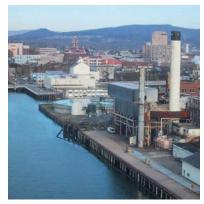


the port of bellingham

the PROPOSAL V 1.0





CollinsWoerman
Walker Macy
The Transpo Group
KPFF
RMC Architects
Landau Associates

June 10, 2008

Executive Summary

Bellingham's central waterfront is in a state of transition from its long history as an active industrial site. For the past several years, the Port of Bellingham and the City of Bellingham have joined together to create a vision and to develop a clear path toward transforming the vacant industrial land into a thriving mixed-use urban neighborhood. Encompassing 220 acres, The Waterfront District will become a focal point for Bellingham and Whatcom County as an economic, social, recreational and educational hub.



Even before the Port of Bellingham acquired the Georgia Pacific Tissue Mill site in January 2005, the Port and City were well on their way to clearly defining the community's vision for the changing waterfront through the work of the Waterfront Futures Group. Since then, the two governments - with strong support from state and federal governments -- have been working toward creation of a Master Plan, Development Agreement and Development Regulations. While many people are eager to see the redevelopment work begin now, the Port and City recognize that all of these plans and regulations will be necessary so that this important brownfield redevelopment can get underway with a clear and predictable path forward.

A Proposal to Explore and Answer Questions

In 2007 a draft Environmental Impact Statement was brought forward for review and comment. As was anticipated, this document, as well as early work on the draft Master Plan, raised questions about several key future redevelopment decisions. These questions focused on the following areas:

- Determining the best development density for the site when it reaches full build-out in 20 to 30 years.
- Choosing a road, trail and transportation grid that serves the community in the early and later stages of development. Related to this was determining the best bridge and road construction solutions to deal with the substantial grade and slope changes from Downtown Bellingham to the waterfront site.
- Defining strategies to phase development over all 220 acres so that no property is left stranded and so that Downtown Bellingham is enhanced by the new development. Agreements about phasing also are important because they determine where public monies should be directed in development of marine and land infrastructure.
- Establishing clear guidelines and direction for the entire development to serve as a role model for innovative sustainable development. This early guidance will ensure that the environmental cleanups, habitat creation, infrastructure choices and economic decisions are done in a manner that is sustainable and that reflects the values of the people of Whatcom County.

In March 2008 the Port of Bellingham's Board of Commissioners directed staff to pause in the completion of the Environmental Impact Statement in order to conduct further research to determine answers to these important questions.

What is The Proposal?

For the past two months, the Port has worked with consultants and with the City toward creation of this Proposal for The Waterfront District. The intent of this document is to provide a clear set of recommendations to define the elements needed for a Preferred Alternative, which could then be fully evaluated by the Port, the City and the community in the supplemental to the Draft Environmental Impact Statement.

Executive Summary

This Proposal was developed to provide a path forward by answering key questions through additional research, engineering and analysis.

This document is formatted and organized to adhere to the requirements of a Sub-Area Plan to ultimately be submitted as a Comprehensive Plan amendment to the City of Bellingham. It was intended to make the transition from this document to the Sub-Area Plan as straightforward as possible by keeping the format constant throughout this process. Some sections of this document may appear to be less detailed than others. It was the direction of the design team to focus their efforts on several primary areas that need further exploration and research prior to completion of the Sub-Area Plan at the end of this year.

The Proposal provides recommendations and direction to the next planning phase and includes specific sections to address Environmental Considerations; Sustainable Strategies; Land Use; Transportation; Parks, Recreation & Open Space; Utilities; and Project Cost Estimates.

This Executive Summary includes the key recommendations, but substantially more detail can be found throughout The Proposal document.

Summary of Recommendations

This document defines a recommended set of options for the Port of Bellingham to consider in moving forward in defining the Preferred Alternative for the Environmental Impact Statement (EIS). These options include:

Street Grid

Pedestrian and water-oriented with an layout that is rotated from the 2006 Draft Framework Plan.

Street Network

Integrated slope between the Downtown and Waterfront which provides options for below-grade parking.

Street Construction Sequence

Eight step sequence for initial commitment. Additional steps for full build-out.

Railroad Relocation

Completed prior to 2016

Proposed Development Density

North of Waterway 1.7 MSF Mix of Uses South of Waterway 4.3 MSF Mix of Uses

Total 6.0 MSF Mix of Uses

Area Breakdown

- Marine Trades
- Downtown Waterfront
- Log Pond
- Shipping Terminal
- Cornwall Beach

Parks, Trails & Habitat

33 acres

Parking

- Early years surface parking
- Phase into structured parking built into integrated slope of site
- Reduce code requirements to reflect shared use of parking and sustainable design

Shoreline Setback

Per City Staff recommendations to Shoreline Master Plan

View Corridors

Corridors at rights of way Corridors through property



Objectives of the Proposal

As part of the Environmental Impact Statement process, the Port of Bellingham identified thirteen "applicant objectives" that are applied to defining the elements of The Proposal:

- 1. **Develop a mixed use waterfront neighborhood** on the existing industrial site providing opportunities for a range of uses and activities. Create a vibrant area that integrates water-dependent uses and open space with new office, retail, services, institutional, and residential uses, and enhances the economy and livability of the area.
- 2. **Connect surrounding neighborhoods** with The Waterfront District Redevelopment project, including the Central Business District by: 1) ensuring that the redevelopment is compatible with adjacent areas; 2) encouraging uses that complement, not replace, neighboring uses; and 3) integrating new roadway, pedestrian access and trails with surrounding systems.
- 3. **Provide community benefits** through the phased construction of public open spaces and beaches, pedestrian trails, and moorage for small vessels that fit within the overall intent of the redevelopment plan.



- 4. Identify opportunities to restore habitat, including enhancement and creation along the waterfront environment within the context of creating an economically-viable redevelopment.
- 5. Ensure compatibility of redevelopment with environmental remediation efforts.
- 6. **Enhance economic vitality** for the region by creating conditions that are attractive to a range of employment opportunities and businesses,

including water-related industries, research and development ventures, goods and service establishments, and educational and cultural facilities.

7. Construct an economically-responsible infrastructure network and public amenities,

in conjunction with the City of Bellingham, which are integrated to adequately support phased, long-term redevelopment of the site and stimulate private investment in the project. The ability to provide the infrastructure and public amenity



system should be derived from grants and the sale or lease of redevelopment parcels by the Port and from grants, bond financing and tax revenues by the City and other applicable fees and service charges. These sources of capital will be used to offset the initial and ongoing investment in infrastructure and amenities to minimize

subsidy from the general tax base of the Port or City.

- 8. Increase public access to the waterfront by developing pedestrian, bicycle and vehicular connections to/from the site and an interconnected system of trails, viewpoints, walkways, streets, parking and boat moorage facilities. Encourage use of non-motorized transportation modes.
- 9. Work to provide an affordable range of housing by engaging non-profit organizations and developers to provide opportunities for a mix of housing products affordable to a range of employees on the site and in the community.
- 10. Cooperatively work with the City of Bellingham and the public to adopt a Master Development Plan and Development Agreement that provide the necessary predictability, consistency and expediency for long-term success of the redevelopment, and allow for flexibility to respond to market factors over time.

- 11. **Encourage sustainable and "green" development practices** as part of future building and infrastructure design and construction at the site.
- 12. Incorporate features to complement future mixed-use redevelopment into the planned Clean Ocean Marina, including: boat slip configurations, public walkways/small parks around the perimeter of the marina, and enhanced habitat opportunities.
- 13. Continue coordination with state, federal and local agencies, and tribes, including organizations, institutions, the public and the private sector to facilitate redevelopment planning and implementation that is successful and an asset to the community.

Timing

It is the intent for this Proposal to provide the framework to define the contents for the Preferred Alternative to be used for the Environmental Impact Statement (EIS).

In August of 2008, the Preferred Alternative is intended to be issued for public review and comment prior to the completion of the Final Environmental Impact Statement (FEIS).

The community input from the Draft EIS and from the Preferred Alternative review will then be used to produce the Final EIS and the Draft Master Plan, which will be issued at the end of 2008.

Terminology

Throughout this document, there are many architectural, planning, legal and real estate terms used that may need clarification around their definition to ensure consistency. These terms include:

Area: Related to the District breakdown; includes Marine Trades, Downtown Waterfront, Log Pond, Shipping Port and Cornwall Beach.

Density: Relationship of the intensity of development to the environment.

Developable Area: The total of all upland development opportunities (180.4 acres)

Floor Area Ratio (FAR): Ratio of the gross floor area of buildings to the size of net land area.

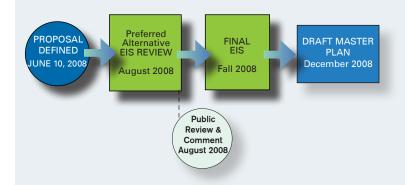
Gross Land Area: Total land area.

Height: Measurement of buildings or structures from the new or proposed grade.

ROW: Right of Way

Sequencing: Related to the primary roadway construction steps.

View Corridor: Field of vision that is shaped by the surrounding environment intended to preserve a specific view of an object or scenery.



The Waterfront District Facts

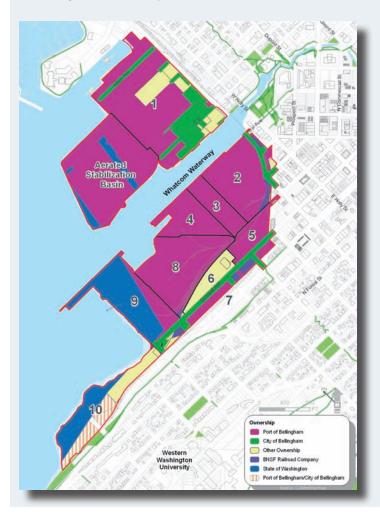
Due to multiple ongoing processes for The Waterfront District, there are many references within this document that imply knowledge from previous work that has been generated. This list is a summary of those references that are not specifically explained within this document, but are required for continuity:

Land Ownership

Total	216.3 acres
Other*	46.2 acres
City of Bellingham	21.2 acres
Port of Bellingham	148.9 acres

^{*}Other ownership includes BNSF, State of Washington, PSE and certain private owners.

^{*}Land ownership is actually 216.3 acres and is referenced within this document as 220 acres for ease of reading and consistency between other documents.



EIS Evaluation*

Alternative 1: High Density	7.5 MSF
Alternative 2: Medium Density	6.0 MSF
Alternative 3: Low Density	4.0 MSF

*A Draft EIS was issued in January of 2008 that analyzed the environmental impacts of the three alternatives listed above; including a No Action alternative.

Zoning

Bellingham, WA (Whatcom County) Industrial/Waterfront Mixed Use (Existing) Central Business District Neighborhood

Source Documents

- Draft Environmental Impact Statement. 01/08
- City of Bellingham Comprehensive Plan. 6/06
- Old Town Sub-Area Plan. 10/07
- Waterfront Vision & Framework Plan: Connecting Bellingham With the Bay. 12/04 Strategic Guidelines

Proposal Names and Imagery

The names used in this document for streets and planning areas within The Waterfront District are informal and only included to help describe the Proposal. The City of Bellingham's process for determining formal names for these features will be used during future steps in the planning process.

Most of the photographic images used in this document are from other locations and not intended to represent final project design features for buildings, parks, and land uses. They are simply presented to convey the conceptual nature of the different areas that could be created within The Waterfront District.

Table of Contents

1 Introduction —	7
1.1 Purpose of the Proposal1.2 Relationship to the 2005 Comprehensive Plan1.3 The Planning Process1.4 Context	
2 Vision —	15
3 Environmental Considerations	17
4 Sustainable Strategies —	21
4.1 Sustainable Strategies	
5 Land Use —	25
 5.1 Areas of Unique Character 5.2 Land Use 5.3 Area Building Development 5.4 Building Types 5.5 Historic Resources Plan 5.6 View Corridors 5.7 Development Phasing 5.8 Parking Plan 5.9 Clean Ocean Marina 	
6 Transportation	45
 6.1 Street Network 6.2 Pedestrian Street Environment 6.3 Bike Network 6.4 Transit Routes 6.5 Street Infrastructure Construction 6.6 Street Network Construction Description 6.7 Core Street Network 6.8 Street Sequencing 	
7 Parks, Trails & Habitat	83
7.1 Parks & Open Space Plans 7.2 Shoreline Environment	
8 Utilities —	99
9 Cost Estimates —	103
10 Conclusions	105

1 Introduction



1.0 Introduction

The intent of this document is to provide a clear set of recommendations to define the elements needed for a Preferred Alternative, which could then be fully evaluated by the Port, the City and the community in the Draft Environmental Impact Statement. It contains the following areas of focus:

Vision

The big-picture potential for The Waterfront District.

• Environmental Considerations

Description and location of clean-up areas.

• Sustainable Strategies

Discussion of LEED and strategies connected to water, energy, greenhouse gases, wastewater and stormwater.

Land Use

Description of the proposed built environment, including activity areas, parking, building types, views, and general development phasing.

Transportation

Focused discussion on the proposed pedestrian street network and its strategic phasing, along with transit and bike considerations.

• Parks, Trails & Habitat

Discussion of the proposed natural environment for both recreation and habitat.

Utilities

Description of existing utility infrastructure, including water, sewer, stormwater, electricity and natural gas.

Cost Estimates

Analysis of potential Port and City costs to prepare the site for future development.

Conclusions

1.1 Purpose of the Sub-Area Plan

In early 2005, the Port of Bellingham acquired approximately 137 acres of waterfront property and tidelands adjacent to Bellingham Bay, formerly owned by the Georgia-Pacific Corporation, who operated a pulp and tissue mill on the site since 1963. This property, along with other City and Port

properties make up a project site of over 220 acres.

This Waterfront District Proposal, initiated by the Port of Bellingham, represents a joint planning effort with the City of Bellingham involving residents, landowners and community stakeholders to create a long-term redevelopment opportunity for The Waterfront District.

The Sub-Area Plan's intention is to provide a framework for future development within the two Urban Villages designated by the City in which the Waterfront District is located: the "CBD Core Village" and "Central Waterfront District Village."

1.2 Relationship to the 2005 Comprehensive Plan

The City of Bellingham Comprehensive Plan establishes land use goals and policies to guide future decision-making and to coordinate growth within the City over a 20-year planning period. The Plan serves as a guideline for designating land uses, infrastructure development and community services, while remaining flexible and addressing long-range strategies.

The City of Bellingham Comprehensive Plan was last updated in 2005 (adopted on June 5, 2006) to re-evaluate goals and policies from the 1995 Comprehensive Plan. Since 1995, the Bellingham urban area changed significantly with a 20% increase in population, a 25% housing unit increase and the addition of 1,500 acres as a result of about 10 annexations and a new neighborhood.

The Waterfront District that is the subject of this Proposal falls within two of the Urban Villages defined in the Comprehensive Plan: the "Central

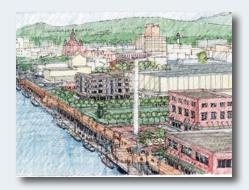


Waterfront District" and the "CBD Core Village". Each urban village is required to provide a framework for development through Policy FLU-18. This Policy requires a master plan to specify land uses and densities; street and utilities layout; lot arrangement; housing types; village square or plaza locations); streetscape amenities; relationship of the buildings to the street; parking structures or lots; protection of critical areas; pedestrian and bicycle facilities; and other items deemed necessary to ensure compatibility with surrounding areas.

1.3 The Planning Process

1.3.2 Site History

Bellingham's current waterfront is made up of land forms created by filling tidal flat areas. Before this filling occurred, the beaches and nearshore areas were used by a variety of Native American tribes for fishing and shellfish seasonal encampments and areas for harvesting. For more than the last 100 years, Bellingham's waterfront has served the regional economy as a thriving industrial area, a transportation gateway and a home to many maritime activities. In the early 1900s, the Whatcom Creek federal waterway was established and silt from the dredged waterway was used as fill along parts of the waterfront. In the years after, Pacific Coast Paper Mills and Puget Sound Pulp were founded and



operated as major employers on the waterfront. Through the 1930s and 40s, the Bellingham waterfront saw major activity related to the pulp mill and the production of ethyl alcohol (a by-product from pulp mill waste). In the early 1960s Georgia-Pacific acquired the waterfront mill site. Operations con-



tinued through the following decades, during which industrial activities contaminated adjacent waterways and upland properties before more stringent laws were put in place.

It wasn't until the early 1980's that the mill complex saw its first major plant closure since beginning operation in 1925. This signaled a slow decline that continued until Georgia-Pacific closed its Bellingham site permanently on December 21, 2007.

1.3.2 Public Involvement Process (Source: DEIS)

Bellingham has an opportunity that few communities get - to direct development downtown and toward the great waterfront amenity that drew settlers to the area in the first place. This opportunity has been over a decade in the making and has involved numerous public and private citizens and community stakeholders.

Waterfront Futures Group (WFG)

In 2002, the Port and City established the Waterfront Futures Group (WFG) to obtain citizen input regarding a redevelopment vision for the Georgia Pacific site and a long-term plan for the entire Bellingham waterfront. The Port and City selected a diverse and dedicated group of people from the community to serve as WFG team members. Over an 18-month period, the WFG team developed the "Waterfront Vision and Framework Plan: Connecting Bellingham to the Bay" which articulated the group's vision, recommendations and guiding principles for future development of all 11 miles of Bellingham's shoreline. The Waterfront Vision and Framework Plan provided a community vision for the waterfront and guiding principles for managing future water-related development. Major guiding

principles for site redevelopment included: improve waterfront access; restore the health of land and water; promote a healthy and dynamic waterfront economy; and, reinforce the inherent qualities of each place on the waterfront.

The Waterfront Vision and Framework Plan also emphasized a commitment to: stimulating public cooperation and investment in the planning, acquisition and improvements at the waterfront; protecting legal rights and responsibilities of all parties; and recognizing the environmental, cultural and economic systems affecting Bellingham Bay. The Waterfront Vision and Framework Plan was finalized and presented to the City and Port in June of 2004.

Waterfront Advisory Group (WAG)

In 2005, the Port and City established a citizen advisory committee to continue the strong community voice in determining the future of Bellingham's bay waterfront and to ensure that the principles outlined by the Waterfront Futures Group continue to be implemented in future development. This group reviewed the Waterfront Futures Group Guiding Principles that were drafted in 2004 and defined a set of implementation strategies to guide the ongoing master planning process.

Draft Framework Plan

As part of the ongoing planning and public participation effort, a series of open houses, workshops and public meetings were held in 2006. Preliminary design concepts were formulated which were then presented to the public for comment. Various design concept proposals were also submitted by independent parties and numerous comments were provided by the public.

In September 2006, a Draft Framework Plan was prepared by the Port and City based on the comments and recommendations received over the multi-year planning effort. The Draft Framework Plan generally consisted of a redevelopment site plan illustrating concepts related to: roadway layout and connections to the City of Bellingham roadway grid; location and extent of parks and open space; location of trail network, including provisions for public access to the waterfront; location of areas for mixed-use redevelopment; and, integration of



the planned marina with mixed-use redevelopment. This Draft Framework Plan was used by the Port and City in their initial assessment of the potential financial implications of long-term redevelopment of the site.

1.4 Context

1.4.1 Natural Setting (Sources: Whatcom Museum, Guiding Principles, DEIS)

Bellingham Bay and the land and streams that surround it provide important and diverse resources that once influenced the living patterns of the original Native Americans inhabitants. The modern growth and development of Bellingham's waterfront was based in part on the commercial use of some of those same resources. The availability of abundant lumber and salmon, coupled with the Bay's strategic transportation location and early settlements ensured the prominence of Bellingham as the major city between Everett and Vancouver, British Columbia.

Throughout the area's history the marine environment and its diverse species have served an important role for local people. Bellingham Bay provides habitat for spiny dogfish, skates and rays, ratfish, herring, anchovy, smelt, cod, surfperch, sablefish, greenling, lingcod, sculpin, flounder, and sole. Whatcom Creek within the project area hosts populations of fall chinook, chum, pink and sockeye salmon, and steelhead and cutthroat trout. Shellfish, including clams, mussels, oysters, geoducks, and gastropods have been another historically important resource, though their current status near the site has not been studied in depth. Marine and land mammals and birds that traditionally occupied Puget Sound and its lowlands functioned



as an additional source of food and raw material for Native Americans and later coastal inhabitants. These included loons, herons, ducks, swans, raptors, and gulls, along with deer, elk, bear, and small fur-bearing animals.

The Bellingham Bay shoreline and surrounding lands also provide habitat for a variety of plant species. Native vegetation in this area, part of the western hemlock zone, is characterized by strands of hemlock, western red cedar, and Douglas fir with a dense understory.

1.4.2 Historic Setting (Sources: Whatcom Museum, Guiding Principles, DEIS)

A little over 100 years ago, the City of Bellingham as it is known today was established. It was

formed from four existing communities that had each been independent at various points in time: Whatcom, Sehome, Bellingham and Fairhaven. Landowners and industrialists established these initial towns and then subsequently consolidated them to further various interests. The final establishment of the City of Bellingham occurred on December 28, 1903, when a group of newly elected officials was sworn into office.

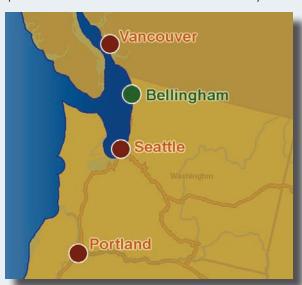
Whatcom Waterway is the central feature of the Bellingham waterfront, both in a physical and functional sense. The waterway was shaped by the outflow of Whatcom Creek, which forms a natural channel to the deep water of Bellingham Bay. As European settlement took hold on the bay, the first industrial uses were centered on the waterway to take advantage of Whatcom Creek's falling water to power early sawmills. The channel also enabled sailing vessels to traverse the otherwise shallow mud flats. The establishment of a military post, Fort Bellingham, just above Whatcom Falls in 1856 helped concentrate local homes and businesses near the waterway. The developing town adopted the familiar native name Whatcom, which translates from Salish to mean "falling or noisy waters." When a county government was established in 1854, the name Whatcom was chosen again and the government seat was anchored on the banks of the creek.

With the ambitious development of the Colony Mill in 1881, the channel was deepened and a long wharf was extended to bring lumber-carrying sailing vessels closer to the estuary below the falls. The Old Colony Wharf eventually became the Whatcom Wharf, and served as the primary gateway into the communities surrounding Bellingham Bay.

At the end of the nineteenth century, railroads began to replace ships and ferries as the primary means of transportation along the shores of Puget Sound. By 1891, the Great Northern Railroad completed a massive trestle that carried tracks on a vast arc enclosing the tidelands. The Whatcom Wharf reached almost half a mile out to intersect the rail line, while parallel wharfs at B and G Streets also extended out to the train trestle, creating the linear grid that still defines the harbor area today.

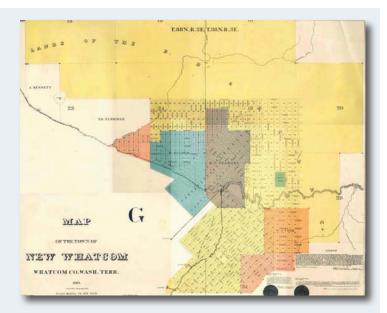
The construction of the rail trestle was followed by the addition of a pivot bridge to allow shipping, as well a passenger and freight depot. Soon, the initial waterfront industries that had built deepwater wharves were joined by smaller enterprises lured by the possibility of using rail to deliver materials and ship their products.

The excitement of the rail era spawned the creation of the Bellingham Bay Improvement Company (BBIC), a loose partnership of business interests that largely steered the area's economy. With investors in San Francisco and the Pacific Northwest, the company targeted real estate and industrial development. BBIC acquired large parcels on the southern edge of the bay and by 1906 had constructed a sprawling lumber mill, wharves, and piers that all faced Whatcom Waterway. The com-



pany was influential in getting the federal government to fund the design and construction of improvements to the Whatcom Waterway. In concert with the dredging and bulkhead construction, BBIC played a central role in creating industrial property along the Waterway's southern edge. The materials dredged from the water were used to fill platted lots on the current Georgia-Pacific site.

In 1913, BBIC sold the Bellingham Bay Lumber Company to the rapidly growing Bloedel Donovan Company. After the mill was converted from steam to electricity, it became the flagship operation for an international lumber empire. Bloedel Dono-



van's headquarters building was finished just as the Panama Canal opened in 1914; the company immediately started shipping lumber to markets all over the world. On a historical note, the Cargo Mill, as it is now known, shipped ten million feet of lumber to build a naval base at Pearl Harbor and cut five solid bridge beams each measuring three feet square by 82 feet long.

Following the lead of other ports on the West Coast, Bellingham established a Port Authority under State law in 1920. Until then, activity on Bellingham Bay was controlled by private industrial interests including Pacific American Fisheries (a large cannery at Fairhaven), Bloedel Donovan Lumber Mill (along the Sehome shore), Olympic Portland Cement (further north), and several sizable lumber and shingle mills. The new Port Commission purchased the Municipal Dock on Whatcom Waterway from the City of Bellingham and developed a comprehensive plan for harbor development - adding wharf area, building new freight facilities, and dredging and filling for additional capacity.

In 1926, the Port of Bellingham received voter approval for a plan to purchase land, build wharves, and dredge the Squalicum Creek area north of Whatcom Waterway. The BBIC and its partners - who had already dredged part of the Squalicum Creek Waterway in order to create 22 acres of usable land - offered the new project to the Port of Bellingham for \$250,000. By 1931 it was com-

plete, including a breakwater, marine ways, a web house, and moorage for the commercial fishing fleet.

In the first half of the 20th century a sequence of large industrial construction unfolded on the inner southern bank of the Whatcom Waterway, culminating in 1937 in Ossian Anderson's ambitious plan to build a state of the art pulp and paper mill. The mud flats were platted and filled with dredged material from Whatcom Waterway and ownership was consolidated into a large development parcel. In May 1938, the primary brick masonry buildings of the Puget Sound Pulp & Timber Company began operation, producing more than 7,000 tons of pulp a month. The original vision was to build a sprawling compound of red brick buildings in a single burst of construction, but changing world affairs derailed the plan. The primary paper making markets of



Asia collapsed as Japan invaded mainland China in the late 1930s and the beginnings of war in Europe cast further doubt on the viability of a high production pulp mill in the distant Pacific Northwest. When pulp and paper demand stabilized during the Second World War and then grew rapidly in the years after, the imposing brick complex was completed as originally planned. It ended up taking more than a decade to complete, but when it was finished around 1949, the Puget Sound Pulp & Timber Company in Bellingham was perhaps the most productive, efficient and visually elegant wood pulp production facility in the world.

With the help of federal New Deal programs, the

Port of Bellingham expanded facilities at Squalicum, deepened Whatcom Waterway to a uniform thirty feet, and built small boats and fleets next to Citizen's Dock at the waterway's head. During World War II, the Port partnered with Todd Shipyards and invested in cold storage facilities between Whatcom and Squalicum Waterways, an enterprise destined to become a significant part of the industrial waterfront.

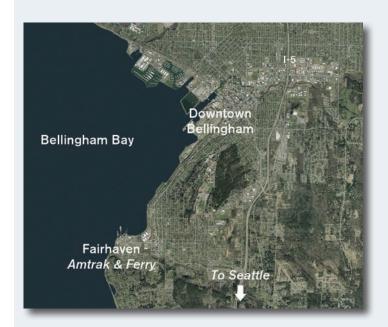
The Port of Bellingham acquired the Bloedel Donovan mill site in 1947 after the company dismantled its machinery to pursue remaining mature growth timber in Canada. Under the Port of Bellingham's stewardship, the site was cleared of debris, then filled and graded for industrial leases. The sturdiest buildings and drying sheds were retained, and the old Bloedel Donovan Company Headquarters Building was divided into small office suites. Bloedel Donovan also donated a site on Lake Whatcom to the City of Bellingham for a park and community center.

In 1963, the Puget Sound Pulp & Timber Company and its waterfront site was sold to the Georgia-Pacific Corporation, a growing wood products conglomerate that already controlled plywood mills in Bellingham. Headquartered in Portland, Georgia-Pacific expanded the operation to include paper and tissue manufacturing operation on the site. The company also physically changed the complex over the next twenty-five years by absorbing nearly all of the south Whatcom Waterway landfill area and developing massive warehouse facilities and an industrial lagoon on the northern end.



Around the same time in the early 1960s, the capacity of Whatcom Waterway was expanded significantly, including the lengthening the dock, dredging, and filling to create additional storage yards. The Port launched a major marketing effort and accommodated the additional shipping with a new rail spur, more office space, and two mobile gantry cranes for quicker handling of cargo. By 1964, most of the Port property between the Georgia-Pacifc Pulp Mill and the North Terminal was developed.

In the early 1980s, due to the growth of Georgia-Pacific's paper operation and increased concerns about environmental quality in the harbor, a large water treatment lagoon (the Aerated Stabilization Basin) was constructed at the mouth of the waterway. The lagoon, along with a major fill project at Squalicum Waterway around the same time, completed the basic topography and navigational courses that define Bellingham's harbor today.



1.4.3 The Waterfront District Today

Today, The Waterfront District is reflective of the site's industrial and maritime history. Made entirely of fill, portions of the site have been built atop former city landfills and waste fill sites. The property has various contamination sites throughout it,

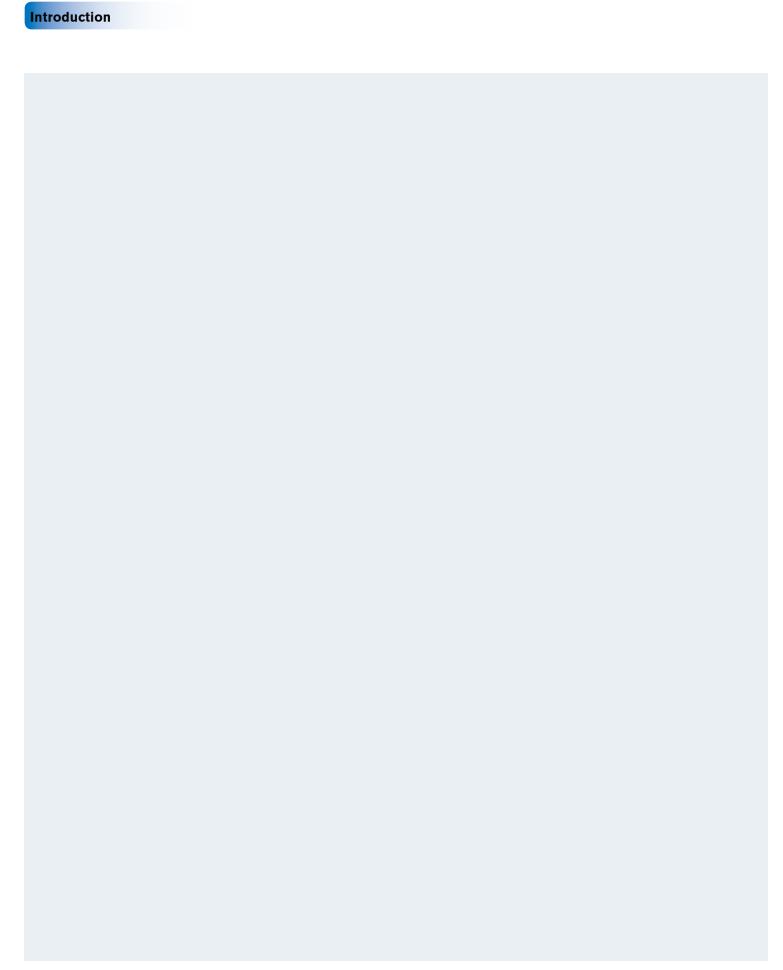


caused by decades of continuous industrial use. The Waterfront District is a brownfield site, burdened with the costs of environmental cleanup and necessary site mitigation to prepare this property for new uses. It is primarily paved and occupied by former pulp mill and chemical plant buildings.

When Georgia-Pacific ceased operations in late 2007, there were 36 buildings on the site. By spring 2008 a number of those buildings had been removed. The few remaining buildings will be evaluated for possible reuse as development and transportation decisions are made. For now, the property on the southern side of the Whatcom Waterway is idle, except for demolition work.

On the northern side of the waterway efforts are underway to attract new marine industries and engineering and design are underway for the Clean Ocean Marina. The entire site has been designated by the State of Washington as an Innovation Zone – a Port-managed effort to create lab-to-market opportunities by bringing educational research together with private manufacturing.

While the Port of Bellingham's Innovation Partnership Zone is pursuing several business cluster areas, its focus will be on Marine Manufacturing Innovation.



2 Vision



2.0 Vision



Much to their credit, the people of Bellingham and Whatcom County have responded to the recent closure of one of their main industrial employers with an energetic commitment to redefine the future. Because of the unique waterfront location of this property, the future possibilities and challenges are inspiring. The chance to redevelop more than 220 acres of property adjacent to a city's Downtown core represents phenomenal opportunities to the community. And when that land is located alongside one of the most stunning marine areas, on the edge of the San Juan Islands, the opportunity is unparalleled anywhere on the West Coast.

Today The Waterfront District is an urban brownfield, burdened by contamination from decades of industrial use and municipal landfills. Cut off from



the community since its creation more than 100 years ago, this waterfront property has never been available to the general public to

explore and enjoy. Instead it has been a true working waterfront providing steady employment to generations of people from Whatcom County. Now, with the closure of the Georgia Pacific mill, the land is in transition and the only activity inside its chainlink fence is that of demolition.

Yet the community's vision and enthusiasm is taking shape into a very real plan for the creation of The Waterfront District. Beginning well before the final mill closure, the community came together through the Waterfront Futures Group to transform their enthusiasm for this redevelopment into a shared vision of transforming this aging industrial site into a vital, energized urban waterfront with a myriad of opportunities for people to live, work and play on their public waterfront.

The greater Whatcom Community is dedicated to finding the right balance among uses so that property for new businesses and manufacturing is valued as much as property for people to picnic on and shorelines they can truly enjoy. The Port of Bellingham and the City of Bellingham, as well as the entire community, have a national reputation as leaders in the environmental movement. The Water-



front District
will provide
the place to
showcase
those shared
values as
one of
the Puget
Sound's largest marine
cleanups be-

gins here and as an entire shoreline is transformed. On the land side, The Waterfront District will be one of the nation's first LEED-Neighborhood Design projects and it will become known throughout the world as the premier location that demonstrates that economic vitality and environmental sustainability can thrive together.

Education, innovation and new jobs will be driving forces in this project with Western Washington University already planning to develop a campus setting here with its Huxley College of the Environment as well as other University programs. The values and programs at Huxley will meld with the vision for this redevelopment. Innovation also will define The Waterfront District, with the State of Washington already designating the entire 220 acre site as an Innovation Partnership Zone. This

designation will present new opportunities for partnerships between educational institutions and private manufacturers to bring new technologies to the marketplace. The growth of marine trades and marine manufacturing in The Waterfront District will ensure the authenticity of this redevelopment, while the Innovation Zone will help those traditional job sectors remain competitive.



New parks, trails and public spaces will make this section of the waterfront available to everyone. More than 30 acres of new public spaces will provide a wide variety of opportunities for people to enjoy and explore their waterfront. In addition, development of the Clean Ocean Marina, a new boat launch and numerous kayak beaches will make it easy for boaters to gain access to Bellingham Bay and for visiting boaters to come ashore and enjoy Bellingham.

The citizen-led Waterfront Futures Group crafted the overarching vision for this transformation in 2004. Today the community is working together to reach consensus on a more detailed plan to bring this vision to reality. Innovation, Sustainability, Environment, Recreation, Education, Employment and Housing all are parts of the complex equation that is The Waterfront District. Combined with enthusiasm, dedication and stewardship, these elements are the beginning of an amazing transformation.



3 Environmental Considerations



3.0 Environmental Considerations

Today, The Waterfront District is reflective of the site's industrial and maritime history. Most of the site is built on tidelands which have been dredged and filled to support over 100 years of heavy industrial waterfront activity. As a result of those uses, portions of the site are affected by soil, groundwater and/or marine sediment contamination from historical releases of hazardous substances. The site is primarily paved and occupied by inactive industrial buildings. Public pedestrian and vehicular access to the



site is limited and the only recreational use of the site occurs at the west end of Cornwall Avenue where a small pocket beach is located. Most of the shorelines are hardened with industrial wharfs, bulkheads, and non-engineered riprap.

Environmental Cleanup and Habitat Restoration

Historic salmon spawning grounds in Bellingham Bay and along the Whatcom Waterway have been devastated by more than a century of industrial activity on the waterfront. Declining salmon runs have raised awareness about the importance of salmon habitat and figure prominently in the clean-up and shoreline restoration programs that will be part of The Waterfront District.

The Port and City have teamed with the state and federal government to embark on a multi-year clean-up program for Bellingham Bay and the inner portion of the Whatcom Waterway. Restoration efforts include cleaning up historical contamination, removing old creosote pilings, creating soft, shallow banks, and extensive habitat restoration.

The end result will be the kind of innovation that allows mixed uses throughout the Waterway, including small boat moorage on the inner channel with the outer portion of the channel available for deep-water commercial use.

There are seven state-listed cleanup sites within The Waterfront District. Each of these sites has been

extensively studied and is being cleaned up according to strict state standards implemented by the Washington State Department of Ecology (Ecology). The regulatory process includes multiple steps from the initial discovery of contamination to the long-term monitoring of the effectiveness of the cleanup action. The steps in the cleanup process include the following:

- •Initial Discovery and Investigation: The initial site assessment confirms the presence of contamination and determines the relative risk to human health and the environment.
- •Remedial Investigation and Feasibility Study (RI/FS): The remedial investigation defines the nature and extent of contamination and the feasibility study identifies and evaluates a range of cleanup alternatives.
- •Cleanup Action Plan: The Cleanup Action Plan describes the selected remedy, specific cleanup methods, and the monitoring that will occur during and after construction. The Cleanup Action Plan is determined by Ecology and is typically part of a legal agreement called a Consent Decree between the state and the lead party conducting the cleanup.
- •Project Design & Permitting: Cleanup projects require engineering design and the acquisition of any state and federal permits.
- •Construction: A contractor is hired and construction of the cleanup remedy is performed with oversight by state and federal agencies.
- •Long-term Monitoring: The cleanup is monitored at regular intervals to make sure it continues to be protective of human health and the environment.

The Port and City are working cooperatively with Ecology to develop cleanup solutions which protect human health and the environment, support a vibrant, mixed use waterfront, and are well coordinated with the habitat restoration objectives for endangered salmon. The sites are being actively managed to attain a safe and healthy waterfront as efficiently

Environmental Considerations

as possible. All site work is being performed under legal agreements with Ecology to ensure proper compliance with the state Model Toxics Control Act and other applicable sites.

The seven state-listed sites within The Waterfront District include the following:

Site	Description	Stage in Cleanup Process
Cornwall Avenue Landfill	This site was used by the City for the disposal of municipal solid waste between 1953 and 1965. The cleanup will support a large waterfront park and mixed-use development along the bluff.	Ecology is reviewing a draft RI/FS and is expected to release this document for public review and comment in 2008. (Port-lead)
R.G. Haley	This site was used for the operation of a wood treatment facility between 1953 and 1986. This site is privately owned and the cleanup process is being managed by the property owner with oversight by Ecology.	Ecology is reviewing a draft RI/FS and is expected to release this document for public review and comment in 2008. (Private-lead)
Chlor-Alkali plant	GP built a Chlor-Alkali plant in 1963 to produce chlorine gas and caustic soda which were used to bleach wood pulp. The chemical plant closed in 1999 and a number of environmental investigations were completed examining clean-up solutions which supported ongoing heavy industrial operations on the property. The Port acquired this property in 2005 and is developing new cleanup strategies which support mixed-use redevelopment objectives.	Ecology is expected to release a draft RIFS for public review and comment in 2010. (Portlead)
Pulp and Tissue Mill	GP acquired Puget Sound Pulp and Timber in 1963 and gradually expanded operations. The pulp mill closed in 2001 and the tissue plant closed in 2007. The Port acquired this property in 2005 and is developing cleanup strategies which support mixed-use redevelopment objectives.	Ecology is expected to release a draft RIFS for public review and comment in 2010. (Portlead)
Whatcom Waterway	This site is primarily contaminated by mercury discharges from GP's former Chlor-Alkali plant in the late 1960's and 1970's. The cleanup will support a number of habitat restoration and property redevelopment objectives including a new marina, public access to the shoreline, and the creation of near-shore habitat for endangered salmon.	Ecology has approved a cleanup plan which is going through engineering design and permitting. Construction of the cleanup action is expected to begin in 2010. (Port-lead)
Central Waterfront	This site has historically been used to support a variety of industrial activities including a municipal and wood waste landfill, boat yards, foundry activity, petroleum storage, and pulp and paper mill product storage. The cleanup will support an active Marine Trades area and mixed-use redevelopment objectives.	Ecology is expected to release a draft RI/FS for public review and comment in 2009. (Port- lead)
I&J Waterway	This site has been used since the early 1900's to support a variety of industrial activities including lumber mills, a rock crushing plant, frozen foods processing, and a seafood processing facility. The cleanup will support the mixed-use redevelopment of the surrounding uplands and the ongoing light industrial navigation requirements within the I&J Waterway	Ecology is expected to release a draft RI/FS for public review and comment in 2010. (Portlead)



Environmental Considerations

The Port has acquired most of this property and has taken the lead in managing the cleanup responsibility to help revitalize a stagnant waterfront economy and bring forward the community's vision of a vibrant, mixed use waterfront. Public ownership will ensure historic contamination does not become a barrier to waterfront revitalization. Waterfront property available for sale or lease will have known costs depending on the proposed development, and potential investors will not be deterred by the uncertainty of environmental cleanup costs or the threat of environmental liability.

The Port, with guidance from state agencies, is developing solutions which will support a new generation of clean waterfront businesses, restore salmon rich habitat, and allow public access along restored shorelines. Cleaning up the legacy of environmental contamination is signaling a new era of environmental stewardship for Bellingham's waterfront.



Seismic Concerns

Most of The Waterfront District is located on manmade fill in a seismically active area similar to many locations in the Puget Sound. Two seismic hazards most likely to impact future redevelopment of the site are ground shaking and liquefaction. The relatively soft to loose soils on the site may amplify ground motions produced by earthquakes.

The other likely seismic hazard is liquefaction. This occurs when earthquakes cause soil to lose strength and behave temporarily like a liquid, affecting the foundations and integrity of buildings.

Sound engineering practices are available in this region to ensure that design and construction methods applied in the redevelopment of The Waterfront District would not result in significant adverse impacts. Ground improvement techniques or deep foundations are available to mitigate liquefaction impacts. Engineering approaches could include stone columns, vibro compaction, vibro-replacement, deep soil mixing, compaction grouting, installing wick drains, and others. Specific designs will be determined project-by-project, as part of the building/construction design and permit process.

Tsunamis

Tsunamis are another seismically-related hazard that has the potential to impact future development in The Waterfront District. Preliminary models show a major rupture along the Cascadia Subduction Zone could cause a tsunami presenting a temporary hazard at the site, including inundation of 1.6 feet over much of the site at existing grades. The referenced study acknowledges its limitations and states directly that the information should not be used for land-use planning, showing that tsunamis are possible but that their impact potential is not fully understood. Raising areas of the site several feet above existing grades could address the potential impact of a tsunami. In addition, public notification and early warning systems would be available.

Climate Change/Sea Level Rise

Sea level rise in relation to global climate change is a natural impact that is difficult to accurately predict. However, the Draft Environmental Impact Statement for The Waterfront District is one of the first generation of plans to analyze the potential impacts of global climate change over the next 50 to 100 years. This is an emerging and very significant consideration for a waterfront project of this type. State-level agencies in Washington indicate that sea levels in the Pacific Northwest may rise between 4 and 52 inches from 1990 to 2100, based on projections from the Intergovernmental Panel on Climate Change. As part of site redevelopment, site grades could be raised several feet above existing grades to address the potential impact of sea level rise.

4 Sustainable Strategies



4.0 Sustainability



The Waterfront District has the opportunity to shape and lead the Northwest, US and international thinking on sustainable strategies. Being developed as one of the nation's first LEED-Neighborhood Design projects, it will become known as one of the best examples for demonstrating that economic

vitality and environmental sustainability can thrive together.

Developed as a project under the pilot program; Leadership in Energy and Environmental Design for Neighborhood Development (**LEED-ND**) rating system, The Waterfront District will use the highest environmental and community planning standards to create an exceptional place to work, live and play.

Background on LEED-ND

The United States Green Building Council (USGBC), in partnership with the National Resources Defense Council (NRDC) and the Chicago-based Congress for the New Urbanism (CNU), with assistance from the Urban Land Institute (ULI), created LEED-ND to rate development projects on their sustainability from a neighborhood perspective.

The LEED-ND rating system integrates the principles of smart growth, urbanism and green building into the first national system for neighborhood design. LEED-ND certification provides indepen-



dent, third-party verification that a development's location and design meet accepted high levels of environmentally responsible, sustainable development. Through a multi-year research and review process, the LEED-ND partners have identified draft

criteria that will guide developments to achieve significant improvements in sustainability on both of these fronts, as well as related ones, such as water management and habitat preservation.

LEED-ND acknowledges that while about one-third of greenhouse gas emissions come from buildings, another third is generated in transporting people and goods between buildings. Therefore, sustainable development must include both buildings and their surrounding communities.

The intent of the rating system is to certify smart growth or sustainable development in a quantitative way. The rating system is organized into the following categories (points):

Beyond LEED-ND

In addition to the criteria defined by the LEED-ND pilot program, the Port and City of Bellingham acknowledge there are other factors that drive a holistic approach to redevelopment of The Waterfront District.

The Triple Bottom Line (TBL or 3BL) captures an expanded spectrum of values and criteria for measuring organizational (and societal) success. TBL has become the dominant approach to public sector full cost accounting. The performance framework includes Environmental, Economic and Social Sustainability.

Environmental Sustainability

ATBL endeavor reduces its ecological footprint by, among other things, carefully managing its consumption of energy and non-renewables. Because this redevelopment includes the cleanup of seven different state-listed sites, restoration of over three miles of sensitive marine shoreline, and re-use of vacated industrial structures to develop new waterfront facilities like the Clean Ocean Marina, The Waterfront District ranks very high in the LEED ND



system. In TBL thinking, an enterprise which produces and markets a product should also bear the true cost of its ultimate disposal. Arguments that it costs more to be environmentally sound are often inaccurate when the course of the

Sustainable Strategies

business is analyzed over a longer period of time. Generally, sustainability reporting metrics are better quantified and standardized for environmental issues than for social ones.

Economic Sustainability

In order to create market incentives for implementation and long-term support, truly sustainable proposals must be efficiently designed and economically viable. The "bottom line" is shared by public and private sector property owners, investors, grant agencies, businesses and tax payers. A key economic strategy for the waterfront is to coordinate the integrated design of property cleanup and redevelopment. For example, it is very sustainable to design parks, roadways and building foundations to function as environmental remediation and stormwater management features within The Waterfront District. Creative engineering will ensure cost-effective projects that serve multiple functions and perform well over the long run.

Social Sustainability

Pertains to fair and beneficial business or development practices. A TBL company conceives a reciprocal social structure in which the well being of corporate, labor and other stakeholder interests are interdependent.

A triple bottom line enterprise seeks to benefit many constituencies, not exploit or endanger any group of them. ATBL business or development also typically seeks to "give back" by contributing to the strength and growth of its community with such things as health care, affordable housing, public amenities and education. Quantifying this bottom line is relatively new, problematic and often subjective.

4.1 Sustainable Strategies

As a target to address sustainability from a holistic approach, there are many strategies to be considered to highlight the best practices in sustainable development for The Waterfront District

4.1.1 Water Conservation

Potable water demand can be reduced by con-



servation and substituting reclaimed water for uses that don't require drinking water quality. Reclaimed and/or reused water comes from captured rainwater stored for reuse. The rainwater is rela-

tively clean and can be reused for various functions such as flushing toilets and irrigating landscaping during dry periods. Another source comes from processing wastewater to a level of purification for uses that don't require potable water. A Membrane Bioreactor (MBR) process is a system for purifying and reclaiming water for other uses. This technology has been installed with individual building and district wide systems.

4.1.2 Energy Generation

The Waterfront District provides a number of opportunities for energy generation. Many of these strategies may only contribute to small increments of energy production. A comprehensive energy policy should maximize renewable energy. New technologies will create additional opportunities to incorporate renewable energy in the future.

Solar Power



Power generation from photovoltaic (PV) cells is a mature technology being used throughout the world. Technological improvements continue to enhance the efficiency and reduce costs. A PV

based district system would require large areas of land, this use should be prioritized for vertical surfaces. Federal, State and local incentives and tax credits provide typical payback times of between five (5) and ten (10) years. Resource maps indicate potential power generation of 3.5 – 4.0 KWh/m2/day.

Ocean Power

Tidal or wave power is an emerging field. There are several potential technologies that are being implemented around the world on an experimental and production basis. This is a renewable, low-impact technology. Some systems are visible above the water; other systems are anchored to the bottom and are not visible. These systems may not be feasible today due to regulatory and technological challenges. Since these technologies are placed off-site, they do not directly affect the master planning of the site. These concepts should be studied for use in the future.

Geothermal Power

There are no known local resources of geothermal power in the area. As the site has contamination issues and capping the contamination is the most likely remediation strategy, these types of energy technologies may be precluded.

Wind Power

Wind power is a mature technology using a renewable resource. The intermittency of wind



can be an issue if it makes up a large portion of the total supply; it is less of a problem as a supplemental energy source. Because so much power is generated by higher wind speeds, much of the energy comes in short bursts. Peak wind speeds also may not

coincide with peak demand for electrical power. Localized wind maps show the area around the waterfront as fair for wind power development. Large district type facilities have a significant aesthetic impact to consider.

Micro Hydro Power

This technology would utilize the Lake Whatcom raw water pipeline for power generation. Previous studies have demonstrated some potential for this resource to be tapped for power production. These studies should be updated to reflect current technologies, costs and regulatory issues. Another technology related to this utilizes the inherent pressure and/or flows

within piped utility systems for power generation. Micro turbine generators are installed in conjunction with pressure reducing valves in water systems to generate electricity. These technologies recover energy normally lost, are small and unobtrusive and have no or low environmental impacts.

Biomass Energy

This technology refers to carbon based materials that can be used as fuel or for the production of fuel. Anaerobic digesters, which break down biodegradable materials, yield organic wastes and methane which can be burned as a fuel source. Plants processed into ethanol through fermentation or distillation are typically categorized as biofuels. Biodiesel derived from plants or algae are also considered biofuels. Operation of these types of facilities requires a renewable supply of inputs or a dedicated waste stream from another process. Anaerobic digesters can utilize any kind of carbon based waste, the source materials would have to be separated and conveyed to the facility for processing. These types of facilities would require dedicated land area for equipment, storage areas for inputs and/or outputs and may require transportation of inputs and waste products.

Mining Waste Heat

This technology refers to reclaiming waste heat from sewer pipelines and other waste heat sources. Waste heat is tapped to produce hot water which can be used to heat buildings.

4.1.3 Greenhouse Gas Emission Reduction Opportunities

Reducing greenhouse gas emissions (GGE) involves a complex and synergistic approach. The proposed development, compact, urban and dense, will reduce GGE from a traditional suburban development with low densities and required trips for jobs and services. Development in this area will link to downtown and strengthen the immediate vicinity with jobs, goods and services. Transit and non-motorized connections will substantially reduce vehicular trips for residents in the general

vicinity. Many strategies embedded in previous sections also directly contribute to reducing GGE.

Energy used for heating and cooling buildings is the single biggest contributor to GGE in the country. Any GGE reduction strategy should start with promoting high efficiency buildings and reducing or eliminating electrical energy used for thermal needs. Strategies, including green roofs, natural ventilation and solar orientation should be used as fundamental design principles. Our region is fortunate to have significant energy produced by hydroelectric power which is considered low or neutral for GGE. Maximizing energy production from renewable energy sources such as solar, wave, tidal, wind or biomass provide many benefits.

4.1.4 Wastewater Treatment

A newer treatment approach being implemented around the world is membrane bioreactors (MBR). The MBR in its present forms constitutes a complete plant for the treatment of sewage. The basic MBR consists of two processing steps - a bioreactor, in which aerobic bacteria digest organic material in the presence of dissolved oxygen, and a membrane module, in which relatively pure water separates from the suspension of organic matter and bacteria.

There are many reasons for utilizing this newer technology, some of the advantages over conventional treatment are:

- •Improved water quality
- •Allows wastewater reuse for irrigation, nonpotable or potable needs
- •Reduces wastewater discharge fees, potable water costs and preserves existing system capacities
- •Provides water for non-potable applications where fresh water is in short supply
- •Lowers capital costs in new systems
- •Easily modified to expand treatment capacities, can be phased to match development
- •Lowers operational and maintenance costs

The technology is still improving and greater use of these systems will help reduce the costs of implementation. Advanced treatment of the reclaimed water could also expand the potential uses. This technology may also become an energy generator in the future by converting from an aerobic digestion process to an anaerobic digestion process. Methane gas is produced from the anaerobic process which would fuel the process and generate surplus electricity. It is estimated that the energy content of typical sewage inflow is about five times the energy required to run the treatment process.

4.1.5 Stormwater Management

Stormwater collected from non-automobile related surfaces such as green roofs, sidewalks and public open spaces are generally cleaner and does not



need much treatment for reuse. Stormwater collected from streets and parking lots typically contain higher concentrations of automobile pollutants. Reclamation and reuse of stormwater for

irrigation and other non-potable uses such as toilet flushing would require collection and storage facilities. District type systems should be evaluated in comparison to individual building provided systems. District systems could be located in the right-of-way minimizing the need for additional land area. The soil environmental conditions may prohibit infiltration of stormwater on the site.

Water quality treatment options include mechanical filtration, vegetative filtration and higher technology membrane systems. Mechanical filtration utilizes catch basins and underground vaults for grit and pollutant separation. Vegetative filtration utilizes plants, soils, bioswales and biological processes to separate and absorb the pollutants. Membrane Bioreactor systems provides the highest levels of water purification for non-potable uses. Low Impact Development (L.I.D.) techniques utilize a combination of mechanical and vegetative filtration and infiltration to remove pollutants and manage stormwater.

A combination of these innovative sustainable systems will be evaluated for use in appropriate areas within The Waterfront District.

Land Use



5.0 Land Use

The Waterfront District is intended to be a medium density sustainable development that has a healthy balance between the creation of new jobs and the integration of new housing opportunities - all supported by neighborhood goods & services. This live/



work environment supports a walkable community and provides a critical mass of jobs and housing to create a new District of 6 million s.f. of development within the Bellingham community.

The diversity of office,

institutional, marine, and light industrial related jobs targets a employment-based development of approximately 2.8 million s.f., which represents approximately half of the overall development. Integrated with the development of 2.8 million s.f. of housing, the overall density of The Waterfront District is complementary to the existing Central Business District - a key objective of the Proposal.

The development is intended to provide a medium density environment that is phased over time to transition The Waterfront District from primarily industrial uses to a mixed use environment that embraces sustainable development.

This new development utilizes new street infrastructure and services to create an urban setting where the streets and open spaces are clearly defined to provide public community spaces within The District. This walkable Waterfront District is broken up into five Areas, each with a unique and memorable character. They are:

- Marine Trades Area
- Downtown Waterfront Area
- Log Pond Area
- Shipping Terminal Area
- Cornwall Beach Area

Each Area is defined by the primary uses, density and building heights integrated with signature pedestrian streets, parks, trails and habitat environment.

Density, which indicates the intensity of development, varies throughout The Waterfront District in order to respond to the current surrounding neighborhood environments. The highest density envisioned [maximum Floor Area Ratio (FAR) 5.0] is proposed for the Downtown Waterfront Area adjacent to the existing Central Business District.

Building heights (maximum) across The Waterfront District will range from 100' to 200' (up to 20 stories). Buildings in the Downtown Waterfront Area will be allowed up to 200', while in all



other Areas maximum building heights will be lower, only allowing buildings up to 100' tall. Setbacks of building facades, limitations of floor area at upper stories, and provisions for view corridors will be developed to limit the impacts of taller buildings within The District.

Parking will be accommodated through a mix of on-street, surface, project-integrated structured parking and free-standing parking garages to support the future development capacity. Initially, onstreet parking (essential to a vibrant urban neighborhood) and surface parking will provide much of the parking capacity, but as density increases the surface parking will transition to structured parking integrated into the development.

Parks, trails and habitat are an important part of this network. They will be almost 18% of the overall development, with an allocation of approximately 33 acres of passive and active spaces to support The Waterfront District and adjacent neighborhoods. Creating a great public space/place on the waterfront demands certain features, such as a density of people during all hours of the working day, as well as evenings and weekends (business and residences). This requires the community to creatively provide for infrastructure that becomes an integral part of the public open space network.

5.1 Areas of Unique Character

The Waterfront District consists of a diverse number of uses clustered in distinct areas of activity.

Each of these Areas has a unique character reflecting the type of uses proposed. The character of each Area reflects specific building types, street types, parks and open space that are appropriate to the proposed uses. This is described in more detail in 5.3 Area Building Development.

For example the Shipping Terminal Area has a proposed density, floor area ratio (FAR), and height limit lower than other Areas within The District due to the types of proposed uses (manufacturing, assembly, and warehousing).

The following descriptions give a general outline of the proposed uses and character in each Area.

Marine Trades Area

Potential / Proposed Uses

- Marine Related Industrial
- Commercial
- Limited Mid-Rise Residential
- Neighborhood Goods & Services

51 acres

Maximum Building Height

100 feet

Target Density FAR

- Base 2.0
- Max 4.0

Excludes ROW, parks, parking.



Downtown Waterfront Area 46 acres

Potential / Proposed Uses

- Commercial
- High-Rise Residential
- Neighborhood Goods & Services
- Institutional

Maximum Building Height

• 200 feet

Target Density FAR

- Base 3.0
- Max 5.0

Excludes ROW, parks, parking.



Log Pond Park Area

Potential / Proposed Uses

- Institutional
- Commercial
- Mid-Rise Residential
- Neighborhood Goods & Services

44 acres

Maximum Building Height

• 100 feet

Target Density FAR

- Base 3.0
- Max 4.0

Excludes ROW, parks, parking.

21 acres



Shipping Terminal Area

Potential / Proposed Uses Maximum

- Marine Industrial
- Commercial

Maximum Building Height

100 feet

Target Density FAR

- Base 2.0
- Max 3.0

Excludes ROW, parks, parking.



Cornwall Beach Area

Potential / Proposed Uses

- Mid-Rise Residential
- Limited Neighborhood Goods & Services

18 acres

Maximum Building Height

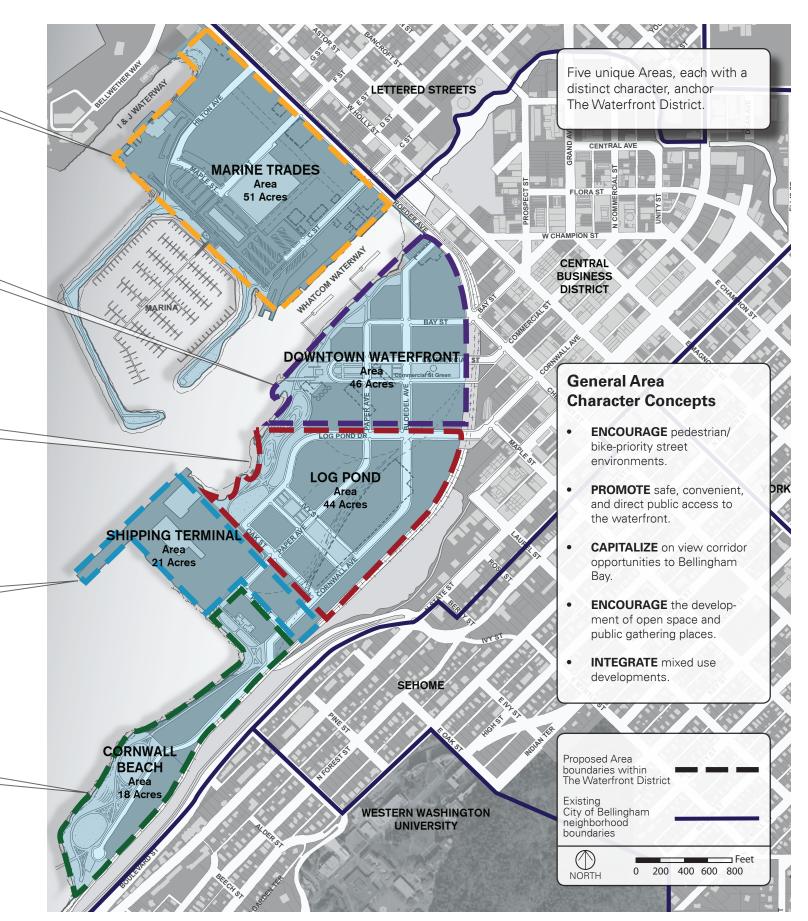
• 100 feet

Target Density FAR

- Base 3.0
- Max 4.0

Excludes ROW, parks, parking.





5.2 Land Use

The intent of The Waterfront District is to provide a diversity of uses that maintain some of the existing uses on the site and provide for their expansion, while changing the character of a majority of The Waterfront District to mixed use. This will include a combination of commercial, institutional, industrial and residential uses.

The diversity of uses will be in clusters so adjacent uses have the greatest degree of compatibility. Buffer zones will be provided in areas where adverse impacts from an adjacent use may become an issue. The types of uses will range from Industrial Marine (including manufacturing, warehousing, and assembly of marine related products, i.e. boat building and repair, commercial shipping, marinas) to Residential Mixed Use (including housing, hotels, retail, restaurants, and personnel services).

Each use is generally defined (more specific definitions will be provided within the Development Regulations) and include images of the dominant building types expected in each land use zone.

Industrial Marine The intent of this zone is to maintain the character of the existing uses on the site and focus primarily on marine and other industrial related activities including manufacturing, assembly, warehousing and institutional. Office use will be limited in this zone and some accessory residential units will be allowed provided they do not adversely impact the principal use of the zone. Marine dependent and related uses will be encouraged. A buffer will limit the impact of light, noise, fumes and working hours on adjacent General and Residential Mixed Use zones.

Industrial Mixed-Use The character of this zone will be similar to that of the Industrial Marine zone; however office and retail uses will be allowed as primary uses provided the industrial character of the zone is preserved. Residential live/work, artist, and gallery units will be allowed in this zone.

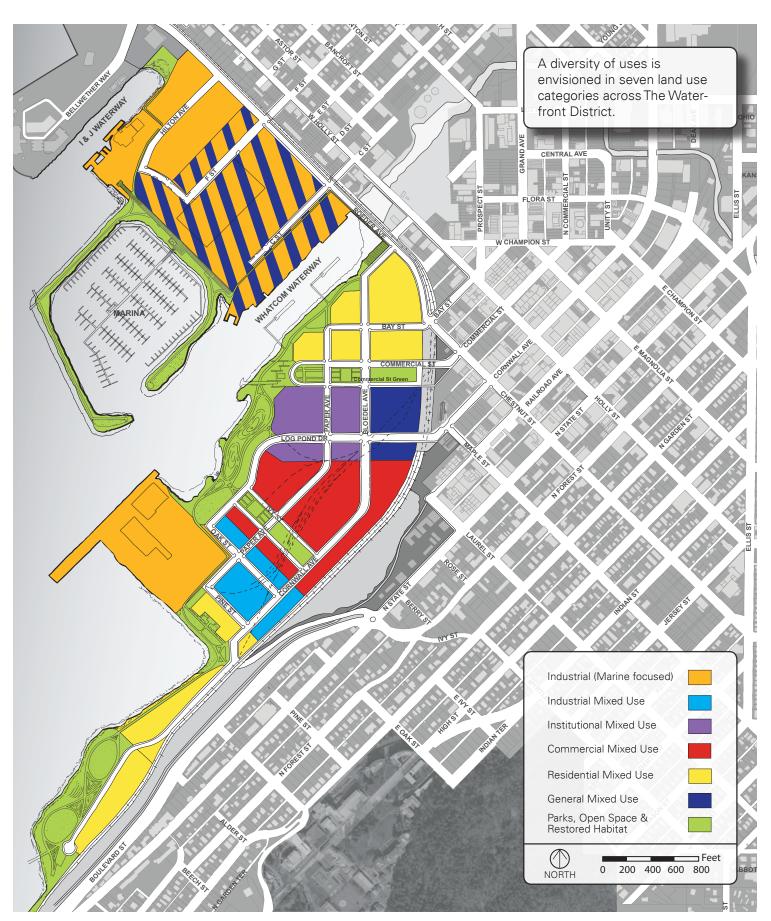
Institutional Mixed-Use This zone is intended to accommodate post-secondary level educational institutions as the primary use. Research and other uses related to this institutional use will be allowed. Office, housing and retail uses will also be allowed in this zone to encourage the potential for institutional and other uses to be mixed within the zone and even in individual buildings. In this zone, transportation such as public bus will be encouraged, including a major public transit hub for The Waterfront District. Pedestrian and bike access will be encouraged. Adaptive reuse of existing historic structures, equipment or materials could preserve the industrial character of The Waterfront District.

Commercial Mixed Use This zone will be characterized primarily by commercial development (office), which will be encouraged through development regulations, although housing and other services will also be allowed. Uses that create evening hour activity to the zone will also be encouraged, including institutional. This zone will have easy access to multiple forms of transportation including biking, walking, bus and automobile.

Residential Mixed Use The character of this zone will be shaped by housing in various forms (high-rise, mid-rise and low-rise buildings) which provide for a wide range of options for varying income levels. Hotel uses will also be allowed. Mixed use buildings with retail at street level will be required in certain locations to encourage street level activity throughout the daytime and evening hours. Office uses will be allowed, but will be limited to preserve the residential character of the zone. Easy access to all forms of transportation will be provided where feasible.

General Mixed Use This zone is a combination of the Residential and Commercial Mixed Use zones and will allow a variety of commercial and residential uses without a preference for a specific type of use. This zone will typically be adjacent to a variety of other zones with varying uses and can draw its character from those adjacent zones as the development market evolves. Mixed use buildings with retail at street level will be required in certain locations within this zone to encourage street level activity throughout the daytime and evening hours. Easy access to all forms of transportation will be provided where feasible.

Parks, Open Space and Habitat These areas will consist of a combination of public parks and trails, open spaces (plazas, landscaped streets, etc.) for public use, and habitat restoration areas with limited access. The character of the zone will be determined by the program of activities to be provided in specific locations within the zone. The intent of the zone is to provide a continuous public connection from north to south in The Waterfront District and from the Central Business District to the water with limited interruption by motorized vehicles. This will provide the backbone for pedestrian and bike circulation in the District.



5.3 Area Building Development

The intent of The Waterfront District is to provide a medium density urban environment that complements the Central Business District. Ultimate build-out for planning purposes is envisioned to be 6 million s.f. of mixed uses by 2026. As previously discussed, the mix of uses varies and is spread throughout The Waterfront District into five distinct Areas:

Marine Trades Area (1,690,000 g.s.f)



This Area is characterized by the working waterfront marine environment that supports the Clean Ocean Marina. The main focus of development in this Area is to accommodate jobs, initially revolving around marine trades such as fishing, boat building, boat repair,

marine product manufacturing and research & development. Infrastructure is designed and located to accommodate the potential transition from marine industrial uses to a higher density mixed use character including housing, office and the possible Terraquarium.

Downtown Waterfront Area (2,325,000 g.s.f.)

The character of this Area is similar to the commercial portion of the Central Business District (CBD). Uses that provide goods and services will mainly



serve the population of the Area and are not intended to compete with those in the CBD.

A mix of housing, office and intuitional uses are proposed to be accommodated in a high density configuration centered

around the Commercial Street Green open space and Bloedel Avenue. Minimum building heights will be encouraged adjacent to these open spaces to establish an urban environment that will become the heart of The Waterfront District. This Area's waterfront development will have a distinct urban character with public uses encouraged.

Log Pond Area (978,000 g.s.f.)



Medium density development marks the character of this Area with an approximately equal mix of housing and job related uses.

Development adjacent to the Log Pond Park and Ivy Street Park will accommodate the

most density with additional open space encouraged at locations away from the parks. Street parking in this Area will provide a majority of parking for park and retail uses.

Shipping Terminal Area (690,000 g.s.f.)



The existing deep water port in this area will be maintained for future shipping, port and institutional related opportunities.

Industrial uses characterize this Area with the potential for transition of peripheral

Areas to accommodate related

office, transportation, institutional and light industrial uses.

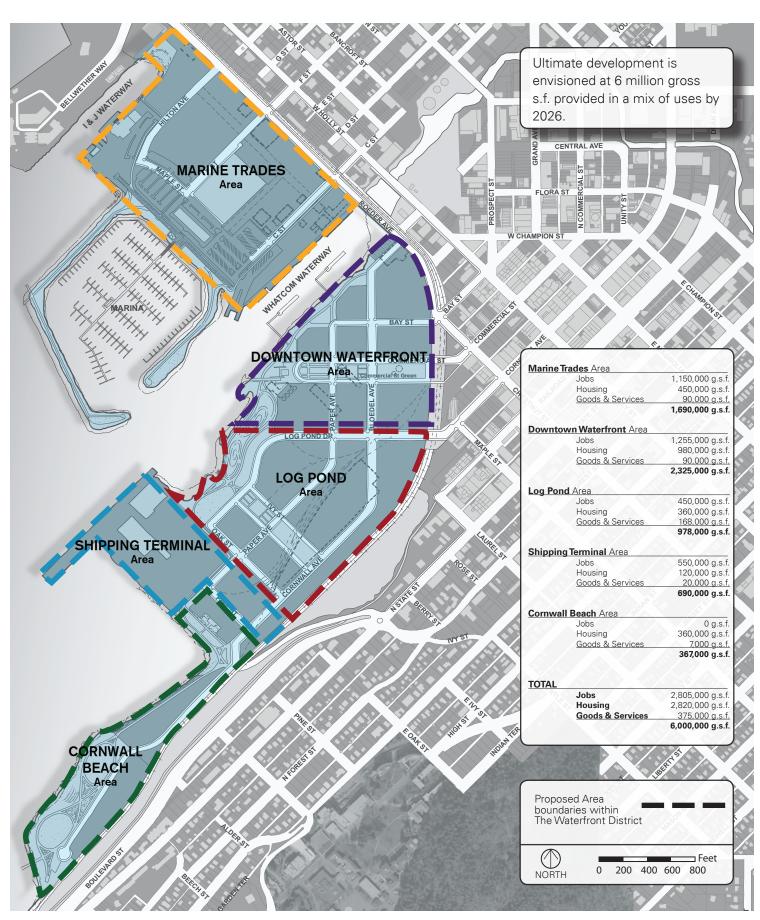
Cornwall Beach Area (367,000 g.s.f.)



This Area is residential in character with a small amount of goods and service uses incorporated into mixed use development.

The goods and service uses will mainly serve residents of

The Waterfront District and the users of the Cornwall Beach Park, which is a major component of this Area with connections to Boulevard Park. Medium density development will be encouraged to relate to the park environment.



5.4 Building Types

JOBS

Heights: **OFFICE**

Principal structures: 2-8 stories Accessory structures: 1-2 stories

Uses:

General office, administrative tasks and/or professional services

Parking: Surface or structured parking

Heights: Principal structures are 2 to 6 stories Uses: Gov't, academic facilities, labs/research, medical clinics, aquariums

Surface of Structured Parking:

MARINE Heights: 1 to 3 stories

INDUSTRIAL Uses: Light manufacturing, marine services, fish processing

> Parking: Surface



HOUSING

INSTITUTIONAL

LOW-RISE

1 to 3 stories Heights:

Uses: For-rent and for-sale units of detached townhomes/garden-style

apartments and flats above retail

Parking: Surface

3 to 6 stories Heights: MID-RISE

> For-rent and for-sale units Uses: Parking: Below structure parking

Heights: HIGH-RISE 6 stories or greater Uses:

Parking: Structured parking

For-rent and for-sale units

GOODS & SERVICES

SMALL NEIGHBORHOOD Uses: RETAIL

Heights: Parking:

1 to 2 stories; freestanding or integrated in a mixed-use building Typically <5,000 s.f.; boutique shops, jewelers, bookstores, coffee

Surface, structured or street



MID-SIZE NEIGHBORHOOD Uses: **RETAIL**

Heights: Parking:

1 to 2 stories; freestanding or in a mixed-use building Typically 5,000-15,000 s.f.; e.g. small grocery or drug store

Surface, structured or street



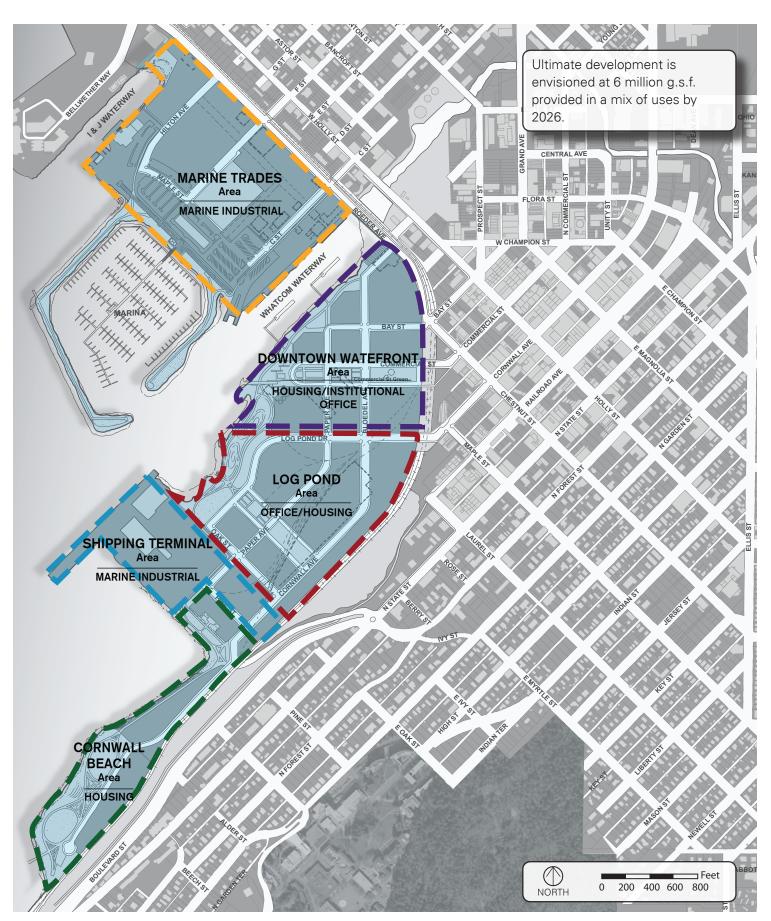
RESTAURANT

Heights: Uses:

1 to 2 stories; freestanding or in a mixed-use building Food and drink establishments typically 5,000-10,000 s.f.

Parking: Surface, structured or street





5.5 Historic Resources Plan

Building upon previous historic and cultural resource studies of The Waterfront District, there are five resources identified which would require further analysis to determine their potential for the following opportunities:

- 1. Retain the structure and reuse in its current configuration.
- 2. Reuse the building material in which the structure was originally constructed.
- 3. Relocate and preserve industrial equipment or features.

The additional analysis required to determine the reuse potential of these structures depends on challenges faced with structures that were constructed between 1928 and 1946.

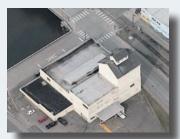
The challenges for the five identified resources include:

- Environmental considerations
- Seismic upgrades
- Existing locations
- Building footprint sizes
- Economics
- View corridors
- Proposed street grid location and grade

Each of the five resources from the former Georgia-Pacifc Pulp Mill present unique opportunities to acknowledge the history of the waterfront, including through retention of the structures. At a minimum, full documentation (including photography) should be required for each of the five identified resources.

All five of the identified resources are located within the Downtown Waterfront Area.

(A) Old Granary Building



Built: 1928 Dimensions: 121'x110' with

81'x39' office

Footprint Area: 16,469 s.f.

Resource: Possible adaptive reuse, or relocate and reuse material and structure shapes.

(B) Digesters



Built: Ca 1938 Dimensions: 235'x44' Footprint Area: 10,340 s.f.

Resource: Possible reuse of existing materials or industrial equipment.

© Board Mill



Built: Ca 1946 Dimensions: 303'x72' Footprint Area: 21,816 s.f.

Resource: Possible reuse of existing materials.

(D) Barking & Chipping Plant



Built: Ca 1937-1946 Dimensions: 129' x 51' Footprint Area: 11,938 s.f.

Resource: Possible adaptive reuse, relocation of industrial equipment or reuse of existing materials.

E Ceramic Tanks



Built: 1930

Dimensions: 31' x 120 Footprint Area: 1,607 s.f.

Resource: Possible adaptive reuse as park feature, augmented with relocation of other historic equipment and materials.



5.6 View Corridors

View corridors represent a field of vision that is shaped by the built environment surrounding them. View corridors are intended to protect and preserve views of Bellingham Bay and the natural environment are essential to connecting people visually and emotionally to one of Bellingham's unique resources. To ensure these visual connections are preserved for people in The Waterfront District and the adjoining CBD, Old Town and the Letter Streets areas, three distinct types of view corridors are proposed. Each serves a distinct purpose in preserving Bellingham's connection to the water.

- A. Shoreline, Distant Views & CBD- These view corridors provide direct views of the waterfront/shoreline, distant views of Bellingham Bay and the islands beyond, and of the Central Business District (CBD) from the waterfront site itself. Typically these will be along street right of ways (ROW) and may incorporate facade setbacks at the upper stories of the buildings. This will occur both in buildings along the ROW and within the shoreline environment to accommodate views from the water to the CBD. Special consideration will be given to street tree landscaping, street furniture, and traffic signal locations to maintain views.
- **B. Marina & Distant Views** These view corridors are similar to the shoreline & distant view corridors, except they will frame foreground views of the Marina with Bellingham Bay and the islands beyond.
- **C. Distant Views** These view corridors are specifically designed to provide views of Bellingham Bay and the islands from the existing Central Business District (CBD) They continue the views from the existing street right of ways in the CBD by limiting development heights across the develop-

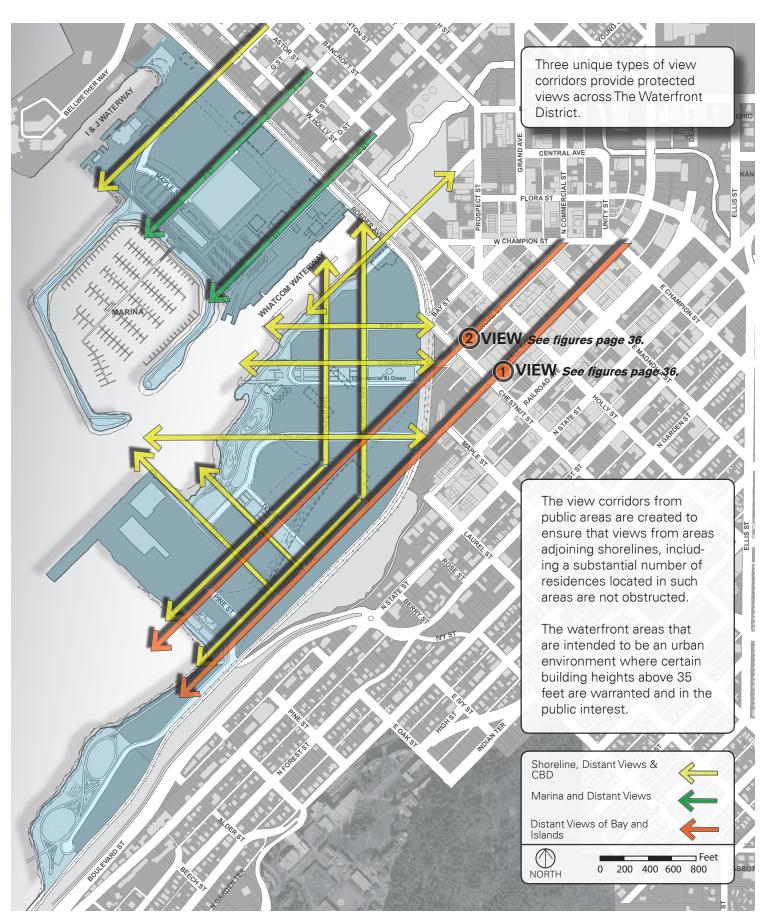
The Waterfront District provides opportunities to expand and improve upon existing public access and public views from The District to the water. These are the primary views to be considered when planning and developing the property. Improvements and enhancements facilitated by the project are in the public interest. Providing an economic environment that facilitates the successful development of these features, creating the necessary density, and managing the infrastructure (i.e. structured parking) that supports The Waterfront District is also in the public interest. When economics necessitate a building over 35' to provide for these attributes, that is also in the public interest.



View 1: Looking south from the intersection of Cornwall Ave. and Roeder Ave.



View 2: Looking south from the intersection of Commercial St. and Roeder Ave.



5.7 Development Phasing



The Waterfront District is currently fully developed with existing marine industrial, warehouse, industrial uses and surface parking from Georgia-Pacific's operations of the Tissue Mill.

In order to accommodate development, three things are required:

- (1) Demolition of existing buildings, structures and associated utilities;
- (2) Construction of new buildings and associated parking; and
- (3) Construction of new major site infrastructure, including primary streets, utilities and parks to support these new uses.

Sequencing

The sequencing of these events will be dependent on development patterns that could be based on economic forecasting, future market demands and overall absorption rates for the anticipated 6 million s.f. of jobs, housing and goods & service uses. Site infrastructure,

including the primary street network and new utility systems, may be phased prior to development and construction of any buildings and structured or surface parking.

Once areas are identified to be redeveloped with new site infrastructure and buildings, existing buildings and structures may need to be demolished. As these areas are redeveloped, existing pavement in surrounding areas may need to be removed and hydroseeded as an interim solution before full development is achieved. These hydroseeded areas would then be replaced with buildings, streets or parking (both surface and structured)

once future market demands determine additional development is necessary.

Since redevelopment is likely to occur over an extended period of time and in multiple phases, utility phasing is assumed to be integrated with the timing of the primary roadway network. These major utilities, including water, sewer and storm could be phased to accommodate development growth and demand over time. In addition, temporary stormwater systems may be in place to bridge between these development phases.

The Starting Point

A key component in determining the strategy for development opportunities is defining the starting point: a defined zone in which to focus early devel-

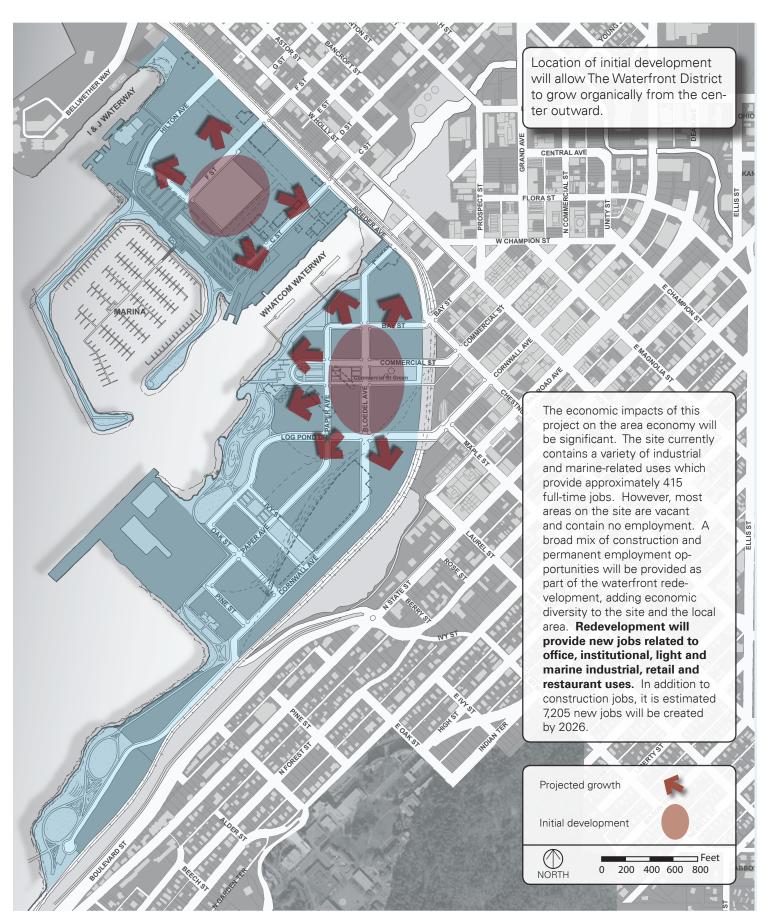


opment opportunities. Since development will be phased over time and driven by the market conditions, it is imperative to identify key locations within The Waterfront District as potential starting points.

Initial development within The Waterfront District will be centered around initial phase infrastructure improvements in the Downtown Waterfront and Marine Trades Areas. By centering initial development in the The Waterfront District, growth can occur organically outward and provide future development opportunities at the waterfront shoreline and link with the CBD.

The Waterfront District will create a new urban waterfront in Bellingham. As the demand for industrial waterfront in Bellingham diminishes, the area will be developed into a modern mixed use urban waterfront with public access.

Extensive hours of public dialogue and conversation have indicated that the creation of a dynamic and sustainable urban waterfront is in the overriding public interest. The planned density, including building area and building heights in the Waterfront District, are supported by this public goal of an environmentally and economically sustainable urban waterfront.



5.8 Parking Plan

Each Area will have a unique mix of parking in response to demand. To accommodate 6.0 million s.f. of mixed uses, the existing City of Bellingham parking regulations will need to be reduced to encourage shared parking.

In addition, a dynamic people/pedestrian friendly waterfront is not a "cars live here" phenomenon. Reduction of surface parking is a key public interest in the process of creating a public/pedestrian friendly place. In many instances, the elimination of surface parking necessitates parking under buildings, which in turn necessitates taller buildings. Similarly, structured parking can be built adjacent to taller buildings that can economically sustain the cost of that structured parking.

Since The Waterfront District will take many years to fully develop, early development may include low-cost surface parking lots which can later be used for infill development. At that time when structured parking makes economic sense, the surface parking lots can be replaced with developments using structured parking. The long-term strategy to redevelop surface parking lots as infill sites allows maximum flexibility to encourage initial development without sacrificing the long term vision of The District: a dense urban environment with little or no surface parking other than on-street parking.

P1 Surface



Surface parking will be used to accommodate early action development. As density increases over time, surface parking will be minimal.

P2 Structure (Integrated)



Structure (integrated) parking is accommodated below buildings or integrated into the center of a block to support multiple uses. This is the most typical parking type.

P3 Free-Standing Garage



Free-standing garages are utilized to support office, institutional and community parking requirements.

P4 On-Street

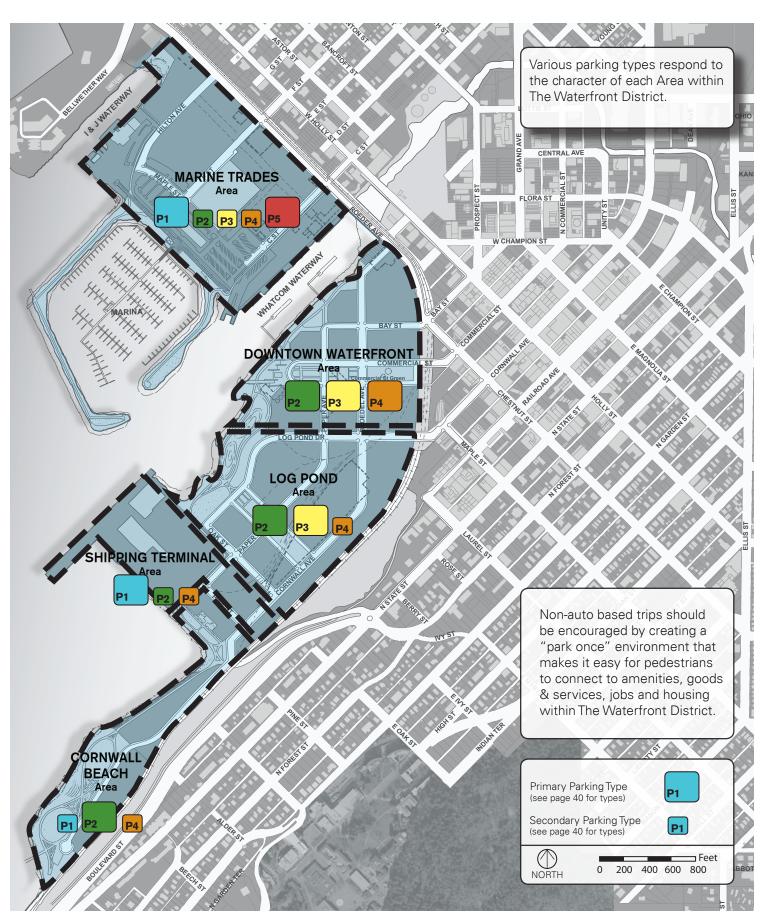


On-Street parking (essential to a vibrant urban neighborhood) will carry approximately 10% of the parking demand at full development build-out.

P5 Marina



Surface parking will be utilized at the marina to accommodate interim marina parking and truck/ trailer parking for the Clean Ocean Marina.



5.9 Clean Ocean Marina

The Port is currently designing and permitting a new downtown marina which will be located inside GP's former 35-acre wastewater treatment lagoon. The conversion of this contaminated lagoon into an environmentally sustainable, state-of-the-art marina will help reconnect the community to the downtown waterfront and include the extensive restoration of salmon habitat.

The marina project will begin by removing over 500,000 cubic yards of contaminated sludge and sediments from the lagoon for disposal at a certified upland landfill. The industrial breakwater will then be re-shaped to more closely resemble the natural shoreline with shallow habitat benches for young salmon to hide from predators. The newly formed breakwater will also include an innovative fish passageway so salmon can better connect with the Whatcom Creek estuary.

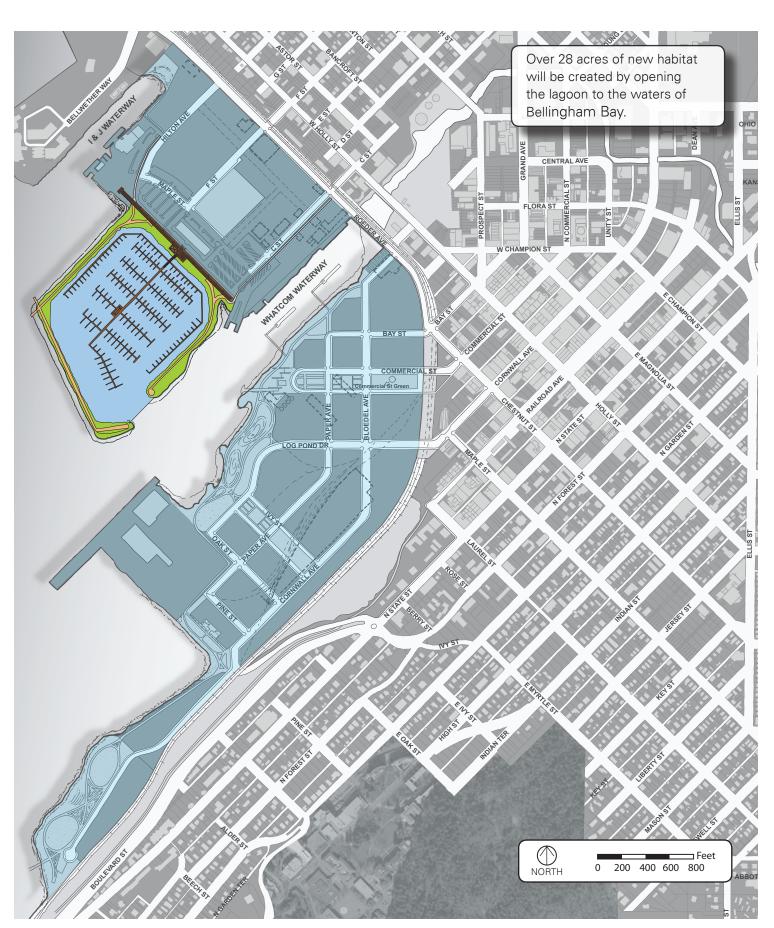
The top of the marina breakwater will be reserved as a public park for people visiting the waterfront with nearly a mile of public trails and scenic viewpoints. This new waterfront park will offer community opportunities to build art and cultural exhibits, interpretive signs and access points.

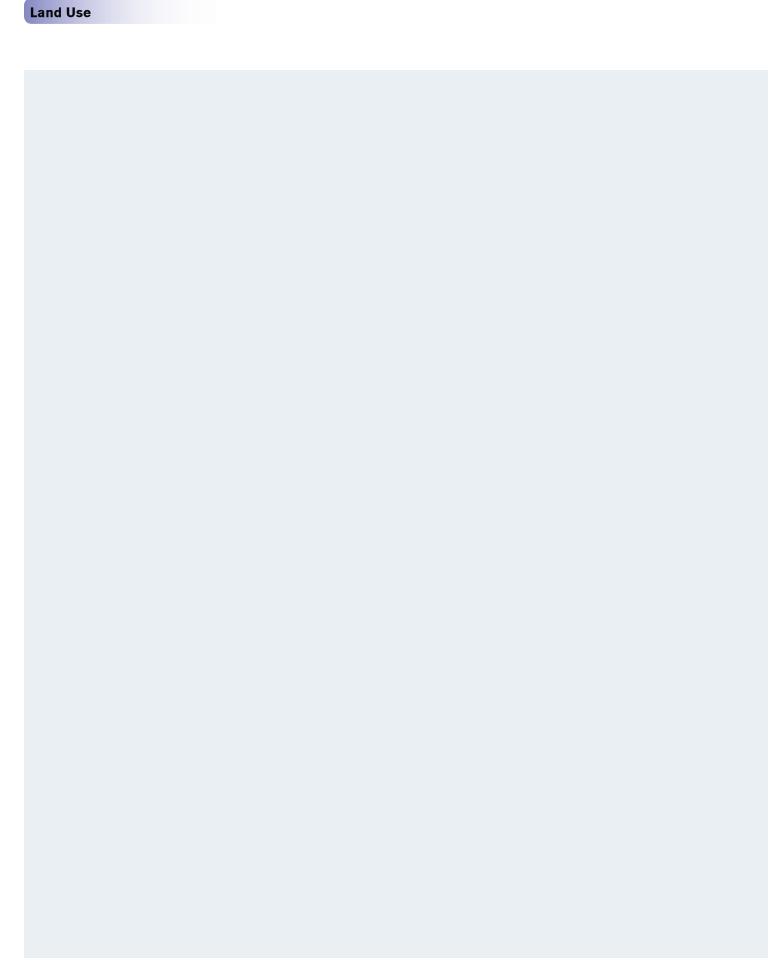
When the newly sculpted breakwater is opened to the waters of Bellingham Bay, 28 acres of new salmon habitat will be created. The marina facilities will offer about 450 new boating slips and include a new public boat launch and visitor boating docks in the Whatcom Waterway. These facilities will be linked to downtown Bellingham by an extensive system of parks, trails, and roads so the waterfront becomes a vibrant hub for people walking, paddling, biking, driving, sailing and cruising.

The Port intends to use the marina project as an opportunity to develop landmark "Clean Ocean Marina" standards. The new downtown marina will define and demonstrate best practices for marina design, construction and operation, consistent with the federal Clean Oceans Initiative.

The Port is working to define "Clean Ocean Marina" concepts for the new marina and explain how these concepts could inform the development of a new marina benchmark modeled after the Leadership in Energy and Environmental Design Standards (LEED) building standard.







6 Transportation



6.0 Transportation

Today the city does not spatially connect to the water. The site does spatially connect to the water, but not to the city. The city must spatially connect to the site and have reference to the water.

The transportation network should be more appropriately defined as the primary open space network for the Waterfront District. The importance of this network is that it provides the organizational back-



bone to spatially reconnect the City of Bellingham to its waterfront. While the network is designed to accommodate vehicle access to and through the District, its primary purpose is

to provide the community spaces shared by everyone within the District and city as a whole. To this end the network will primarily serve the needs of pedestrians, cyclists and transit while accommodating the need for automobile access and circulation. It is the intent of the network to integrate and reconnect the surrounding neighborhoods to the waterfront providing a larger benefit to the city than merely a manner to access the District.

Connections to the existing downtown via Roeder and Chestnut are provided at Bay, Commercial,



Cornwall, and F and C
Streets. All of these will
provide a direct spatial
connection and views
to the waterfront and
Bellingham Bay. "Gateway" connections are
proposed at the intersections of Roeder, Chestnut/Commercial and
Maple creating memorable views of the water.

For the first time since the Georgia-Pacific Mill was constructed, the downtown of Bellingham will spatially reconnect to the water.

The transportation network is defined throughout this document as the primary street network or the street network required to serve The Waterfront District from the perspective of pedestrians, bikes, transit and automobiles.

Phased construction of the primary street network will focus development in specific areas so that a cohesive felling for the District is maintained over time as growth occurs. These new street network sections for the Waterfront District include:

The street network was analyzed for its connec-

- Hilton Avenue
- C Street
- F Street
- Paper Avenue
- Bloedel Avenue
- Bay Street

- Commercial Street
- Log Pond Drive
- Cornwall Avenue
- Oak Street
- Ivy street



tion to the existing city street grid, constructability techniques, sequencing and off-site impacts.

Transportation needs were evaluated and designed with the following

priorities in mind:

- 1. Pedestrian Movements
- 2. Cyclist Movements
- 3. Transit Movements
- 4. Goods and Services Movements
- 5. Private Automobiles Movement

While there were many criteria in determining the alignment of the street grid, it is the intent to provide a network that creates an authentic and memorable environment for The Waterfront District.

6.1 Street Network

The street network is one of the most important components of building a successful urban environment and requires consideration of various criteria. The Waterfront District has unique opportunities presented by its location, but also limitations because of existing conditions. A synthesis of all the criteria must be evaluated to establish the network. Some of the criteria include:

- Topography
- View orientation
- Connections to existing streets
- Optimum block size for building development
- Vehicle capacity
- Open space network
- Constructibility and cost
- Phasing of infrastructure
- Historic resources
- Soil contamination
- Railroad location
- Integration with parks network
- Existing port facilities
- Future tenant requirements (WWU)

The Draft EIS evaluation of the site gave insight into many of these and helped establish where flexibility in the layout could be accommodated.

The GP Mill Site

Initial plans for the Waterfront District street network in this area revolved around extending the existing street grid across the site in a rectilinear manner. This approach provided spatial and view connections to the bay along Cornwall and Commercial and views to the Whatcom Waterway from Laurel and Maple. However, this street network created challenges to constructibility and cost due to the elevated connection of Laurel at Cornwall, the limitation of building Commercial only after relocation of the existing railroad tracks and the increased span of bridges because of the angle at which they would cross the relocated railroad tracks.

Subsequent plans for the street network in this

area evolved by investigating opportunities to create more direct connections to the waterfront (visually and physically) and provide a cohesive development not constricted by the necessity to relocate the railroad tracks. Rotating the street grid provides dramatic pedestrian connections to the

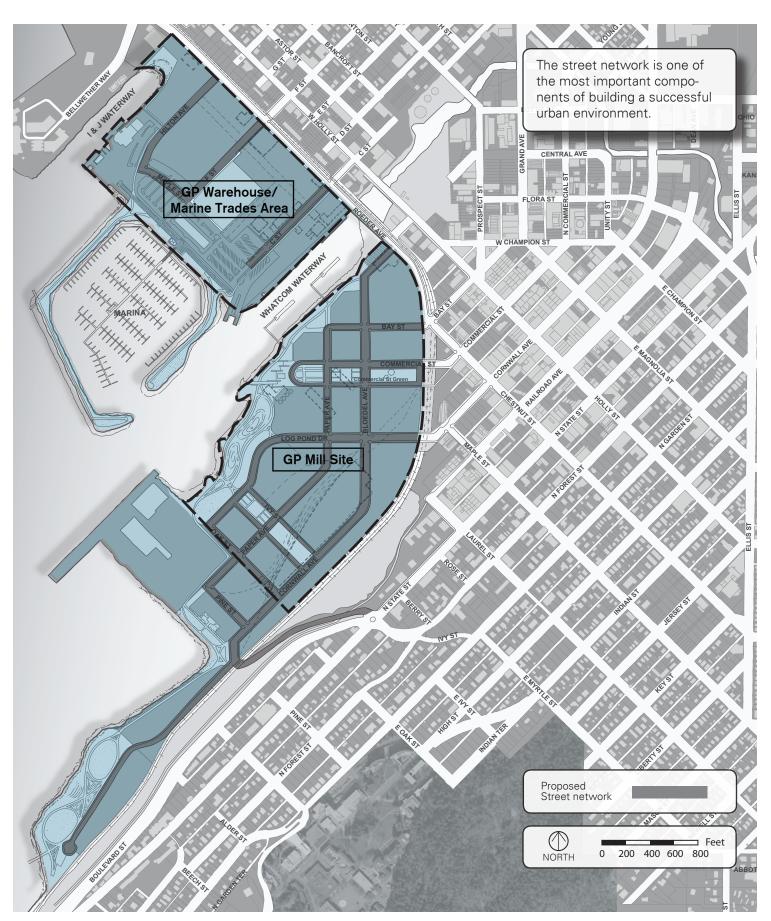


waterfront via Commercial, Bay and Log Pond Drive and allows substantially more development to occur in a centralized manner prior to the relocation of the railroad tracks. Views from the CBD to the bay along Commercial and Cornwall are also preserved by view corridors through the District.

Constructibility is also enhanced in this approach because the perpendicular bridge spans across the relocated railroad tracks are shorter. Some additional costs would be incurred because of raised streets in this area of the site, but would accommodate underground parking which would otherwise not be available due to soil contamination.

The GP Warehouse/Marine Trades Area

Plans for the street network in this area of the Waterfront District are intended to serve the industrial nature of the existing uses, provide access to the proposed marina and accommodate future industrial marine trades uses. The street network in this area could also provide the opportunity for a long term transition of the area to a general mixed use zone with future uses including housing, office and goods & services. The street network of public right of ways will be combined with private streets across the site providing view corridors and pedes-



6.2 Pedestrian Street Environment

The Waterfront District will serve as the gateway from the waterfront and provide the front porch experience for Bellingham's downtown neighborhoods. The pedestrian street environment is an integral part of this experience and comprises one of the largest amounts of public open space in the District.

The Proposal recommends rotating the street grid within The Waterfront District to provide the opportunity for Bellingham's downtown to spatially reconnect to the water by creating memorable views to Bellingham Bay and direct pedestrian connections to the waterfront. These connections will occur through the pedestrian street network and a variety of different street types, each with a unique character.

A variety of pedestrian street types within The Waterfront District will derive their character from the intended use of each street coupled with the area it is serving. Most of the streets within The District will serve only local traffic and will be designed to reinforce a slower speed desired for vehicles sharing the street with pedestrians and bicycles. Each of these streets will be designed to enhance its specific function. Some specific street types include:

- Retail streets
- Residential streets
- Green streets
- Park streets
- Industrial streets

Retail streets will include on-street parking and wide sidewalks which provide the opportunity for outdoor activities along the street such as outdoor dining, street vendors, and informal gathering spaces for pedestrians.

Residential streets will also include on-street parking and wide sidewalks with a character created by landscaping and features that evoke a sense of front yard ownership for the residents.

Green streets include an open space component flanked by streets on each side of the open space. One side of the street is focused on movement of pedestrians, bicycles and vehicles while the other serves a slower speed environment more oriented toward pedestrians.

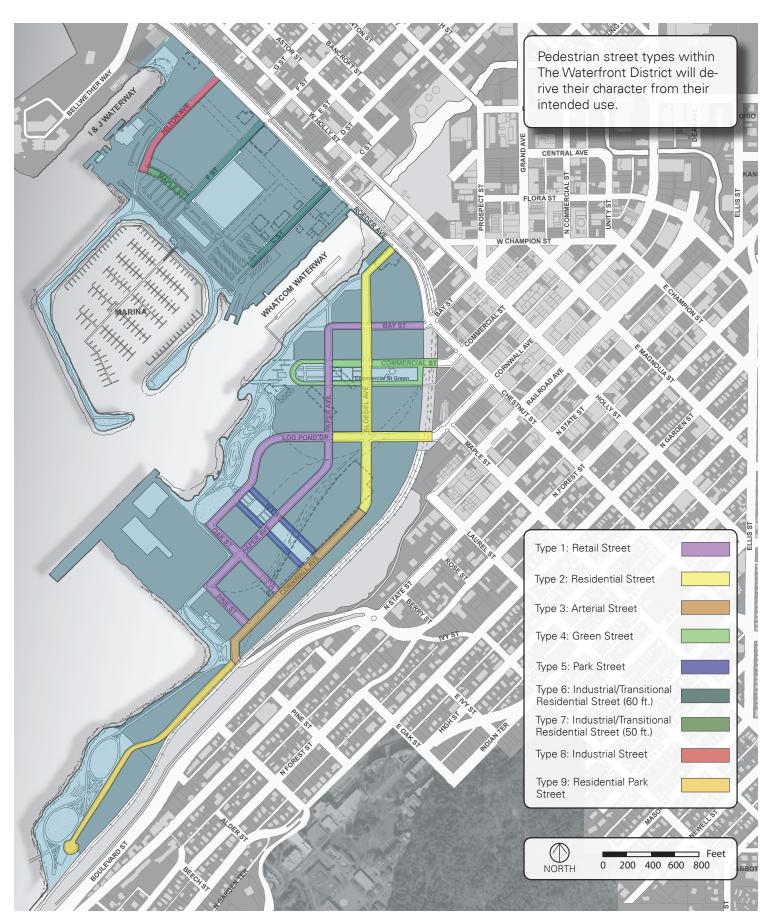
Park streets incorporate a public park between one way streets which serve as access for development as well as parking for the public park amenity.

Industrial streets provide adequate access for industrial activities such as movement of raw materials and finished products by trucks. These streets will have minimal improvements, but will be designed to transition to streets appropriate for mixed use residential and office development. In some cases these streets will serve as view corridors from adjacent neighborhood ares.

Historically, specific street character has defined areas within downtown Bellingham. A combination of street character and rotations of the street grid in the Lettered Streets, the Arts District, the Downtown, and the Sehome Neighborhood has established these areas as unique places within the city. Rotation of the street grid establishes a definitive boundary for the Waterfront District, but it is important that the character of the streets within the Waterfront District uniformly reinforce this sense of place by using common characteristics and features. Some of these will include:

- Street narrowing at street intersections for traffic calming
- Paving and sidewalk textures
- Landscaping and biofiltration of stormwater
- Street trees and street furniture
- Uniform signage throughout the District

All of these components will make the pedestrian street environment the front yard of the Waterfront District.



6.2 Pedestrian Street Environment

Downtown Waterfront, Log Pond and Shipping Terminal Areas

Type 1 - Retail Street

ROW: 85 ft. (2-way street)

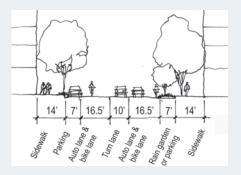
Bikes: Dedicated bike lanes

Parking: Parallel parking both sides of

street

Landscaping: Street trees, highlighted landscape areas at wide sidewalk, natural biofiltration option in lieu of on

street parking



Type 2 - Residential Street

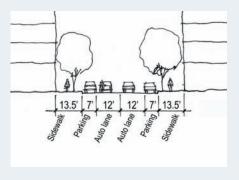
ROW: 65 ft. (2-way street)

Bikes: Auto lane shared with bikes (lane striping to indicate shared auto/bike environment)

Parking: Parallel parking both sides of street

Landscaping: Street trees, natural biofiltration option in lieu of on street

parking



Type 3 - Arterial Street

ROW: Existing (2-way street) Bikes: Dedicated bike lanes Parking: Parallel parking both sides of street

Landscaping: Street trees, natural biofiltration option in lieu of on street park-

Type 4- Green Street

ROW: 220 ft. (2-way street & 1-way street)

Bikes: Dedicated bike lanes on 2-way street

Parking: Parallel parking both sides of the 2-way street & one side of the 1-way street

Landscaping: Street trees, potential for biofiltration, mill artifacts & landscape features at the open space area

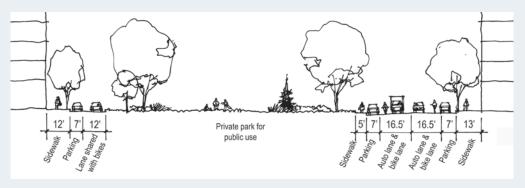
Type 5 - Park Street

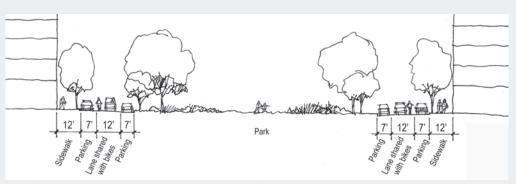
ROW: 200 ft. (1-way & 1-way street)

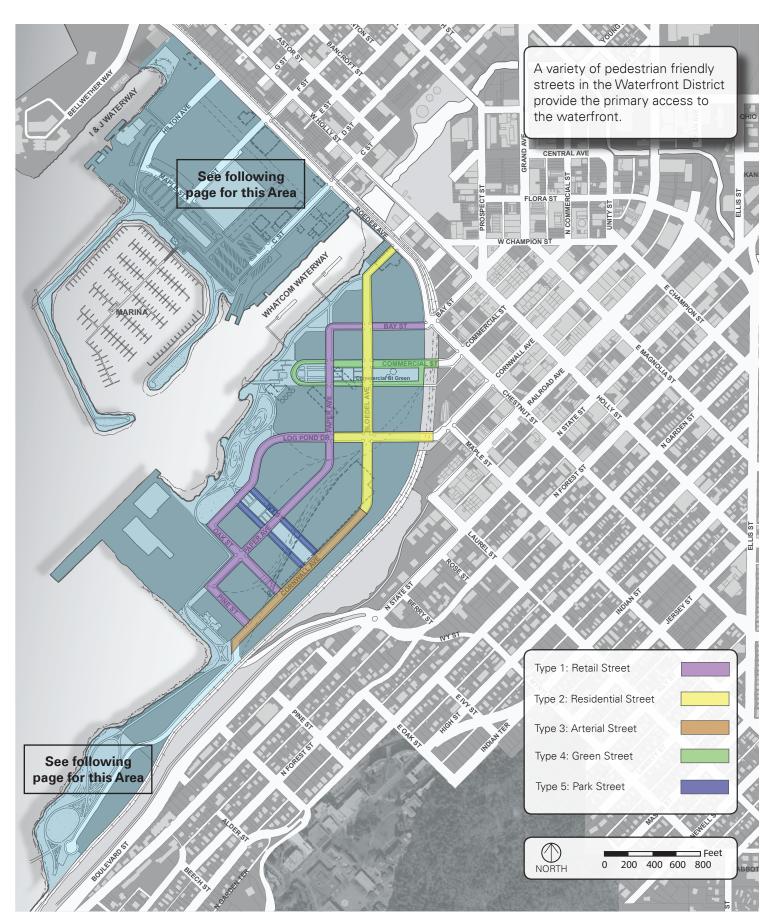
Bikes: Auto lane shared with bikes (lane striping to indicate shared auto/bike environment)

Parking: Parallel parking both sides of each 1-way street

Landscaping: Street trees, natural landscape at park with the potential for natural biofiltration of stormwater







6.2 Pedestrian Street Environment Marine Trades and Cornwall Beach Areas

Type 6 - Industrial/Transitional **Residential Street**

ROW: 60 ft. (2-way street)

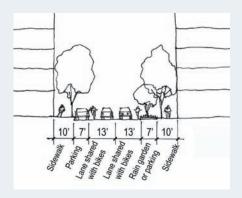
Bikes: Auto lane shared with bikes (lane striping to indicate shared auto/bike environment)

Parking: Parallel parking both sides

of street

Landscaping: Street trees, natural biofiltration option in lieu of on

street parking



Type 7 - Industrial/ Transitional **Residential Street**

ROW: 50 ft. (2-way street)

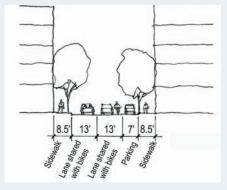
Bikes: Auto lane shared with bikes (lane striping to indicate shared

auto/bike environment)

Parking: Parallel parking one side

of street

Landscaping: Street trees



Type 8 - Industrial Street

ROW: 45 ft. (2-way street)

Bikes: Auto lane shared with bikes (lane striping to indicate shared auto/bike environment)

Parking: No street parking

Landscaping: No street trees, low scale shrubs over utility vaults



Type 9 - Residential Park Street

ROW: 45 ft. (2-way street)

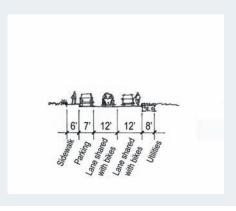
Bikes: Auto lane shared with bikes (lane striping to indicate shared auto/bike environment)

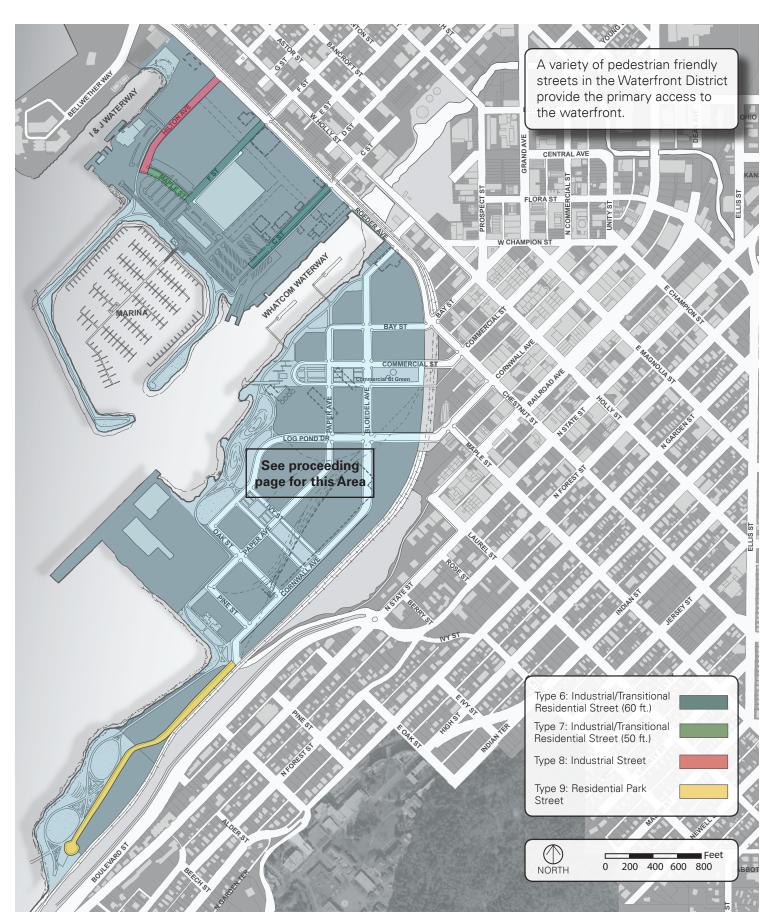
Parking: Parallel parking one side

of street

Landscaping: No street trees, low scale shrubs and ornamentals over

utility vaults

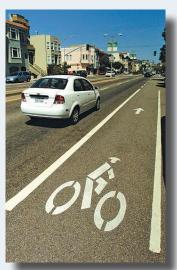




6.3 Bike Network

It is the intent of The Waterfront District to provide three different types of bike environments to enable each Area to be integrated into the existing network. Each of these authentic environments link to existing bike baths to encourage pedestrian activity along the waterfront and to link to the existing network where possible. These three environments include:

Bike Lane on Street



Dedicated high speed route to quickly move north to south through The Waterfront District via Cornwall/Bloedel Avenue corridor and direct access to downtown via Commercial Street and Log Pond Drive.

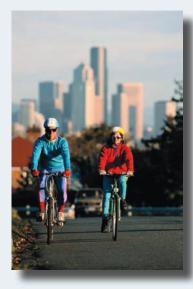
This corridor will have a dedicated bike lane in each direction within the street ROW.

Shared Bike/Auto on Street



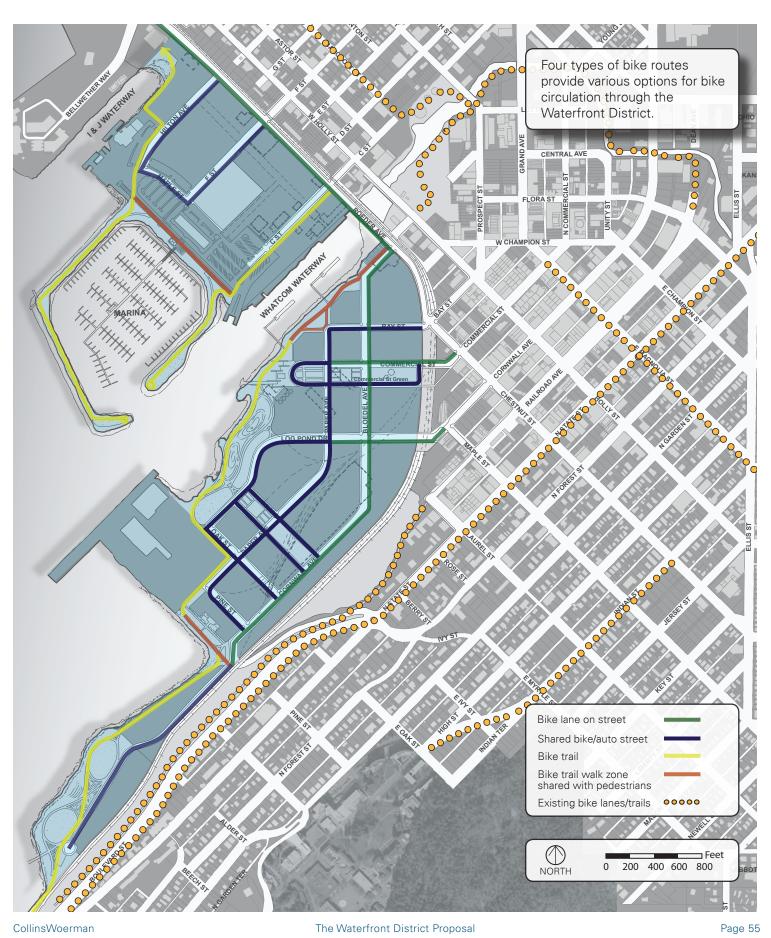
Neighborhood routes via street corridors which are shared with vehicular traffic (sharows) that serve as connections to the existing downtown.

Bike Trail



A more leisurely route that follows the shoreline along the southside of Whatcom Waterway is intended to be shared with pedestrians.

This bike trail is intended to link the overwater connection from Boulevard Park to the south to the shoreline along the Whatcom Waterway.



6.4 Transit Routes

The primary transit provider for the City of Bellingham is the Whatcom Transportation Authority (WTA) which serves Bellingham and Whatcom County. Their mission statement is to enhance the community by:

- Delivering safe, reliable, efficient and friendly service
- Offering environmentally sound transportation choices
- Providing leadership in creating innovative transportation solutions
- Partnering with our community to improve transportation systems

the entire Waterfront District, acting as a circulator. At the same time, existing WTA bus routes may be altered to serve The Waterfront District where appropriate. In addition, connection to the main Western Washington University (WWU) campus may be deemed necessary, especially with the potential for WWU presence in The Waterfront District.

other. There is the potential for one route to serve



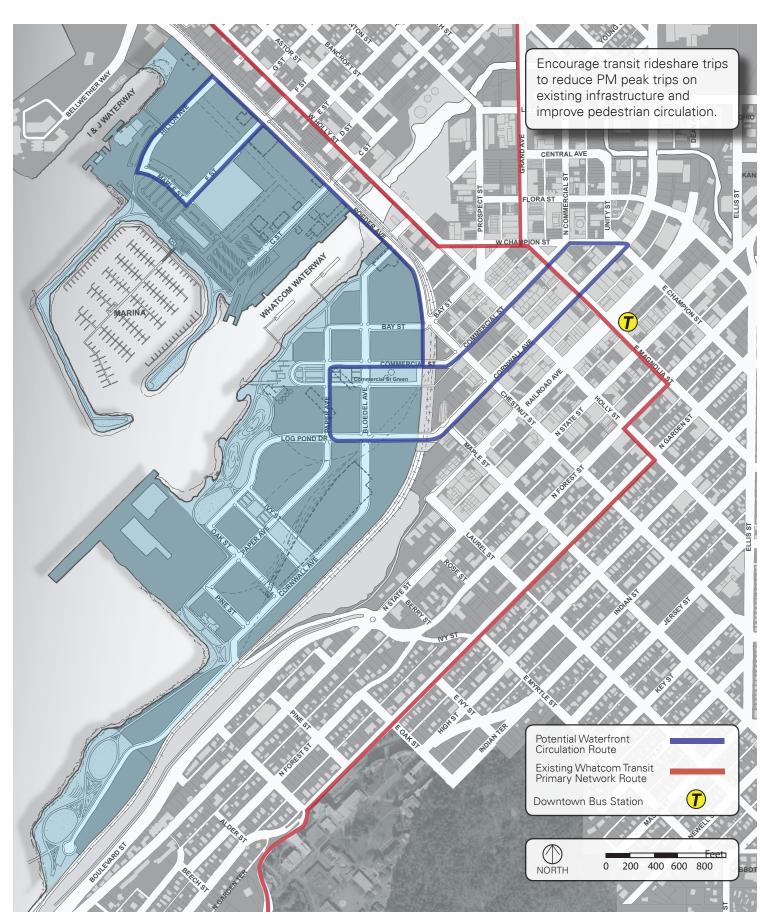
Downtown
Bellingham
is currently
served by
the station
located on
Railroad
Avenue between Magnolia and
Champion
Streets. It

is located approximately 1/2 mile from the edge of The Waterfront District. All major lines, including the five GO lines (Plum, Red, Blue, Gold and Green) serve this station. The GO lines offer service every 15 minutes along five major corridors in Bellingham.

Developing a transportation network, likely based in public bus transit, will be central to reducing single occupant vehicle trips connected to increased development in The Waterfront District. This is true both for trips within The District and those from outside of the immediate Downtown Bellingham area.

The integration of public transit will need to address both sides of the Whatcom Waterway, especially given the fact that some parts of The Waterfront District are over one mile from each



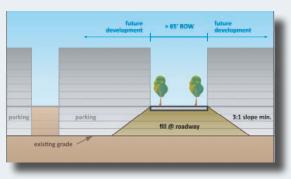


6.5 Street Infrastructure Construction

The Waterfront District's location is one of its greatest assets, but it is also one of its biggest challenges when it comes to infrastructure improvements. The site is comprised almost entirely of fill material which has been placed over the last 100 years as industry expanded creating new land area in Bellingham Bay. In addition to this condition there are also multiple garbage landfill areas and in several locations there are highly contaminated soils from the Paper Mill processing procedures. A final consideration is the impact of global warming on sea level rise which is predicted to be as much as five feet within the next 100 years.

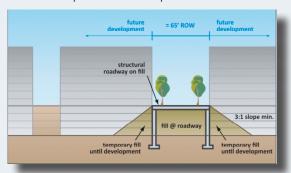
All of these site conditions require special considerations when approaching the street infrastructure design. The fill material on site, though mostly compacted from previous uses, could continue to settle when street infrastructure is placed if the soil is not properly compacted prior to construction. The problem of **soil liquefaction** in an earthquake is also a problem in these filled areas. The garbage landfill areas, which have not been substantially compacted, will continue to settle over several years into the future so designs in these areas may require structural supports to solid soils or construction techniques at adjacent buildings which accommodate the ongoing settlement. The contamination of soils on site will either require removing the contaminated soils so utilities placed under streets will not be located in contaminated soils if streets are placed on the existing grade or raising the street level by placing new fill over the contaminated soils to accommodate utility location in clean fill. All of the above ideas must also consider the impact of sea level rise coupled with storm surge events and tsunamis which could put portions of the existing site under water.

Considering all these existing site complexities the design team evaluated different ways to construct the street infrastructure. In the analysis, three techniques were selected based on their application potential for The Waterfront District:



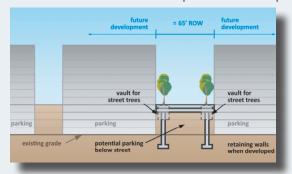
Scenario A: Roadway on Sloped Fill

This scenario assumes the roadway to be constructed on preloaded slope fill.



Scenario B: Roadway on Retained Fill

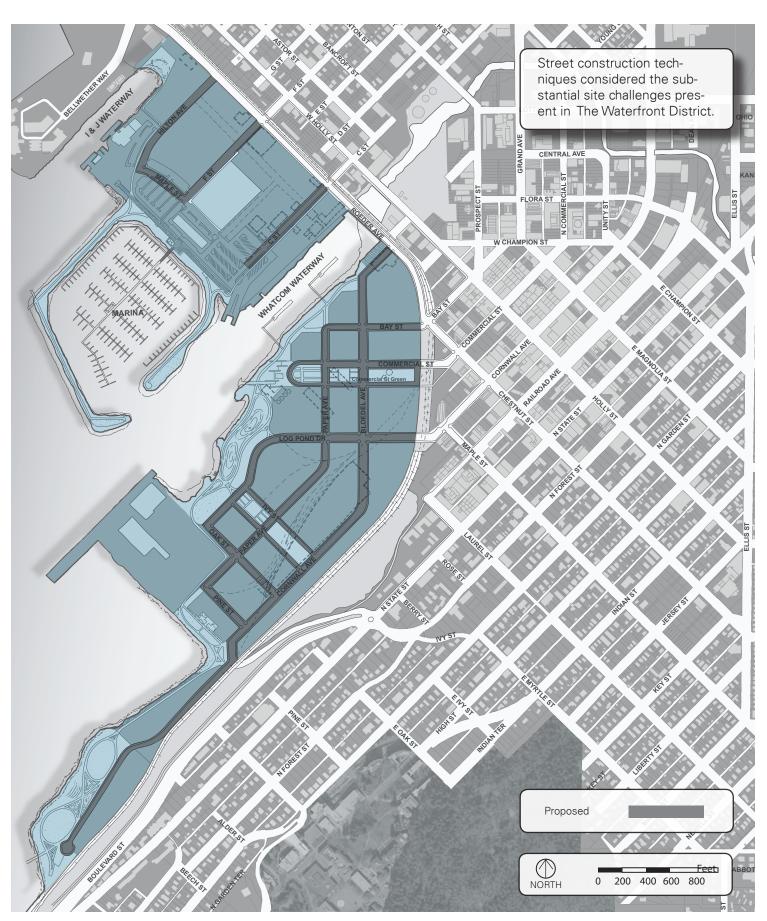
This scenario assumes the roadway to be constructed on retained fill with temporary side slope fill which would be removed prior to development.



Scenario C: Roadway on Bridge Viaduct

This scenario assumes the roadway to be constructed on a bridge viaduct.

Upon completion of the analysis it was determined that **Scenario A** would be the most cost effective in meeting all of the design considerations of the site. The following sections (6.6 and 6.7) give a description of the construction techniques proposed and are the basis for the infrastructure construction costs show in 9.0 Project Cost Estimates.



6.6 Street Network Construction Description

Many of the streets in The Waterfront District have similar construction characteristics. Streets have been grouped together by similar construction character and are described as Construction Areas. Several off-site improvements required to connect the Waterfront District to the existing city street grid are described as Off-Site Improvements.

Construction Areas*

Area 1

- 100' span bridges over the relocated railroad tracks at Log Pond Drive and Commercial St.
- Streets constructed on 11' of compacted fill above existing grade. Connecting streets from Bloedel Avenue to bridge abutment would require additional fill.
- Side slopes of compacted fill material built at a 3:1 ratio

Area 2

- Streets constructed on compacted fill varying in height from 11' above existing grade to 6' above existing grade (average fill depth 8.5')
- Side slopes of compacted fill material built at a 3:1 ratio

Area 3

- Streets constructed on compacted fill 6' above existing grade
- Side slopes of compacted fill material built at a 3:1 ratio

Area 4

- Streets constructed on compacted fill 6' above existing grade
- Side slopes of compacted fill material built at a 3:1 ratio

Area 5

- Streets constructed on compacted fill 6' above existing grade or on excavated and recompacted fill 6' in depth matching existing grades
- Side slopes of compacted fill material built at a 3:1 ratio

* All streets include an allowance to provide all city utilities, street landscaping, and street illumination

Off-Site Improvements**

Improvement 1

- Install a traffic signal at C Street / W. Holly St.
- Install a traffic signal at C Street / Roeder Ave
- Reconstruct C Street to a 3-lane roadway with sidewalks and storm drainage
- Install a railroad crossing signal 1

Improvement 2

- Convert Central Ave to a pedestrian corridor between W. Holly St. and Roeder Ave
- Upgrade the railroad crossing at the intersection of Central Ave and Roeder Ave
- Install a traffic signal along Roeder Ave at the proposed site access roadway

Improvement 3

 Demolish and rebuild the Bay and Chestnut St. bridge intersection to accommodate railroad height clearance requirements

Improvement 4

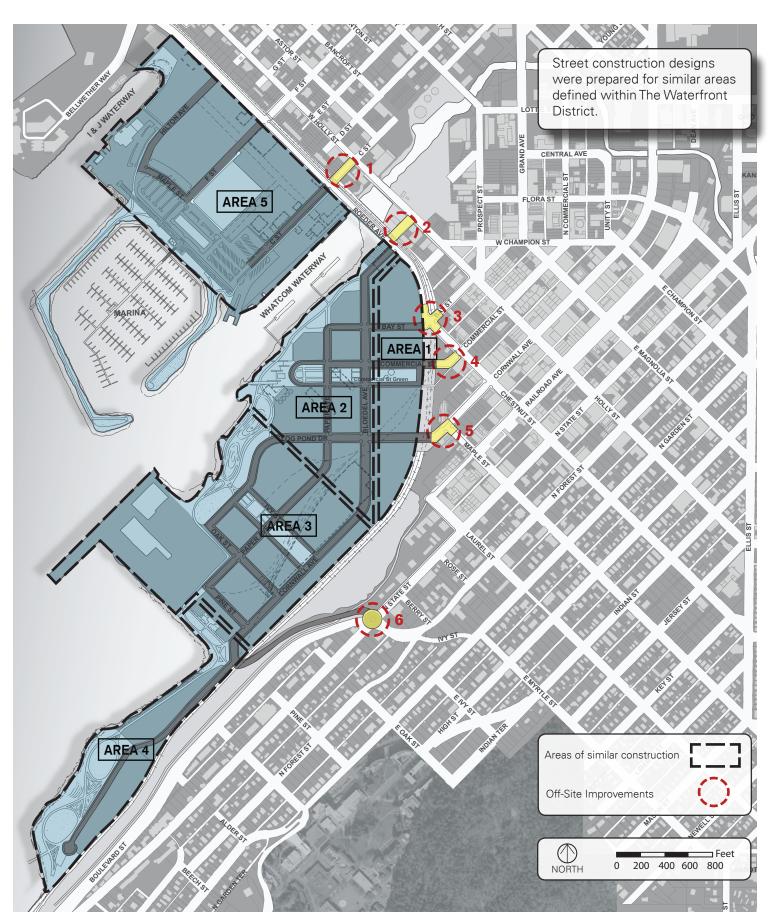
- Construct extension of Commercial St.. from Chestnut St. on compacted fill with retaining walls as a bridge abutment on the east side of the relocated railroad tracks
- Upgrade the traffic signal at the intersection of Commercial St. /W Chestnut St.

Improvement 5

Construct extension of Cornwall Avenue including reconstruction of the Maple St. intersection on compacted fill with retaining walls as a bridge abutment on the east side of the relocated railroad tracks to receive the Log Pond Dr. bridge

Improvement 6

- Construct a roundabout at the intersection of Wharf St. / State St., including pedestrian sidewalks and storm drainage
- **Does not include property acquisition for new ROW



6.7 Core Street Network

The Core Street Network is the minimum street network required for the Waterfront District to function as a cohesive urban environment. With the Core Street Network in place an acceptable level of development can be achieved by providing adequate access to the site, a core nucleus of streets in the Downtown Waterfront Area, and several access points to the waterfront parks network. The Core Street network would include:

Streets

Bloedel Avenue connecting from Roeder Avenue to Log Pond Drive

Commercial Street connecting from Chestnut Street to the Waterfront Park at the Whatcom Waterway

Paper Avenue connecting from Bay Street to Oak Street

Bay Street from Bloedel Avenue to Paper Avenue

Log Pond Drive from Bloedel Avenue to Paper Avenue

Oak street from Paper Avenue to Cornwall Avenue

Extend Cornwall Avenue from Wharf Street into the Cornwall Beach Park

Reconstruction of "C" Street approximately 900' east from Roeder Avenue

Reconstruction and extension of "F" Street approximately 900' east from Roeder Avenue

Relocation of Hilton Avenue

Maple Street between Hilton Avenue and "F" Street

Removal of Cornwall Street Bridge and addition of a cul-de-sac at the entrance to the CoGen Plant.

Removal of Laurel Street

Relocation of the Railroad adjacent to the bluff

Off-Site Improvements

Install a traffic signal at C Street / W. Holly St.

Install a traffic signal at C Street / Roeder Ave

Reconstruct C Street to a 3-lane roadway

Install a railroad crossing signal at C Street

Convert Central Ave to a pedestrian corridor between W. Holly St. and Roeder Ave

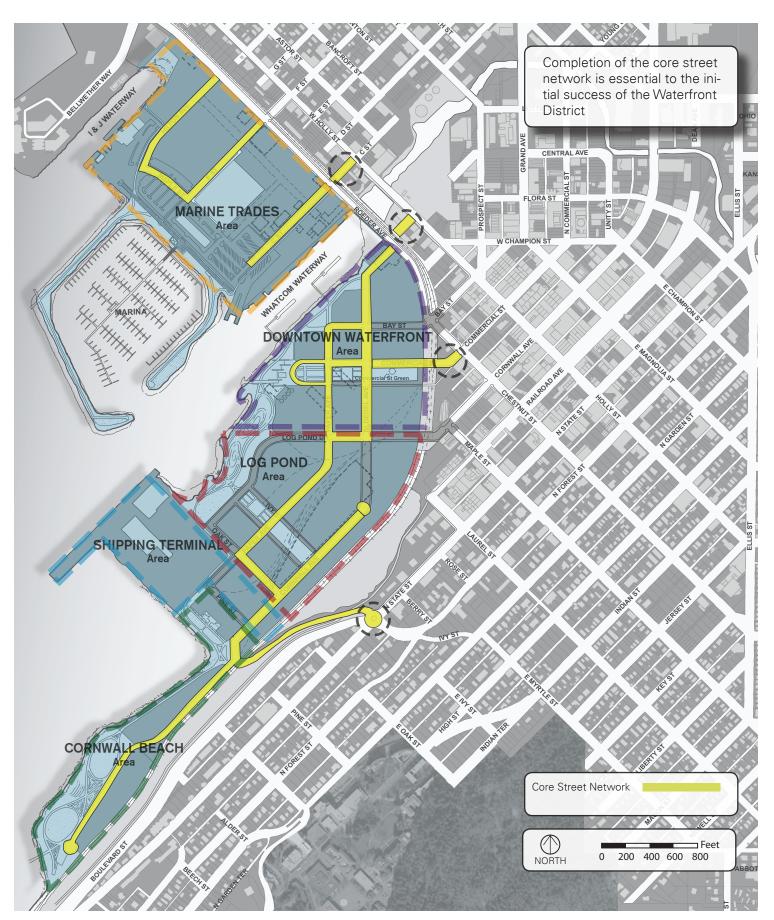
Upgrade the railroad crossing at the intersection of Central Ave and Roeder Ave

Install a traffic signal along Roeder Ave at the proposed site access roadway

Construct extension of Commercial St. from Chestnut St. on compacted fill with retaining walls as a bridge abutment on the east side of the relocated railroad tracks

Upgrade the traffic signal at the intersection of Commercial St. /W Chestnut St.

Construct a roundabout at the intersection of Wharf St. / State St., including pedestrian sidewalks and storm drainage



6.8 Street Sequencing

It is the intent of the street network to be sequenced to accommodate market driven development over time to construct an economically-responsible infrastructure network. As development increases, certain development thresholds will trigger additional street improvements required to accommodate the additional development capacity.

It is envisioned it will take eight sequence steps to develop the core street network to achieve a development capacity of 3,900,000 s.f of mixed uses to support the key objectives of the Proposal. Additional improvements would be required to accommodate the additional 1,100,000 s.f. of development to achieve ultimate build-out in 2026. In addition, these steps would also include off-site infrastructure improvements that would be required to support on-site activities.

The timing of each sequence is dependent on many factors that include working around an existing active railroad, locations of existing uses, and existing infrastructure constraints. The proposed



strategy of street sequencing was established based on three requirements: 1) add infrastructure in a step-wise sequence to support the development phasing described

in Section 5.7, 2) support the creation of a new "gateway" connection between the waterfront and downtown as early as feasible, and 3) coordinate the installation of the street grid with the early and efficient relocation of the Burlington Northern Railroad from the center of the site to the bluff.

Core Street Network

The Core Street Network is the network that serves as a the foundation to support the community in the early stages of development – while providing long term flexibility for additional improvements as development increases over time.

This network was analyzed from a sequencing standpoint to insure adequate level of service is provided as development is incrementally added. Each sequence includes a project description, any off-site improvements required and the total development capacity obtainable by each improvement. These sequencing steps have been extensively analyzed to address existing conditions, feasibility and any fatal flaws to ensure.

Summary of Core Street Sequencing

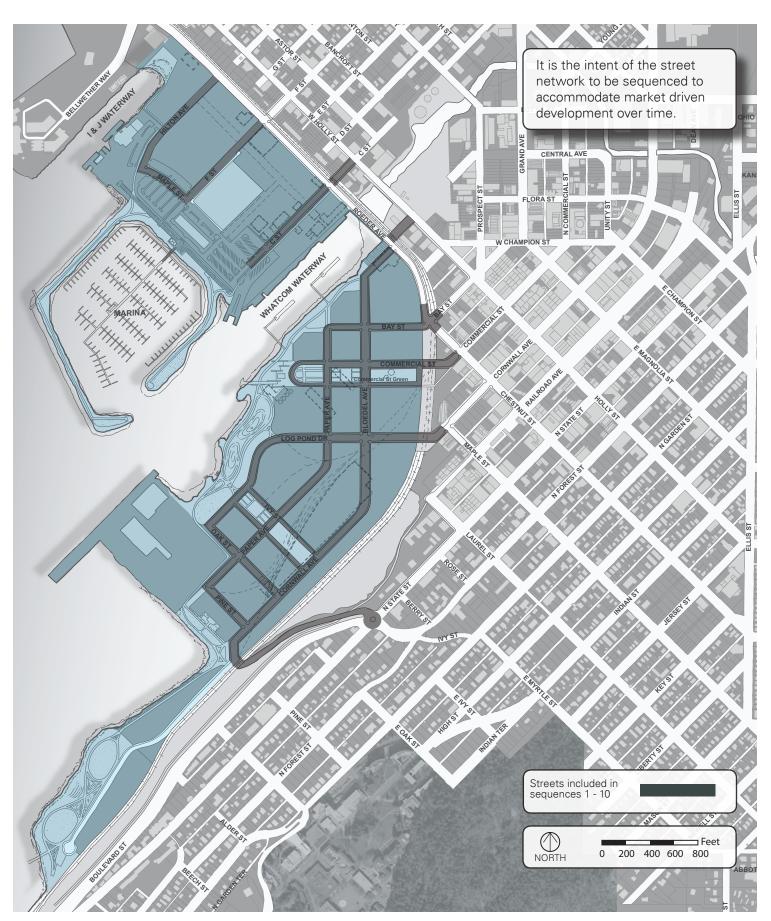
- **1.** Build Bloedel Avenue, Hilton Avenue, C Street and convert Central Avenue between Holly Street and Roeder Avenue to pedestrian access only.
- **2.** Improve Wharf/State intersection and improve F Street.
- **3**. Build Paper Avenue/Bay Street (connect to Bloedel Avenue.
- 4. Extend Paper Avenue (connect to Cornwall Avenue).
- **5.** Construct Commercial Street Bridge extend to Bloedel Avenue.
- **6.** Demolish Cornwall Bridge and relocate BNSF Railroad. Rebuild temporary Bloedel Avenue and Log Pond Drive connections.
- **7.** Build Log Pond Drive bridge connection to existing Cornwall Avenue.
- **8**. Build Log Pond Drive between Paper Avenue and Oak Street / Ivy Street.

Total Development Capacity = 3,900,000 s.f.

In order to achieve additional development and reach the ultimate build-out capacity, at least two of the following improvements would be required:

- Construct Bay Street Bridge
- •Construct Chestnut Street Bridge over Waterway
- Provide Increased Public Transit Options
- Other Trip Reduction Options

These improvements would allow for total



Project Description

Build Bloedel Avenue, Hilton Avenue, C Street and convert Central Avenue between Holly Street and Roeder Avenue to pedestrian access only.

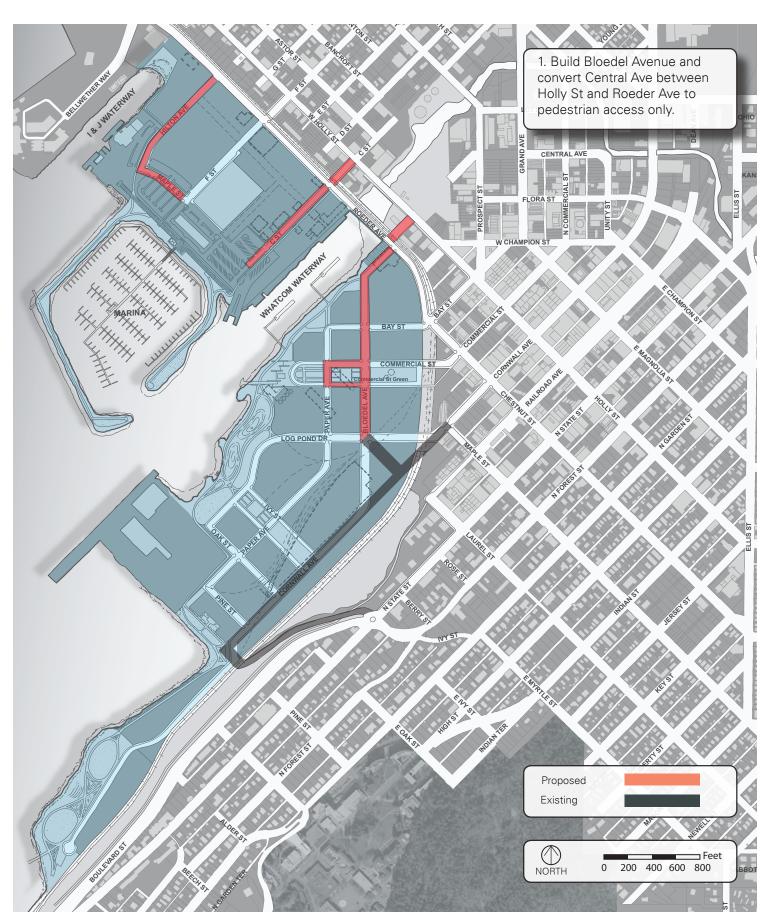
Off Site Improvements

Signalize intersection at Central Avenue / Roeder Avenue, reconstruct C Street, and add traffic signals at Holly and Roeder.

Development Capacity

North of Whatcom Waterway 500,000 g.s.f South of Whatcom Waterway 1,300,000 g.s.f Total **1,900,000 g.s.f.** (32% of total development)

Development Timing



Project Description

Improve Wharf/State intersection and improve F Street.

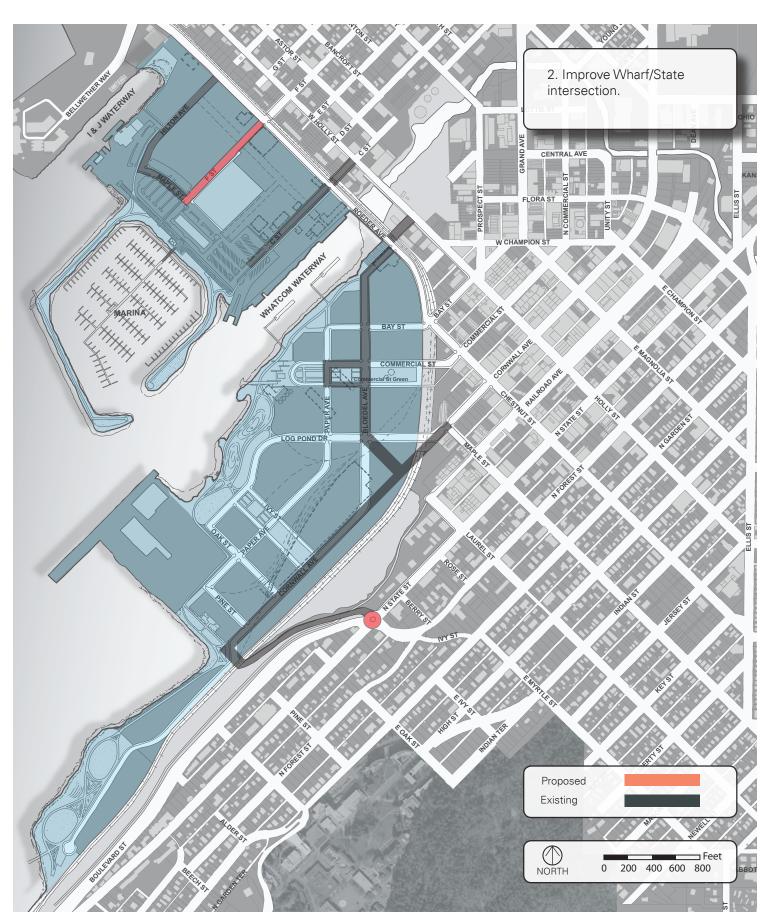
Off Site Improvements

Build roundabout at Wharf/State/Boulevard intersection.

Development Capacity

North of Whatcom Waterway 800,000 g.s.f. South of Whatcom Waterway 2,100,000 g.s.f. Total **3,000,000 g.s.f.** (50% of total development)

Development Timing



Project Description

Build Paper Avenue/Bay Street (connect to Bloedel Avenue.

Off Site Improvements

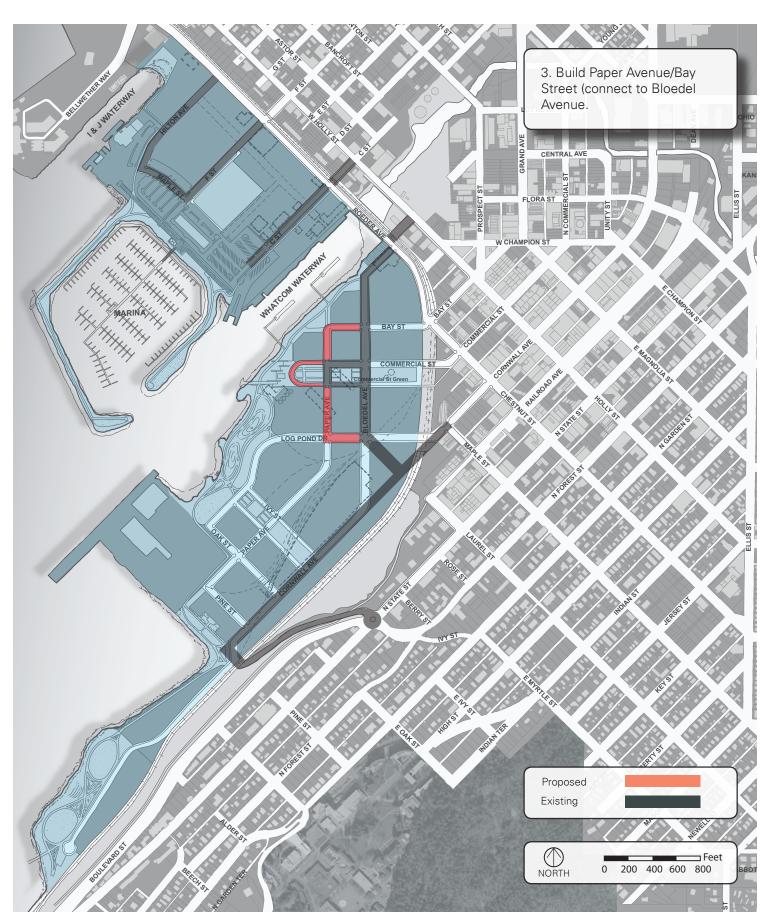
None

Development Capacity

North of Whatcom Waterway 800,000 g.s.f. South of Whatcom Waterway 2,100,000 g.s.f.

Total **3,000,000 g.s.f.** (50% of total development)

Development Timing



Project Description

Extend Paper Avenue (connect to Cornwall Avenue).

Off Site Improvements

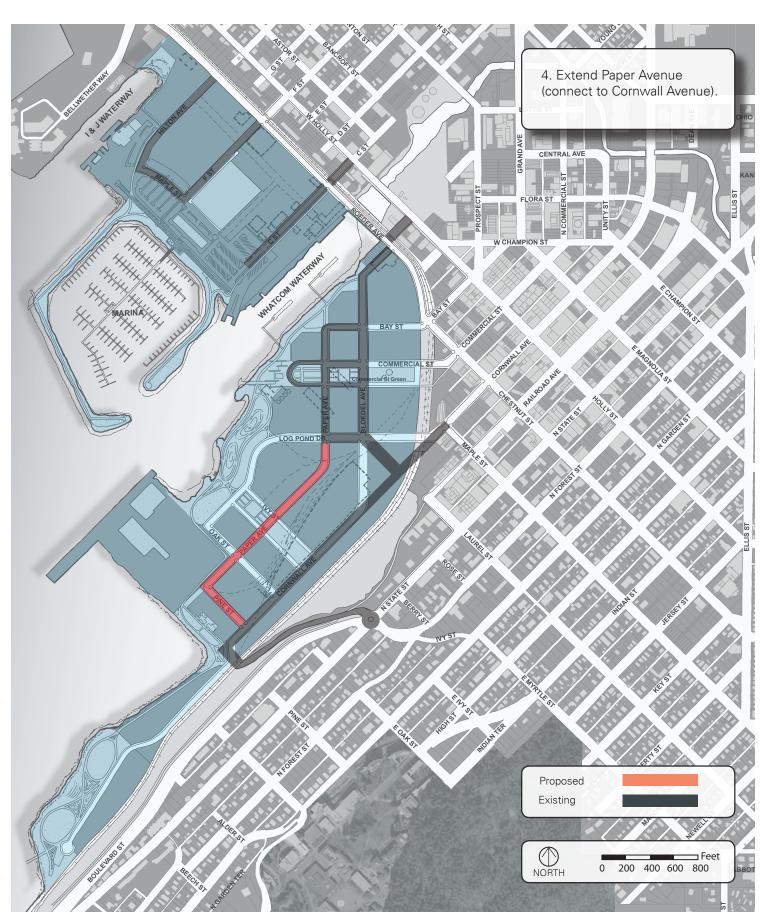
None

Total Development Capacity

North of Whatcom Waterway 900,000 g.s.f. South of Whatcom Waterway 2,300,000 g.s.f.

Total **3,300,000 g.s.f.** (55% of total development)

Development Timing



Project Description

Construct Commercial Street Bridge - extend to Bloedel Avenue.

Off Site Improvements

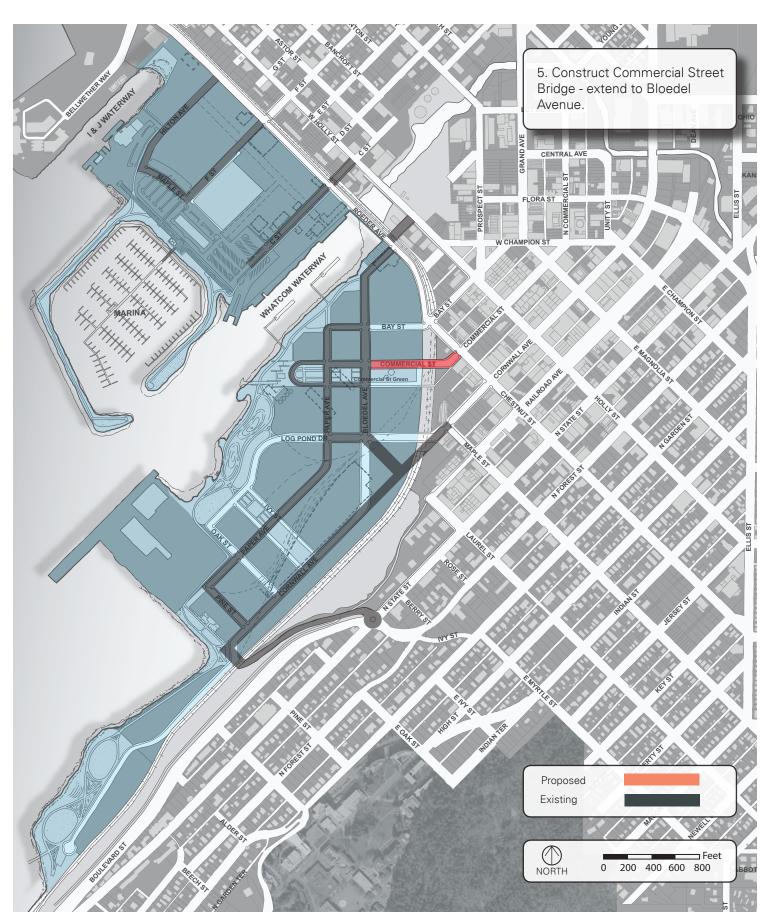
None

Total Development Capacity

North of Whatcom Waterway 1,000,000 g.s.f. South of Whatcom Waterway 2,600,000 g.s.f.

Total 3,600,000 g.s.f. (60% of total development)

Development Timing



Project Description

Demolish Cornwall Bridge and relocate BNSF Railroad. Rebuild temporary Bloedel Avenue and Log Pond Drive connections.

Off Site Improvements

None

Total Development Capacity

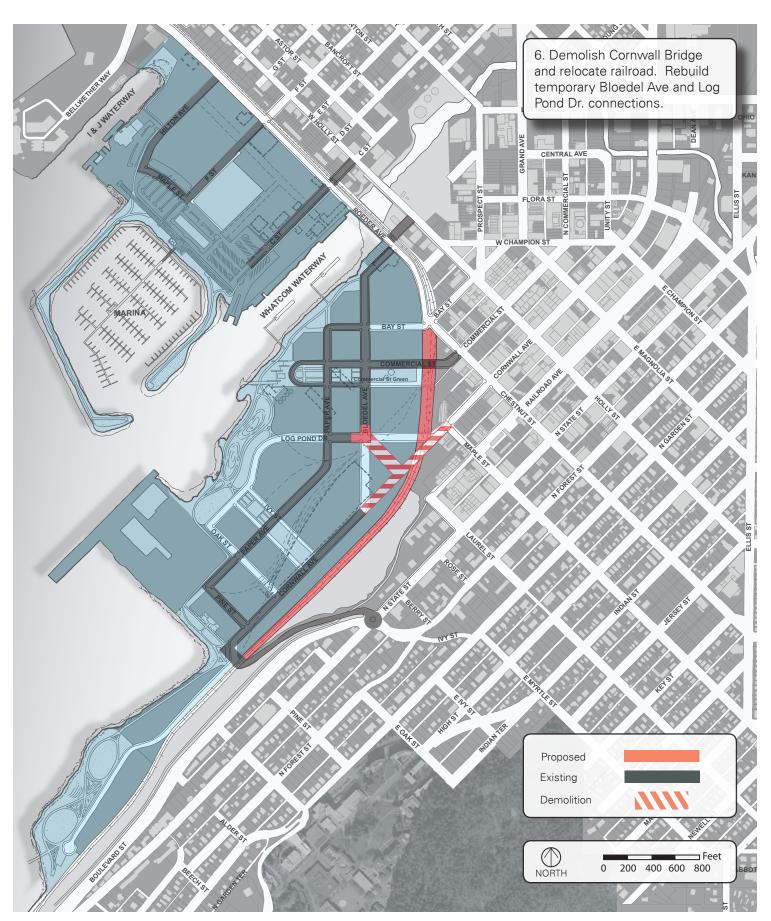
North of Whatcom Waterway 1,000,000 g.s.f. South of Whatcom Waterway 2,600,000 g.s.f. Total **3,600,000 g.s.f.** (60% of total development)

Development Timing

TBD

Level of service decreases due to demolition of Cornwall Bridge.

As described in section 6.7 Core Street Network, completion of this sequence of work represents the full buildout of the Core Street Network.



Project Description

Build Log Pond Drive bridge connection to existing Cornwall Avenue.

Off Site Improvements

Upgrade Maple Street corridor, including intersection traffic control improvements at Cornwall Avenue, State Street and Forest Street.

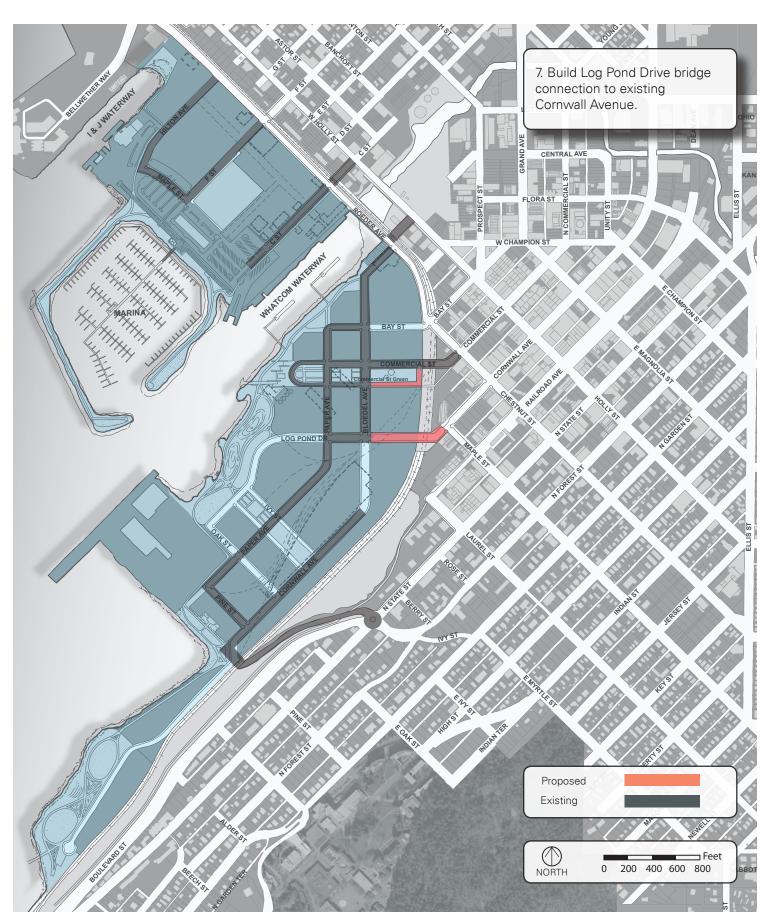
Total Development Capacity

North of Whatcom Waterway 1,000,000 g.s.f. South of Whatcom Waterway 2,600,000 g.s.f. Total **3,600,000 g.s.f.** (60% of total development)

Development Timing

TBD

Replaces Cornwall Bridge capacity - level of service returns.



Project Description

Build Log Pond Drive between Paper Avenue and Oak Street / Ivy Street.

Off Site Improvements

None

Total Development Capacity

North of Whatcom Waterway 1,100,000 g.s.f. South of Whatcom Waterway 2,800,000 g.s.f.

Total **3,900,000 g.s.f.** (65% of total development)

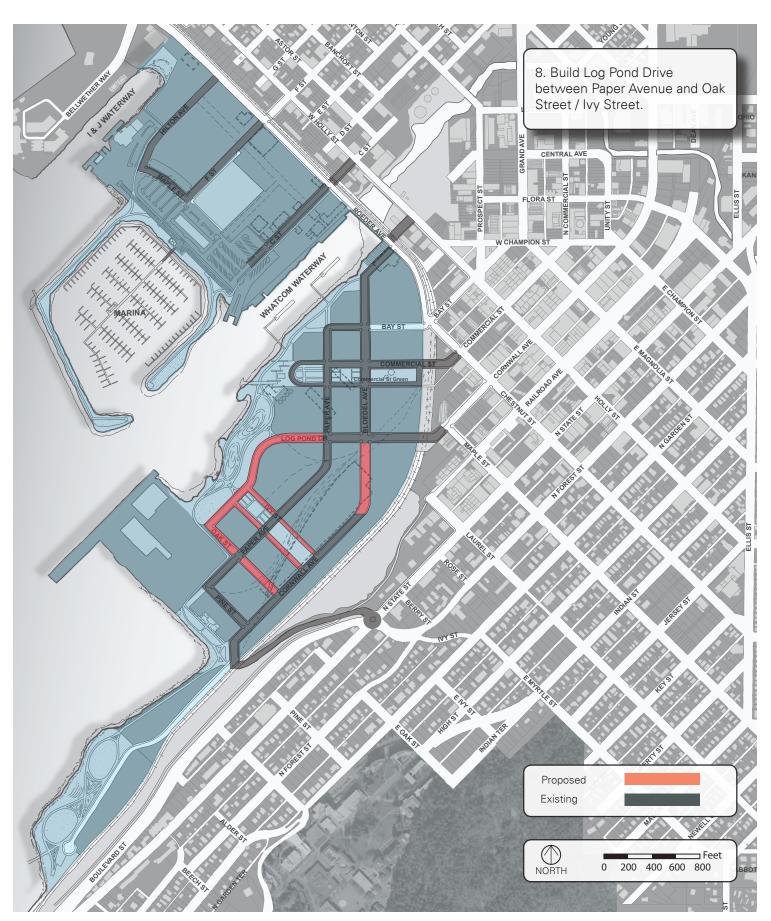
Development Timing

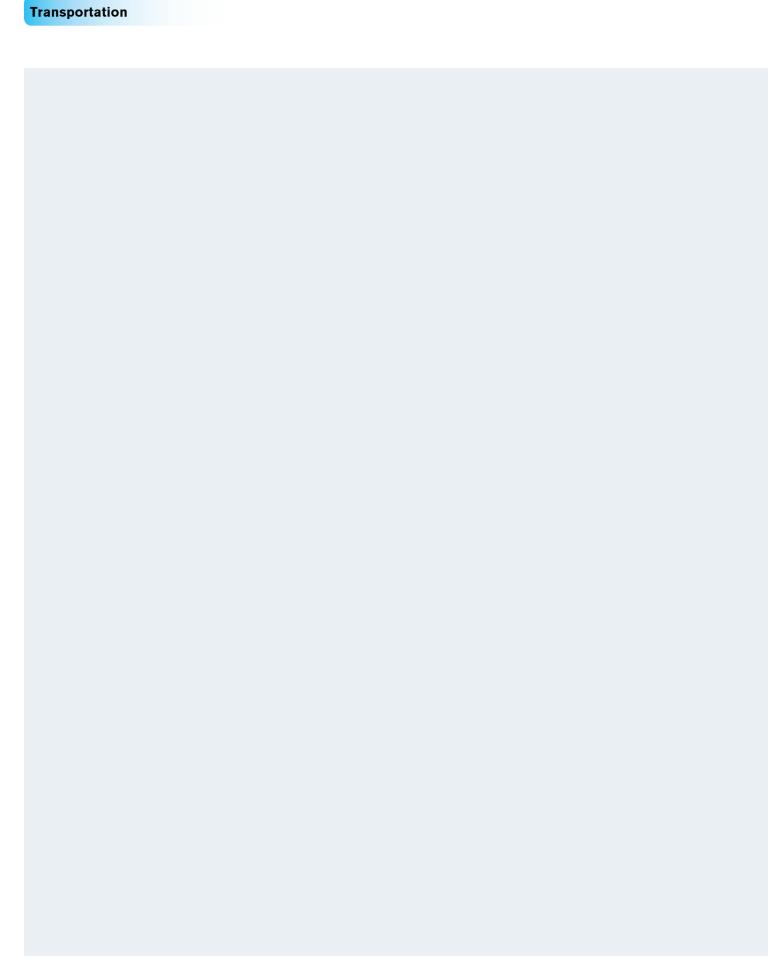
TBD

In order to achieve additional development and reach the ultimate build-out capacity, the following improvements would be required:

- 1. Construct Bay Street Bridge
- 2. Construct Chestnut Street Bridge
- 3. Provide Increased Public Transit Options
- 4. Other Transit Options

These improvements would allow for total development capacity to equal **6,000,000 s.f.**





7 Parks, Trails & Habitat



7.0 Parks & Open Space

One of the most significant elements of this redevelopment project is that it will provide people with numerous new areas of waterfront access through the creation of new parks, trails and boating facilities.



These signature parks and trails will link Downtown Bellingham to the waterfront and will feature outstanding areas to walk, play and experience the waterfront.

They also will provide linkages to the Millennium Trail system and other local trail networks.

Similar to the transportation system, the parks and open space amenities will be phased in as the site develops. Each phase of development will be accompanied by the creation of new public recreational areas.

This Proposal suggests elements of various park



developments, but recognizes that community discussion and Bellingham Parks Department direction will further guide the details of the parks and open spaces in The Waterfront District.

For this Proposal, approximately **18%** of The Water-front District will be dedicated to parks, trails and habitat equaling approximately **33 acres** in a variety of configurations, serving the variety of land uses in the project and fulfilling its stature as a regional attraction.

Marine Trades Area	7.48 acres	
Central Waterfront Area	8.77 acres	
Log Pond Area	6.24 acres	
Shipping Terminal Area	0.32 acres	
Cornwall Beach Area	10.25 acres	

Total 33.06 acres

The Waterfront District will serve as an important linkage in a developing regional system of waterfront walks and trails, which otherwise would skirt the site's boundaries with minimal access to Bellingham Bay.

The entire Waterfront District will celebrate the public value of waterfront parks and open space by dedicating the majority of its shoreline to public access and amenities. This will benefit the community as well as residential or office development fronting onto waterfront parks. The precise scale and arrangement of parks, trails and habitat will be determined by the future Master Plan according to relationships with future building footprints and streets, which will also determine more precise ac-

cess points.



The parks and open spaces will allow a wide range of passive and active uses as described below. It is the intention of these areas to be public

spaces. Once development occurs within The Waterfront District, there may also be private spaces within development parcels, such as courtyards and roof gardens. It will be critically important for designers to pay close attention to the transition between private and public spaces.

Marine Trades Area (7.48 acres)

The parks and open spaces within this area will create dramatic new public access trails along the top of the breakwater to the Clean Ocean Marina. People that walk to the outer end of the breakwater will experience an unencumbered feel of Bellingham Bay and unique views eastward to the city center, Western Washington University and Sehome Hill. Other trails will connect the marina to the I&J Waterway and Bellwether Peninsula.

Parks, Trails & Habitat

A new beach park will be created at the northern end of the I&J Waterway for passive uses associated with hand-carry boat launching, exploring the beach or contemplating nature. Some shoreline habitat may be enhanced at this park and along the Waterway. A shared pedestrian and bicycle shoreline trail running along Hilton Avenue and near the proposed Terraquarium will merge with a wide boardwalk fronting the future Marina.

A public trail with seating will extend along the



length of this breakwater, ending at overlooks and pockets of lawn overlooking the Marina entrance. From a proposed boat launch adjacent to the northeast corner of the Marina, a

trail or wide sidewalk connection (referred to as the Warehouse Trail) will extend south along C Street from Roeder Avenue to intersect with the Shoreline Trail.

Downtown Waterfront Area (8.77 acres)

Maritime Heritage Park will seamlessly link to the waterfront as the new park and trail areas take shape in the Downtown Waterfront Area. Most of the water frontage along Whatcom Waterway will become a public park. The existing waterfront edge is a wharf or bulkhead on pilings, which may remain in front of the Granary Building, but will be softened or cut back to provide a more natural edge along the remainder of Whatcom Waterway. Although the wharves provide a compelling reminder of the marine history, the environmental impacts of leaving the treated pilings and overwater shading in place outweigh the aesthetic qualities from incorporating the bulkheads into new park designs.

The Waterfront District will be connected with the Maritime Heritage Park and the Whatcom Creek Trail beyond to the north of Holly Street. The Shoreline Trail will extend south through the Waterfront District, leading eventually to Boulevard Park via an over-water boardwalk from the Cornwall

Avenue Park. The trail may be designed as a wide esplanade with benches, a railing and ornamental lighting along the top of the restored shoreline bank. This esplanade will merge with wide walks in front of waterfront mixed-use buildings, which will encourage cafes and restaurants to incorporate outdoor seating along the walk. The width or depth of the park in this area will be influenced by shoreline regulations and development footprint locations.

On-street parking along waterfront park frontage roads and surrounding streets should be adequate for park usage. The park space in this area will feature landscaped pockets, seating and spaces for passive recreation on lawn or turf between the Shoreline Trail and adjoining development. Areas between the trail and the water's edge will likely feature habitat restoration and will limit public water access to docks, overlooks or specific beaches formed when the bulkheads are removed and the banks are softened.

Log Pond Area (6.24 acres)

This Area will provide one of the most prominent signature parks for the development with the Log Pond Park placed in the center of the shoreline area. Here people will experience soft-bank shoreline similar to the Port's Marine Park facility in Fairhaven. Fronting onto the restored log pond, this park will offer a mixture of naturalized shoreline habitat as well as public overlooks and some water access via small beaches.

The existing log pond shoreline may be reconfigured for more optimal habitat creation, reconfigur-



ing remaining industrial shoreline. Upland areas will probably include large amounts of lawn space to promote active but informal public recreational usage. This might include pick-up ball games or Frisbee

as well as festivals or

concerts. In appropriate locations this park might include children's play areas, fountains and tennis or basketball courts. Passive uses might include

simple, informal outdoor leisure activities such as picnicking, sunbathing and exercising. A dog run or similar dedicated dog walking area may also be appropriate. The higher-intensity usage of this park may warrant small restroom and changing facilities and may also allow for the construction of concession facilities such as a café, restaurant or snack bar, similar to the one found at Boulevard Park. On-street parking along a waterfront park frontage road and surrounding streets should be adequate for park usage.

A portion of the park may serve as an open space for a branch campus of Western Washington University. This will present interesting opportunities for the park to extend into the academic facilities and perhaps incorporate classic formal elements of campus landscape design such as quads or malls. The transition from the campus open space to the



more public areas of the waterfront park will offer interesting design opportunities. The wide shoreline trail described within the Downtown Waterfront Area will continue through the Log Pond Area.

Shipping Terminal Area (0.32 acres)

The ideal pocket beach in the Shipping Terminal area already has been discovered by the community as the perfect place to launch a kayak, enjoy a picnic or watch a sunset over Lummi Island. This will become a formalized beach park, perhaps with parking, restroom and changing facilities and a small craft launching area. A small lawn area could provide gathering space and a location for boaters to prepare for launching, while areas adjacent to the beach may be restored to natural conditions to provide essential wildlife habitat. The trail extending from Boulevard Park to the south through Cornwall Avenue Park will pass through this park.

Cornwall Beach Area (10.25 acres)

The Cornwall Beach Area will provide one of the largest parks largest parks in The Waterfront District, similar in size and experience to Boulevard Park, including a long natural beach for diverse recreational experiences. This park, once a landfill, will provide some of the same amenities as the Log Pond Park but will likely be more passive and informal in nature with large areas of lawn shaded by trees and punctuated by native shrub beds. This may be a good location for a small amphitheater for concerts with a stunning natural backdrop.

The shoreline will be restored, with native plantings on the existing degraded foreshore and perhaps the creation of widened beaches. This entire area is a landfill so such shoreline reshaping may be required in some areas to cap and restore the shoreline. The park will include longer stretches of publicly-accessible and walkable beach.

This park will enable the realization of long term goals of connecting Cornwall Beach with the existing over-water trail from Boulevard Park and the Taylor Avenue Dock to the south. This trail will wind through Bay Park and intersect with a looping system of pedestrian trails or walks weaving through the park.

New residential development at the south end of Cornwall Avenue will overlook this park, provid-



ing an amenity for residents and also ensuring continued supervision of the park. This park could also be accessed in the future via a bridge and stair over the railway tracks from the South Bay Trail.

7.1 Marine Trades Area Park and Open Space Plan

Some of the most sweeping bay views and oneof-a-kind experiences will be enjoyed in the Marine Trades Area.

This diagram represents the park and open space plan and supporting program elements for the Clean Ocean Marina and Marine Trades Area. Parks and trails in this area will provide public access to the I&J Waterway as well as the Whatcom Waterway and will be developed over time to support development patterns.

This environment enables public waterfront access along the I & J Waterway and the Whatcom Waterway. Total park, trail, open space and habitat environment for this Area is 7.48 acres. This includes upland and marina and breakwater environment.



I&J Waterway Park

- Gateway to Waterfront District
- Informal turf area
- Tidal habitat enhancement
- Bird watching
- Kayak launch
- Beach access
- "Maritime industry-watching"



Marina Boardwalk

- 20'-30' wooden boardwalk
- Bike lane adjacent
- Seating
- Small-boat watching
- Habitat on 'banks' of Marina



Marina Center Plaza

- Gathering place, spillover from Marina Center retail or activities
- Drop-off for private vessel passengers
- Restroom and Gatehouse



Marina Causeway

- 10-16'-wide path on top
- Wildlife viewing
- Small-boat watching
- Overlooks



Boat Launch Park

- . Dock for small craft tie-up
- Wildlife viewing
- Overlooks
- Shoreline habitat



7.1 Downtown Waterfront Area Park and Open Space Plan

Parks and open spaces in this Area of The Waterfront District will link the site with the city's Maritime Heritage Park, creating a sweeping park experience from the historical Whatcom Museum down to the shores of the Whatcom Waterway. This area includes the shoreline along the south side of the Whatcom Waterway that would be developed over time to support development patterns.

This diagram represents the park and open space plan and supporting program elements for the Downtown Waterfront Area. Total park, trail, open space and habitat environment for this Area is **8.77 acres.** This does not include the Commercial Street Green north of Paper Avenue.



Central Avenue Pier

- · Bird Watching
- · Estuarine habitat overlook
- · Gateway to District, gatherings

Central Avenue Beach

- Seating
- Steps to beach
- Watercraft launch



Habitat Renaturalization

- Native and climate-adaptive plantings on bank and in created coves or eddies
- For full habitat value, water's edge not always publicly accessible
- · Overlooks from trail offer seating and interpretation



Waterway Docks

- 10-15' wide, floating
- Small watercraft launch
- Fishing
- Wildlife viewing



Waterfront Trail

- . 16' concrete or asphalt trail for bikes and pedestrians.
- Include overlooks at key vantage points as well as benches at regular intervals.



Waterfront Square

- Heart of The Waterfront District
- Special events, concerts, markets
- · Spray fountain for child's



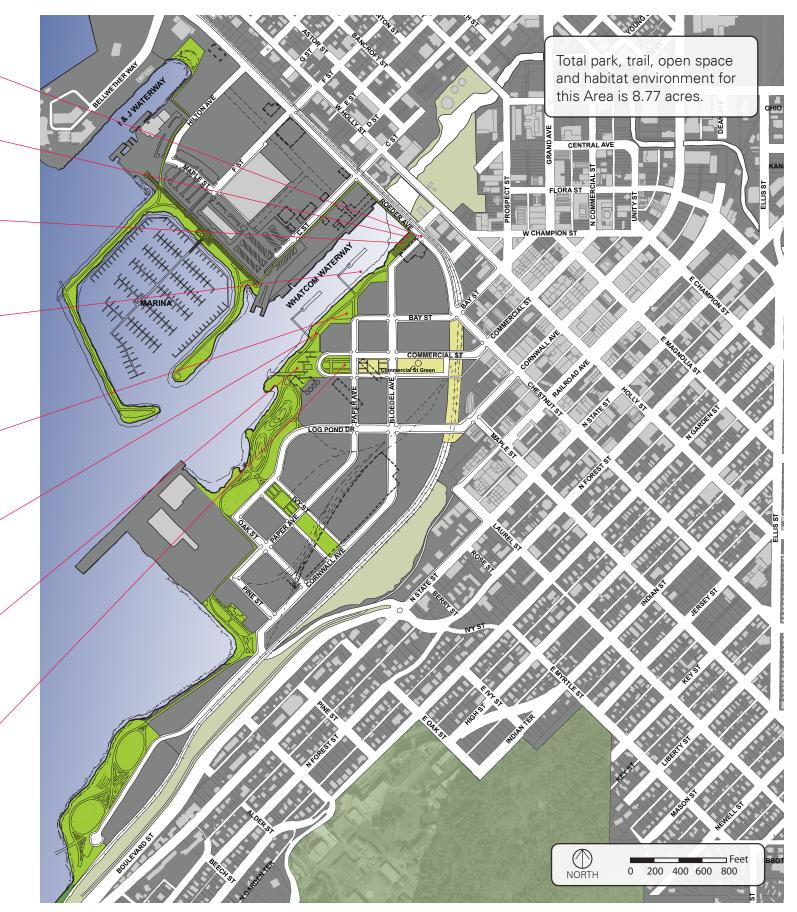
Commercial Avenue Pier

- Bird watching
- Overlook, bay views
- Special, small events



Commercial Street Green

- 125'-150' wide curb-curb
- Small plazas for monuments or children's play areas
- · Potential markets, art events, concerts
- Privately-owned, publicly managed
- · Seating along urban walks, under shade trees



7.1 Log Pond Area Park and Open Space Plan

A soft shoreline with a centrally located park, the Log Pond Area will anchor the finest qualities of The Waterfront District by providing beach access alongside established habitat areas that would be established over time to support adjacent development patterns.

This diagram represents the park and open space plan and supporting program elements for the Log Pond Area. This area also is alongside the south side of the Whatcom Waterway. **Total park, trail, open space and habitat environment for this Area is 6.56 acres.**



WWU Campus

- Quad or mall framed by WWU buildings
- Open lawn for informal student gathering and recreation
- Potential for concerts, eventsSeating along walkways, under
- shade trees
 Form depends on WWU program



Log Pond Park

- Lawn for informal gathering and recreation (frisbee, ball games, picnics)
- Potential for concerts, events
- Seating along walkways, under shade trees, views to water
- Potential mounds to enhance views of Bellingham Bay



Log Pond Beach

- Created habitat along foreshore
- Open tidal beach and mudflat with focused public access to water's edge



Habitat Renaturalization

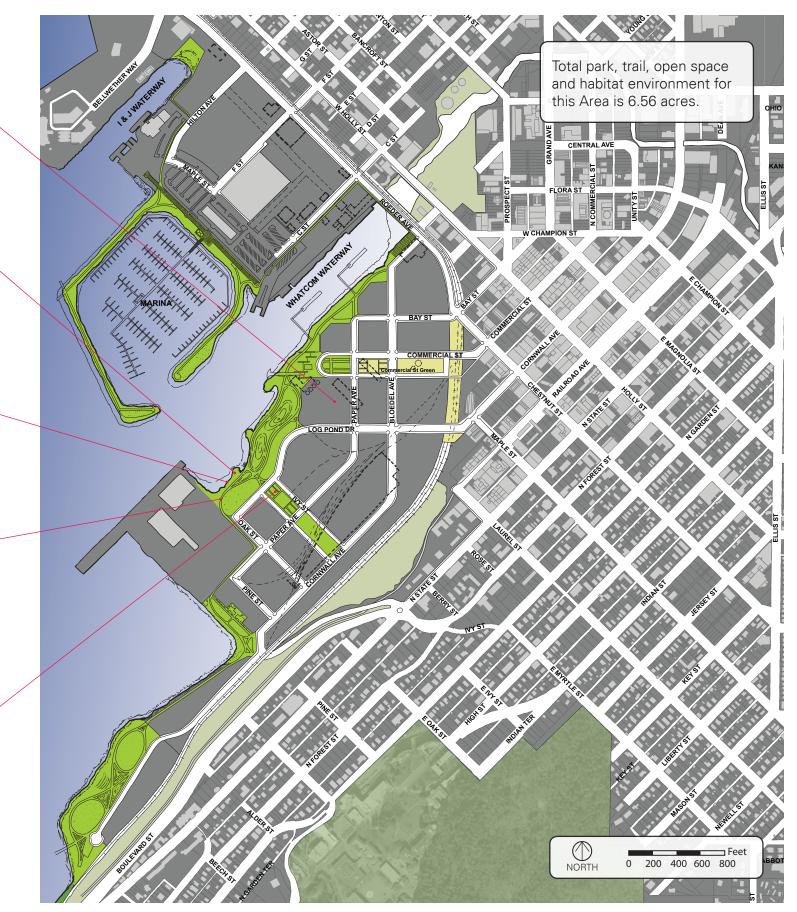
- Native and climate-adaptive plantings on bank and in new marsh
- For full habitat value, water's edge not publicly accessible
- Sewer treatment water outfall



Ivy Street Green

- Native plantings
- Seating along urban walks
- Shade trees at perimeter





7.1 Cornwall Beach Area Park and Open Space Plan

The Cornwall Beach Area will offer the largest park and open space areas for people to enjoy, as well as a future linkage to Boulevard Park. These parks and trails would be established over time to support adjacent development patterns.

This diagram represents the park and open space plan and supporting program elements for the Cornwall Beach Area. This Area allows public waterfront access along the Bellingham Bay. **Total park, trail, open space and habitat environment for this Area is 10.25 acres.**



Cornwall Cove

- Kayak/canoe launch
- Bird watching
- Public beach
- Bike trail crossroads, links to Millennium Trail
- Offshore habitat enhancement



Bayshore Trail

- 12' min. shared bike/ped trail
- Bird watching
- Public shoreline
- Shoreline habitat enhancement



Bay Park

- Major regional bike trail
- Lawn for informal gathering and recreation (frisbee, ball games, picnics)
- Beach access
- Habitat restoration
- Informal amphitheater
- Seating along walkways, under trees
- Landscape transitions





Boulevard Park Connection

- 12' min. shared bike/ped trail
- Over-water trail to avoid beach impacts, routed to avoid eelgrass beds



7.2 Shoreline Environment

The mixed-use character of the proposed development will bring long-term benefits by establishing compatible waterfront uses along the shoreline. The intent is to provide a shoreline that has multiple environments that add several dedicated locations for public access along the waterfront.

The development will restore the natural shoreline habitat on large portions of the existing waterfront



shoreline (south shore of the Whatcom Waterway, Cornwall Beach, and the perimeter of the Cornwall Landfill)

Almost no public access to the shoreline is presently available at the site. The proposed development will provide the community and visitors with access to approximately 80% of the shoreline in The Waterfront District. The remaining shoreline will be reserved for water dependent and water related marine access and uses.

Economic development will be promoted by providing a mix of uses along the shoreline. The shipping channels at the I&J Waterway and portions of the Whatcom Waterway will be preserved to encourage future water-dependent and related uses along these shorelines.

Parks and public access along the shoreline will be developed to balance access with habitat restoration and protection.

No recreation opportunities are presently available on the site. Parks for passive and active recreation, including kayak launch, walking, bicycling, frisbee, etc. will be provided in parks and trails along the south shore of the Whatcom Waterway. Since no natural shoreline is present, the addition of these



areas will not cause the net loss of any shoreline habitat at the site.

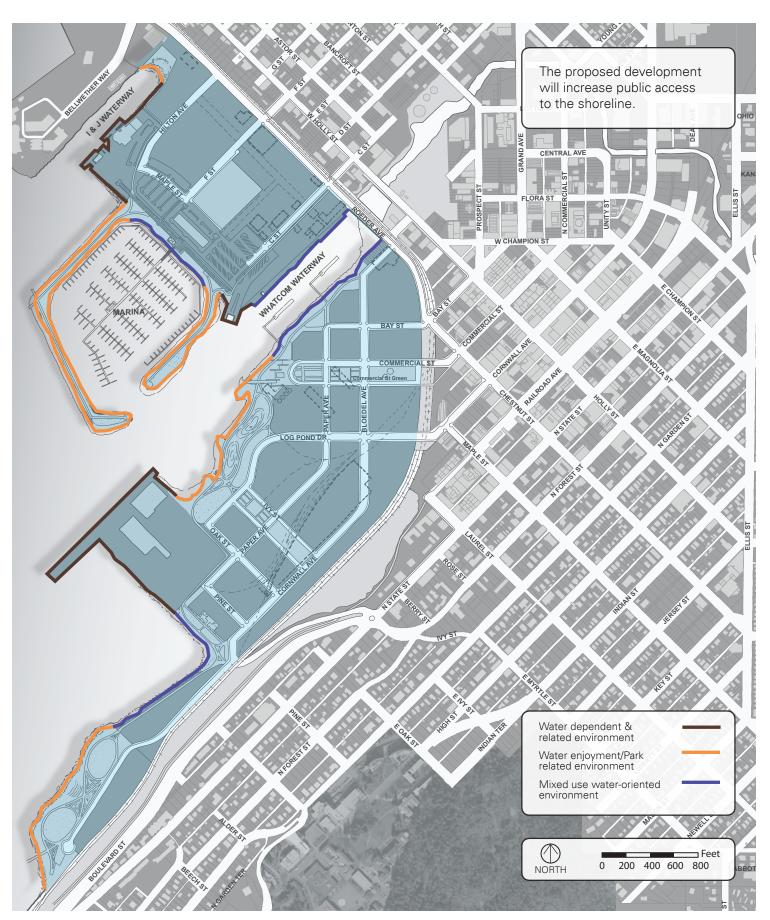
Any historic buildings or artifacts (including the existing

wharf) along the shoreline will be documented, and the knowledge derived from the documentation will be preserved (see 3.5 Historic Resources for additional information).

Water quality will be improved through creation of new habitat, completion of the comprehensive Whatcom Waterway and site cleanup, and in response to discontinued mill operations. All new stormwater systems that drain streets, sidewalks and parking areas will include raingardens or equivalent secondary filtration components.

The potential exists to create two separate storm water systems that drain building roofs and road-way run-off independently. Existing direct runoff into Bellingham Bay from the site could be captured and filtered prior to discharge.

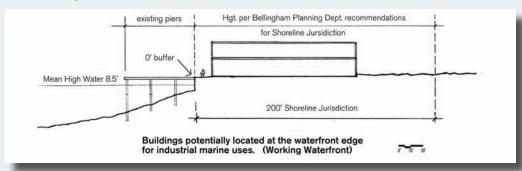




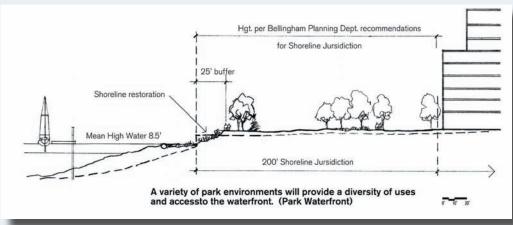
7.2 Shoreline Environment

As previously discussed, the mixed use character of the proposed development will bring long-term public benefits by increasing public access, improving habitat and establishing compatible waterfront uses along the shoreline. The intent is to provide a shoreline that has multiple environments that add several dedicated locations for public access along the waterfront.

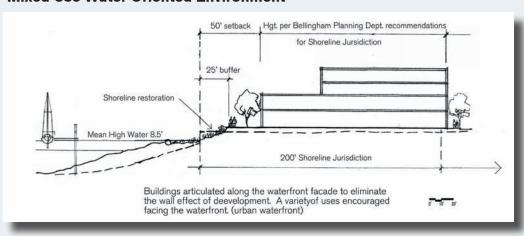
Water Dependent & Related Environment

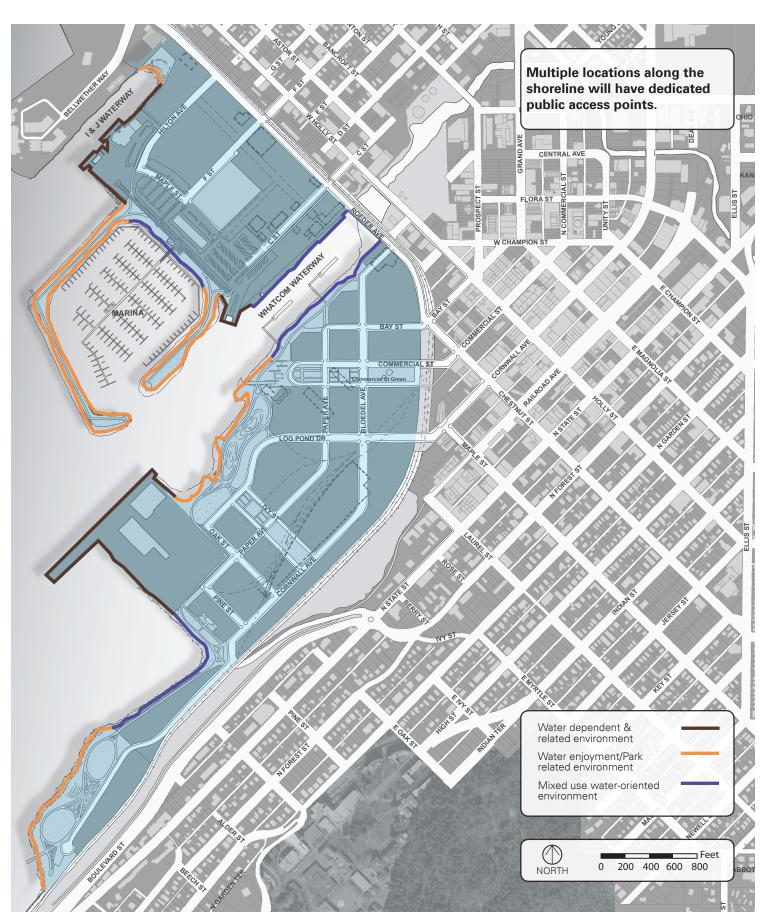


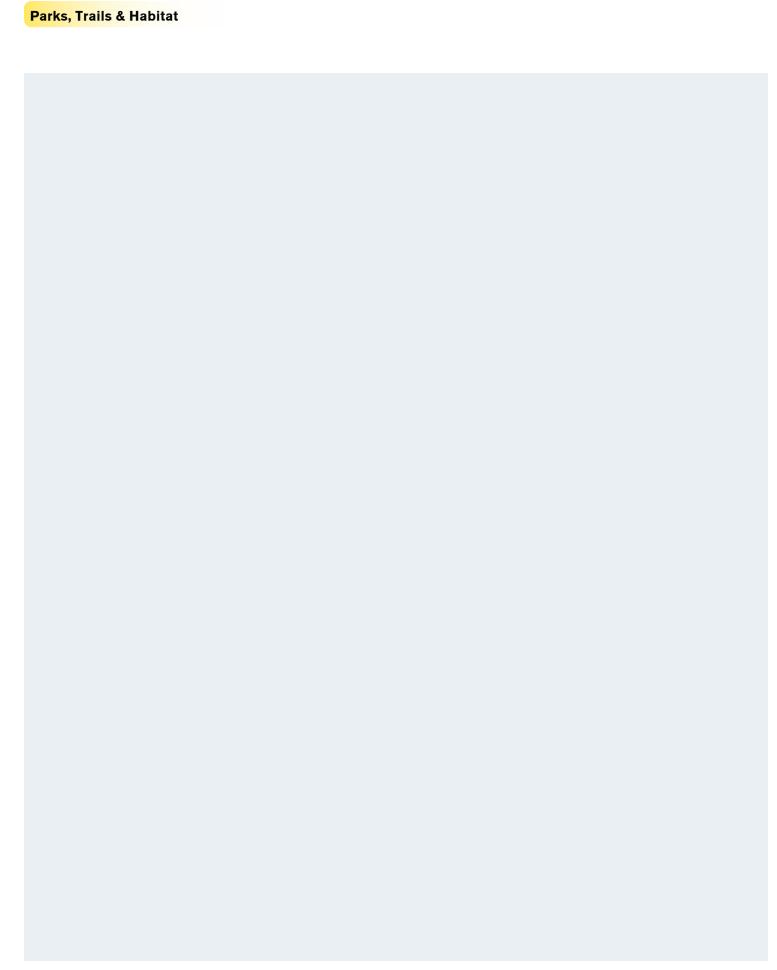
Water Enjoyment / Park Related Environment



Mixed Use Water Oriented Environment







8 Utilities



8.0 Utilities

Redevelopment of The Waterfront District will require connections to existing utility infrastructure systems. Stormwater, water and wastewater infrastructure is operated and managed by the City of Bellingham.



Natural gas and electricity are managed and operated by regional service providers. Most of the infrastructure will need to be replaced due to the existing age, current location or capacity limitations. This provides a tremendous opportunity to integrate sustainable design principles and functions within the planned infrastructure. All utilities can provide adequate services to the proposed 6.0 million s.f. of redevelopment with current or planned improvements to facilities.

Wastewater

The existing users within The Waterfront District are presently served by a network of underground collection systems. Pump stations convey the collected wastewater via force mains to the City's main trunk lines where it is transported to the Post Point Pollution Control Plant. All treated water is discharged from the plant through a deep water pipe to an outfall in Bellingham Bay. The 2006 Capital Facilities Plan indicates that the sewer capacity



is projected to adequately support the City's projected population of 113,055 in the year 2022, which

would adequately serve the proposed development of 6.0 million square feet.

The existing onsite sanitary sewer system is undersized, out-dated and may conflict with the proposed road network. Therefore, it is assumed that the majority of the site's existing gravity sewer system would be reconstructed and relocated within the site's new roadway network. A new pump station would be constructed which would discharge directly into the Oak Street Pump Station. Redevelopment of Marine Trades Area may also involve upgrading the existing sewer system and pump station to accommodate new roadways, buildings and uses. All site wastewater would be conveyed to the City wastewater treatment facility for processing.

Sustainability options that reclaim wastewater for reuse will reduce discharges to the City system. This could decrease sewer charges and preserve capacity in the existing wastewater treatment plant. Reducing conveyance line and pump station capacity inside and outside the district will minimize capital expenditures.

Water

Two separate water systems (potable water and raw water) exist and provide service to the project



site. The raw water is chlorinated by the City to prevent fouling but is not to drinking water standards. This water is supplied by a 48-inch main extending

along the east side of Chestnut Street entering the site at Bay Street. The site is at one of the lowest elevations in the zone thereby operating under the maximum water pressure.

The 2006 Bellingham Capital Facilities Plan (part of the City's adopted 2006 Comprehensive Plan) indicates the City will implement an improvement

program to accommodate a population increase to 113,000 and a water demand of 17.0 million gallons per day (MGD)by 2022.

Sustainable principles might include:

- Water conserving fixtures
- •Micro or drip irrigation combined with drought



tolerant species
•Use of reclaimed
water (clean stormwater or treated
wastewater) for
flushing toilets, irrigation and other nonpotable uses.

Stormwater

The more developed areas of the site generally contain stormwater conveyance systems with outfall structures that discharge directly into Bellingham Bay, Whatcom Waterway or via a pipe to the Aerated Stabilization Basin (ASB). More undeveloped areas have minimal stormwater conveyance systems and runoff infiltrates, evaporate or sheet flows into the Bay and Waterway. Very little off-site runoff sheet flows onto or across the site. Off-site stormwater is conveyed through the site and discharged to the Bay or Waterway. No known active groundwater uses are present.

Redevelopment of the property will reconstruct storm water conveyance and outfall facilities. The topography of the site should enable the use of a gravity system without any pump stations. Off-site flows would continue to be conveyed through the



site. No detention is required for the site since the discharge point is to a receiving body of water (Bellingham Bay or Whatcom Waterway).

The ASB use will be discontinued with the development of a Clean Ocean marina. Water quality treatment would be provided to meet requirements of local, state and federal regulations. Stormwater is the largest single water quality problem for our state and Puget Sound. Effective stormwater management is a high priority for agencies, property owners, facility operators and environmental groups. The common goal of these diverse stakeholders is the protection of aquatic resources under a wide variety of different land



uses, including water-dependent industrial activity, commercial and residential development, recreational boating, public access and water enjoyment.

Emerging "low impact development" technologies such as rain gardens, permeable pavement, bio-swales, and

green roofs capture stormwater and infiltrate into the ground. In bio-swales, healthy plants and soils break down pollutants through natural processes while reducing runoff. These stormwater management options are being evaluated in The Waterfront District. Special consideration is needed for areas where contaminated soils may be isolated and capped or blended with clean soils to meet state standards for public health and safety.

Representatives from the Port, City, Sustainable Connections, Department of Ecology, and stormwater experts recently met to share ideas and strategies for managing stormwater on contaminated waterfront sites like The Waterfront District.

Low impact development stormwater management options will likely be used in combination with other engineering alternatives such vaults, filters, oil-water separators and active treatment systems depending on the land uses (e.g., parks vs mixed use development) and ground conditions (e.g. clean fill, solid waste landfills, petroleum contamination, etc.).

The goal of applying innovative stormwater management techniques to improve the environment and create a sustainable development is a high priority.

Sustainable principles might include:

- •Separation of clean stormwater (rooftops, hardscapes and impervious surfaces not associated with automobiles) from road and parking lot stormwater for reuse
- •Optimize natural stormwater filtration using vegetation
- •Promote surface water features and amenities within The Waterfront District using stormwater
- •Integrate stormwater design features with other sustainability options (using stored stormwater for building cooling, fire flow supplementation, reuse for irrigation)

Electricity

Most electrical facilities within The Waterfront District will be replaced and relocated underground. Existing transmission lines and the current Marine Trades Area substation on site are not pro-





posed to be relocated. The substation within the Downtown Waterfront Area will be replaced with a new substation designed to accommodate new uses for The Waterfront District redevelopment. Timing of the substation replacement is contingent upon the energy demands and future site development schedule.

Currently, PSE's plans for the Encogen station are to maintain its operation and use it as a "peaking" station during times of high energy use. New discharge permits will be necessary for discharges from the facility. The Encogen station may be removed during site development. PSE indicates they have sufficient capacity to serve the proposed development.

Energy conservation and sustainable building designs will reduce demand and capital expenditures for facilities.

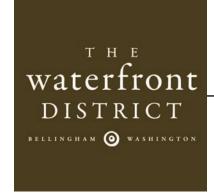
Natural Gas

Most of the existing gas lines will be removed or replaced during redevelopment. The southern area of property south of Whatcom Waterway is served by an existing high pressure gas line that runs along Cornwall Avenue. Some upgrades may be necessary to the regulator station at the west end of Cornwall Street. The Marine Trades Area is served by existing gas lines in Roeder Avenue and Hilton Street.

Cascade Natural Gas has the capacity to serve the proposed development. Energy conservation and sustainable building designs will reduce demand and capital expenditures for facilities.

Page 101

9 Cost Estimates



9.0 Project Cost Estimates



In September of 2006, the Port and City of Bellingham prepared a project update called the Draft Framework Plan. This report was based on recommendations and input from the public, the Waterfront Advisory Group, the City Planning Commission, design consultants, staff and elected officials.

One of the main purposes of the Draft Framework Plan was to provide an initial estimate of project

costs for environmental remediation and preparation of the site for development according to the community's vision. The report used a number of assumptions about the mix of land uses, density (6.0 million square feet of developed floor space), cleanup requirements, necessary road and utility infrastructure, parks and public access, and new waterfront facilities for marina expansion and visiting boaters.

The overall cost estimate for long-term investments in the waterfront by the Port and City was approximately \$334 million in 2006 dollars. The breakout of those costs in millions of dollars is summarized in the table below.

Since 2006, the assumptions used in the Draft Framework Plan have been used as the basis for analyzing the environmental impacts of a range of different development densities, land uses, and other planning elements. This analysis was published in a Draft Environmental Impact Statement which was presented for public review and comment earlier this year.

Based on the results of the 2008 DEIS and additional planning work by the Port, City and consultants, a revised package of recommendations has

been presented in this draft Proposal. Some of the assumptions in the draft Proposal are very similar to that presented in the 2006 Draft Framework Plan. For example, each assumes a transition from industrial to mixed use, 6.0 million square feet of development at full build-out, approximately 33 acres of parks, development of a new Clean Ocean Marina in the ASB, and environmental remediation to support the proposed redevelopment.

The main adjustment in the assumptions is a proposed change in the layout for street infrastructure and bridges across the bluff to connect the waterfront to the existing downtown commercial business district. The engineering feasibility of this changed street layout has been evaluated by the project team, as described previously in Section 6 (Transportation). The engineering evaluation also included a review of the specific construction sequencing of the new



street layout, as well as calculations of the amount of development density that would be supported by each new street component.

The updated cost estimate for the overall investment by the Port and City has been revised to reflect the current recommendations for The Waterfront District.

In some cases the costs have been updated according to recent engineering and feasibility cost analysis (e.g., site cleanup, marine facilities, roads, bridges and utilities). In other cases the costs have been updated by simply adjusting previous estimates to reflect 2008 dollars (e.g., parks). The updated costs do include certain specific off-site transportation improvements (traffic signals and RR signals).

A very important difference is that the current cost estimate includes the installation of street and utility infrastructure in two discrete planning phases. The first phase includes sufficient infrastructure to support 4.0 million square feet of build-out on the waterfront and prepares the property for relocation of the Burlington Northern Railroad. This corresponds

Cost Estimates

to construction steps 1-8 within the Transportation section. The second phase adds sufficient infrastructure to support further infilling up to the overall project density objective of 6.0 msf of development under the additional steps outlines in the Transportation section.

The updated cost estimate for long-term investments in the waterfront by the Port and City under the current set of recommendations is very comparable to the original estimate. The new total investment is approximately **\$347 million in 2008 dollars**. The breakout of those costs in millions of dollars is provided in the table below.

Planning Element	2006 Framework Plan	2008 Proposal Full Build-Out	2008 Proposal Fist Phase	2008 Proposal Second Phase
	6.0 MSF	6.0 MSF	4.0 MSF	2.0 MSF
Environmental Cleanup	\$85	\$94		
Demolition	\$10	\$10		
Marine Infrastructure	\$12	\$13		
Marina Facilities	\$24	\$26		
Visitor Boat Moorage	\$6	\$6		
Subtotal	\$137	\$149		
Roads and Bridges	\$119	\$99	\$65	\$34
Utilities	\$22	\$40	\$26	\$14
Parks and Trails	\$56	\$59	\$40	\$19
Subtotal	\$197	\$198	\$131	\$67
Total	\$334	\$347		

This total cost estimate allows comparison to the 2006 Draft Framework Plan and also provides the basis for further analysis by the Port and City to review the overall economics of the Proposal. The economic model will include estimates for cost expenditures and revenue returns to the Port and City over the long-term.

There are certain costs that have not been included in this evaluation. **The cost for relocating the Burlington Northern Railroad is currently estimated at approximately \$11 million**. It is anticipated, however, that this effort will be supported through a package of federal and state grants. It is not therefore included in the current cost estimate for the Proposal.

The existing intersection of Bay Street and Chestnut Street is currently constructed as an elevated bridge structure over the Burlington Northern Railroad tracks. The structure is expected to require a full reconstruction due within approximately 15 years, regardless of any redevelopment within The Waterfront District. The current estimate for that reconstruction is approximately \$62.5 million that is considered an unrelated off-site cost.

10 Conclusions



10.0 Conclusions & Next Steps

Development of The Waterfront District is a 20-30 year undertaking that will require significant public



and private investment and will result in incredible opportunities for this community. But before the investments can begin, plans, zoning and development regulations must be in place.

The Proposal put forth in this document by the Port of Bellingham with the involvement of the City of Bellingham is an effort to answer complex questions that have arisen from the Draft Environmental Impact Statement and to provide a path forward for this project.

The recommendations in The Proposal can be used as a preferred alternative supplemental to the draft Environmental Impact Statement and, as such, will undergo additional environmental review. Members of the public also will have a time period for providing their comments to the Port of Bellingham. The Proposal also will be used by the Port and the City to undertake an economic analysis of this iteration of the redevelopment project and ensure that the public investment and phasing strategy is feasible.

Later this fall, following publication of a final Environmental Impact Statement, a draft Master Plan and Development Agreement also will be written and will include robust public involvement and public comment opportunities. They also will be reviewed by the Waterfront Advisory Group, the city's Planning Commission and eventual adoption by the Port Commission and the City Council.

The Waterfront Futures Group charted the course when they completed their work in 2004 and set forth a vision for the waterfront. Now the Port and the City are working together to bring that vision to reality. The Proposal is another step in that direction.

