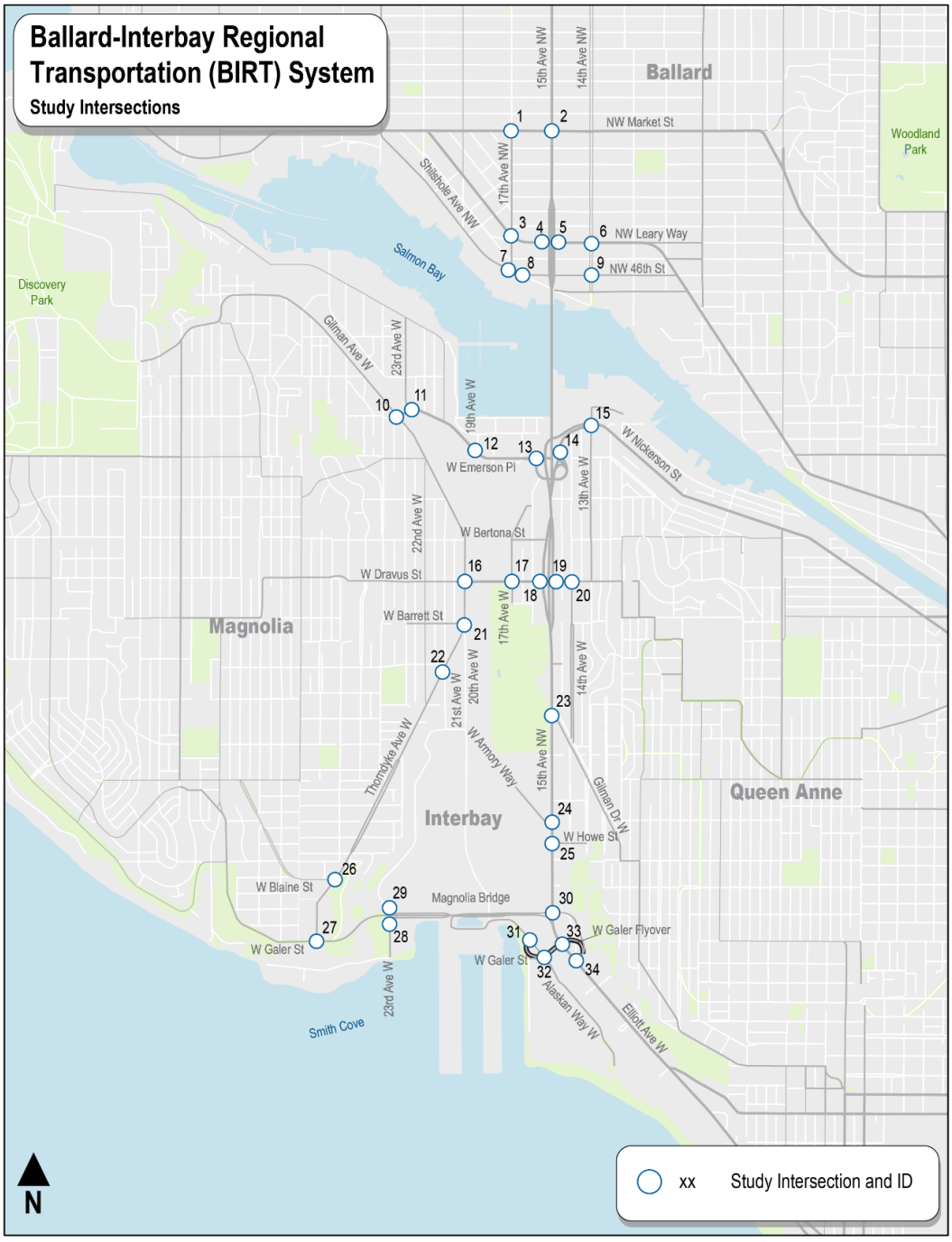
The study area for the BIRT project is generally bound by Market Street to the north, Terminal 91 and the Expedia campus to the south, 10th Avenue West to the east, and 28th Avenue West to the west. Key roadways and intersections are shown in the following table and map.

Table 1. BIRT – Key Study Area Roadways

Roadway Name	Classification	Speed Limit	AWDT[1]	Other Classifications
15th Avenue West at Ballard Bridge	Principal Arterial	30 mph	59,200	Major Freight Corridor
Shilshole Ave NW at Ballard Bridge	Minor Arterial	30 mph	15,300	Major Freight Corridor
15th Avenue West at Dravus Street	Principal Arterial	30 mph	36,000	Major Freight Corridor
15th Avenue West at Gilman Drive W.	Principal Arterial	30 mph	46,000	Major Freight Corridor
W Emerson Pl	Principal Arterial	30 mph	19,800	Minor Freight Corridor Pedestrian Priority Corridor
Gilman Avenue West	Minor Arterial	30 mph	10,800	Protected Bike Lane
W. Nickerson Street	Principal Arterial	30 mph	18,700	Major Freight Corridor
W. Dravus Street	Principal Arterial	30 mph	21,100	Minor Freight Corridor
20th Avenue West	Minor Arterial	30 mph	6,000	Minor Freight Corridor Protected Bike Lane
Thorndyke Avenue	Minor Arterial	30 mph	4,700	
W. Galer Street	Non-Arterial	20 mph	6,600	Industrial Freight Corridor
Elliott Avenue West	Principal Arterial	30 mph	52,000	Major Freight Corridor
Magnolia Bridge	Minor Arterial	35 mph	20,000	Industrial Freight Corridor

Notes:

1. AWDT (Average Weekday Traffic) are 2017 Seattle traffic flow data presented in the 2018 SDOT Traffic Report.



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Multimodal Traffic Counts

Traffic volume data and corridor travel time data (where available) will be compiled from recent transportation studies completed in this area, which are summarized in Table 2.

Table 2. BIRT – Previous Plans and Studies Referenced

Category	Plan or Document
Transit Expansion	▪ Sound Transit West Seattle and Ballard Link Extensions (2019) ▪ METRO CONNECTS (2017) ▪ Seattle Transit Master Plan (2016) ▪ Ballard to Downtown Transit Expansion Study (2014)
Land Use and Development	▪ Fishermen's Terminal Redevelopment (2019-2023) ▪ Terminal 91 Uplands Development (Phase I, 2019) ▪ Terminal 91 2019 Traffic Monitoring Study (2019) ▪ The Interbay Project: National Guard Armory Redevelopment (2019) ▪ Expedia EIS and FEIS(2016) ▪ Industrial Lands Policy Discussion Summary and Recommendations (2015) ▪ The Interbay Public Development Advisory Committee's Recommendations and Implementation Plan (2019)
Ballard Bridge	▪ Ballard Bridge Planning Study Materials (2020) ▪ Ballard Bridge Planning Study: Transportation Discipline Report (2019) ▪ Ballard Bridge Outreach Summary (November 2019) ▪ Bridge Safety Analysis (2018) ▪ Ballard Bridge Seismic Retrofit Environmental Conditions Memorandum (2018) ▪ Ship Canal Crossing Study (2015) ▪ Missed Connection: Ballard Bridge Safety Recommendations (2015) ▪ Ballard Bridge Sidewalk Widening Concept Study (2014) ▪ Ballard Bridge Planning Study Draft Alternatives Comparison Report (March 2020)
Ballard Area	▪ Burke-Gilman Trail Missing Link (2018) ▪ Interbay Trail Connections Project (2016) ▪ Ballard Urban Design Transportation Framework (2016) ▪ Move Ballard (2016)
Magnolia Bridge	▪ Magnolia Bridge Planning Study Technical Memorandum (2019) ▪ Magnolia Bridge Replacement Environmental Assessment Report (2015)
Multimodal Plans	▪ Seattle Pedestrian Master Plan (2017) ▪ Seattle Bicycle Master Plan (2014) ▪ Seattle Bike and Pedestrian Safety Analysis (2020) ▪ Seattle Freight Master Plan (2016)

It was originally assumed that new multimodal traffic counts would be collected for study roadways and study intersections where counts are more than two-years old (pre March 2018) or in areas where traffic is suspected to have increased due to new development (such as in the south

end of the study area near the new Expedia campus). Given the impacts of COVID-19 on travel behavior and the tight timeline for this study, the project team will use existing sources such as technical files developed for the Magnolia and Ballard Bridge studies, draft WSBLE analysis, and other documents listed above..

Future Scenarios

We will develop and evaluate up to four (4) future-year alternatives, which will vary in terms of land use and transportation assumptions. Each of these scenarios will leverage options described in existing efforts including the Seattle Comprehensive Plan, Magnolia and Ballard Bridge studies, and Sound Transit's West Seattle to Ballard Link Extension (WSBLE) project. At this point, we have identified two potential network alternatives, which are summarized in Table 3.

Table 3. BIRT – Future Investment Scenarios

Investment Scenario	Magnolia Bridge	Ballard Bridge	Land Use	Transportation Infrastructure
One	In-Kind Replacement	Mid Level	2042 land uses consistent with West Seattle and Ballard Link Extension study, plus updated assumptions for: • Armory • Terminal 91 • Fishermen's Terminal	• ST Ballard Link Extension • Bike Master Plan • Additional supporting facilities TBD
Two	Armory Way Concept	Low Level		

It is assumed that other future alternatives would leverage the above network alternatives, but vary in terms of citywide land use assumptions following alternatives being considered within the Seattle Industrial Maritime Strategy EIS.

Project Evaluation:

Working with the SDOT project management team and the IAT, Fehr & Peers has identified a set of project evaluation criteria. These criteria provide a mechanism to evaluate potential transportation investments' ability to advance the overall goals of this study.

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Project Evaluation Metrics

Goals	Performance Measures	Evaluation Criteria	Description	Low - 0	Medium - 1	High - 2
				* = We will advise on the appropriate threshold once we have preliminary data. We could use quartiles or % breaks to distinguish high and low performing investments		
1. Improve mobility for people and freight	Increase person mobility in the study area	**Throughput:** Project increases person trips.	Improves capacity for additional person trips at selected screenlines (e.g. Ballard Bridge, Magnolia Bridge, 15th/Armory, 15th/Dravus) compared to existing conditions.	Project does not provide additional person trip capacity.	Project improves person trip capacity in the midday period only.	Project improves person trip capacity in the peak period.
		Transit Mobility: Project improves transit mobility.	Improves corridor transit travel time and on-time reliability.	Maintains existing peak period transit travel time.	Existing peak period transit travel time decreases by X% and on-time performance improves by X%*.	Existing peak period transit travel time decreases by X% and on-time performance improves by X%*.
		Access: Project increases the geographic reach of who can walk/bike to a key destination (e.g. light rail station, RapidRide Stop, or major jobs center) under low-stress conditions.	Increases the number of homes and businesses within a 10-minute walk and low-stress bike ride, measured in terms of the number of households and jobs in the sheds.	Project does not change the size of the walk/bike sheds.	Project increases the number of homes and businesses that have low-stress access to a destination by X%*.	Project increases the number of homes and businesses that have low-stress access to a destination by X%*.
		Connectivity: Project improves the number of high-quality travel choices in the study area.	Improves the number of high-quality connections, which are defined by mode as follows: Pedestrians – facilities are comfortable, flat, accessible, and buffered Bicycles – facilities are LTS 1 Transit – service is frequent and reliable	Project does not change the number of high-quality connections.	Project provides a high-quality connection, but reasonable alternatives exist.	Project creates a new high-quality connection where no reasonable alternatives exist.

Goals	Performance Measures	Evaluation Criteria	Description	Low - 0	Medium - 1	High - 2
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	Accommodate the needs of freight and goods movement	**Travel Time & Reliability:** Project reduces or maintains freight travel times on key corridors.	Results in less roadway delay for freight vehicles.	Project maintains future no-build freight delay during peak periods.	Project reduces future no-build freight delay by X%* during peak periods.	Project reduces future no-build freight delay by X%* during peak periods.
		Route Resiliency: Project adds to available freight paths across screenlines.	Additional freight pathways are available as a result of the project.	Project does not increase freight pathways.	Project enhances existing freight routes (e.g. improves roadway conditions, addresses hot spots, revises intersection geometrics to be more freight viable).	Project provides one or more additional freight pathways than are available today.
2. Provide a system that safely accommodates all travelers	Protect the most vulnerable travelers	**Safe and Comfortable Options:** Project makes biking safer/more comfortable for people of all ages and abilities.	A right-of-way enhancement to improve the Bicycle Level of Traffic Stress (LTS) score (e.g. protected bike lane, multi-use path)	Project does not improve LTS score.	Project improves LTS score by 1 point.	Project improves LTS score by at least 2 points.
		Safe and Comfortable Options: Project makes walking safer/more comfortable.	Pedestrian improvement (e.g. sidewalk widening, new sidewalk, sidewalk buffer, more ADA compliant facilities)	Project does not improve pedestrian realm.	Project improves pedestrian realm (e.g. increasing sidewalk width, adding buffer, improving ADA compliance).	Project improves pedestrian realm (e.g. increasing sidewalk width, adding buffer, improving ADA compliance) and is in high pedestrian-use area (adjacent to a light rail station or commercial uses).
		Safe and Comfortable Options: Project makes using transit safer/more comfortable.	Improves illumination, makes transit more visible, and/or provides more “eyes on the street” at or near transit facilities.	Project does not improve lighting, make transit more visible, or provide more “eyes on the street” near transit facilities.	n/a	Project improves lighting conditions, makes transit more visible, and/or provides more “eyes on the street” near transit facilities.

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				* = We will advise on the appropriate threshold once we have preliminary data. We could use quartiles or % breaks to distinguish high and low performing investments		
		Crossing Safety: Project makes crossing roadways safer/more comfortable for those walking, biking, and accessing transit.	Provides new or improved crossing treatment (e.g. restriping, RRFB, curb ramps, crossing island, curb extension, reduced pedestrian exposure, new signal, reduced motor vehicle turning speed, narrowed curb return, etc.)	Project does not provide a crossing improvement.	Project improves or adds a crossing (e.g. restriping existing crosswalk, adding curb ramps, RRFB).	Project improves or adds a crossing (e.g. restriping existing crosswalk, adding curb ramps, RRFB) and is in a high pedestrian use area (adjacent to a light rail station or commercial uses) or along a route identified in the Seattle Bike Plan.
		Collision Histories and Factors: Project addresses safety at a location where many collisions have occurred or are identified in the City's Bicycle and Pedestrian Safety Analysis.	Provides a safety benefit at a location with a high collision rate (autos, bicycles, and/or pedestrians).	No collisions involving bicyclists or pedestrians have occurred in the last 5 years in this location.	Collisions involving bicyclists or pedestrians have occurred in the last 5 years in this location, but they were not serious or fatal.	Serious or fatal collisions involving bicyclists or pedestrians have occurred in the last 5 years in this location or location is identified as a Top 20 bike/ped project location by Council District in City's Bicycle and Pedestrian Safety Analysis.
	Recognize the unique needs to safely accommodate freight	**Roadway Geometrics:** Project improves mobility for trucks and deliveries.	Improves freight mobility by enhancing roadway elements necessary for optimal industrial freight and delivery operations.	Project maintains current freight and delivery conditions.	n/a	Project includes features to improve freight loading and/or enhances freight ingress/egress.
		Modal Separation: Project limits conflicts with other modes.	Improves multimodal use of freight corridor by limiting conflicts with other modes.	Project maintains current freight and delivery conditions.	n/a	Project enhances turn radii for freight and/or provides protected space for non-motorized uses to remove conflicts.

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3. Equity	Advance projects that equitably serve the community.	**Community Support:** Project is supported by community members.	Has proven community support.	Project does not have community support.	Project received moderate community support.	Project received high community support.
		Social Impacts: Project minimizes impacts on people of color and vulnerable communities.	Improves access or safety for priority communities including youth, seniors, low-income households, limited-English speaking households/workers, people with disabilities, and people of color (e.g. crosswalk improvements in low-income neighborhood).	Project does not improve access or safety for people of color and vulnerable communities.	n/a	Project improves access or safety for people of color and vulnerable communities.
4. Support timely and coordinated implementation	Maintain the current and future capacities of the Ballard and Magnolia Bridges	**Funding Viability:** Project is likely to be funded through local, regional, state, or federal funding.	Has earmarked funds (or high potential to receive earmarked funds), is competitive for grant funding, or can be included as part of another funded project.	No	n/a	Yes
		Agency Support: Project is supported by agencies.	Has proven agency support.	Project does not have agency support.	Project received moderate agency support.	Project received high agency support.
		Timely Implementation: Project is implementable within a reasonable timeframe given	Is feasible and achievable in a reasonable timeframe.	May take more than 20 years to implement, or is not within the City of Seattle's jurisdiction.	Would require agency partnerships (but could be led by the City) and/or could take 7-20 years to implement.	Within the City's jurisdiction and can be done quickly (within 6 years).

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				* = We will advise on the appropriate threshold once we have preliminary data. We could use quartiles or % breaks to distinguish high and low performing investments		
		technical and right-of-way considerations.				
		Constructability, Risk, and Complexity: Project limits construction impacts.	Does not provide undue disruptions in the transportation system during construction.	Construction of project would require extended closure of a route or travel path that has no or limited alternate routes.	Construction of project may have impacts, but alternative routes exist.	Construction of project would have minor or no impacts on travelers or goods movement.
		Environmental Impacts: Project minimizes impacts on the ecological environment.	Supports sustainability (e.g. adds vegetation to reduce heat island effect, reduces street width, uses permeable surfaces, encourages mode shifts away from SOV).	Does not include sustainability improvements.	Encourages mode shift, but doesn't make other sustainability improvements.	Increases vegetation, reduces street width, and/or uses permeable surfaces/other stormwater treatments.
		Economic Impacts: Project supports the Ballard Interbay Northend Manufacturing and Industrial Center (BINMIC) and maritime industries.	Supports and promotes economic viability of the BINMIC and maritime industries.	Doesn't do so	Supports/promotes economic viability to medium extent	Promotes economic viability of BINMIC and maritime industries.
		Responds to Urgent Needs: Project addresses an identified	Addresses an identified seismic or structural deficiency.	No, there is no seismic or structural	Improves identified deficiency	Yes, resolves seismic or structural deficiency.

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		seismic or structural deficiency.		deficiency to address.		
	Provide other necessary infrastructure in Ballard-Interbay to facilitate overall mobility	**Funding Viability:** Project is likely to be funded through local, regional, state, or federal funding.	Has earmarked funds (or high potential to receive earmarked funds), is competitive for grant funding, or can be included as part of another funded project.	No	n/a	Yes
		Agency Support: Project is supported by agencies.	Has proven agency support.	Project does not have agency support.	Project received moderate agency support.	Project received high agency support.
		Timely Implementation: Project is implementable within a reasonable timeframe given technical and right-of-way considerations.	Is feasible and achievable in a reasonable timeframe.	May take more than 20 years to implement, or is not within the City of Seattle's jurisdiction.	Would require agency partnerships (but could be led by the City) and/or could take 7-20 years to implement.	Within the City's jurisdiction and can be done quickly (within 6 years).

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		Constructability, Risk, and Complexity: Project limits construction impacts.	Does not provide undo disruptions in the transportation system during construction.	Construction of project would require extended closure of a route or travel path that has no or limited alternate routes. Project does not improve access or safety for people of color and vulnerable communities.	Construction of project may have impacts, but alternative routes exist.	Construction of project would have minor or no impacts on travelers or goods movement.
		Environmental Impacts: Project minimizes impacts on the ecological environment.	Supports sustainability (e.g. adds vegetation to reduce heat island effect, reduces street width, uses permeable surfaces, encourages mode shifts away from SOV).	Does not include sustainability improvements.	Encourages mode shift, but doesn't make other sustainability improvements.	Increases vegetation, reduces street width, and/or uses permeable surfaces/other stormwater treatments.
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		Responds to Urgent Needs: Project addresses an identified seismic or structural deficiency.	Addresses an identified seismic or structural deficiency.	No, there is no seismic or structural deficiency to address.	Improves identified deficiency	Yes, resolves seismic or structural deficiency.

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