

3 Affected Environment, Significant Impacts & Mitigation Measures

3.1 Introduction

Chapter 3 of the Draft EIS includes a description of the affected environment, analysis of potential impacts, and identification of mitigation measures and significant unavoidable adverse impacts for the following elements of the environment:

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3.2 Natural Environment

3.2.1 Affected Environment

This chapter describes natural resources found in the City of Kirkland. These include earth resources, water resources, and plant and animal resources. Natural systems serve many essential biological, hydrological, and geological functions that significantly affect life and property in Kirkland. Features such as wetlands and streams provide habitat for fish and wildlife, flood control, and groundwater recharge, as well as surface and groundwater transport, storage, and filtering. Vegetation, too, is essential to fish and wildlife habitat, and also helps to support soil stability, prevents erosion, moderates temperature, produces oxygen, and absorbs significant amounts of water, thereby reducing runoff and flooding. Soils with healthy structure and organic content, such as those found in natural wooded areas, absorb, store, and transport water, effectively supporting vegetation, slope integrity, and reducing flooding and erosion. In addition to these functions, the natural environment provides many valuable amenities such as scenic landscape, community identity, open space,

vegetative buffers between uses, and opportunities for recreation, culture, and education. Kirkland's citizens recognize and often comment upon the important role the natural environment plays in the quality of life (City of Kirkland, 2004).

Of particular importance in Kirkland are Sensitive Areas, which include landslide, seismic, and erosion hazard areas, streams, lakes, and wetlands, and priority habitat areas for fish and wildlife. Kirkland's sensitive areas regulations (Chapters 85-90 of the City Zoning Code) provide for site controls applicable to developments in sensitive areas. These and other characteristics are described in the next sections.

3.2.1.1 Earth

Topography

Kirkland is located in the geological province known as the Puget Sound Basin. Local topography elevations range from about 20 feet along the edge of Lake Washington to a high point in the Bridle Trails neighborhood of about 500 feet above mean sea level (Figure 3-1: Topography). Lakes and wetlands such as Lake Washington, Totem Lake, and Forbes Lake occupy glacial basins and depressions of retarded drainage. Valleys and lowlands have been carved into the terrain by several watercourses, including Juanita Creek, Forbes Creek, and Cochran Springs (City of Kirkland, 1994).

Geology

Citywide

The primary surficial geologic unit found in the Kirkland area is Vashon Till (Qt), with local lenses of stratified sands and gravels of varying ages. Critical geologic units include alluvium, peat and older clay, till, and gravel. These units can present development constraints related to drainage, settlement, seismic risk, or landsliding (City of Kirkland, 1994).

Totem Center Study Area

The Totem Center Study Area contains several geologic units including, from north to south (summarized from *Totem Lake Neighborhood Plan, Phase I Background Report*, November 1998):

- Qvt, Lodgement Till, the northern/eastern portion of the block between NE 128th Street and NE 132nd Street, generally: Lodgement till caps the upland areas of the hills surrounding the Totem Lake urban area. It generally consists of an unsorted mixture of sand, gravel, cobbles and boulders in a silt and clay matrix. Large boulders transported by glaciers are also found in the lodgement till. Characteristics of the unit include very low permeability generally indicating dewatering during construction is not required. The high percentage of silt and clay in the lodgement till causes the sediments to be highly moisture sensitive and easily disturbed when wet, requiring surface water control to maintain a firm subgrade and to reduce risk of sediment transport. Use of lodgement till in structural fills is limited to periods of dryer weather typically due to its moisture sensitive nature. Slope instability and erosion are generally low in this geologic unit, although these risks may increase on slopes greater than 20%.
- Qvr, Recessional Outwash, generally the western/southern portion of the block between NE 128th Street and NE 132nd Street: This geologic unit is found in the valley floor area (York Channel floor). The recessional soils can vary from silt and sand to sandy gravel

with cobbles. The recessional outwash sediments are typically permeable, and surface water will infiltrate until it perches atop the underlying, low-permeability lodgement till. Groundwater seeps may be found at the contact of these two units. Coarser grained portions of the deposits may be suitable for structural fill, but silts in some areas of the unit may be unsuitable as a source of structural fill. Slope instability is considered to be moderate to high, depending on the slope gradients. Erosion hazards risks are generally low with sheet flow, but high for concentrated flows.

- Fill (fill/modified land) in the Totem Lake Mall area. The majority of the Mall lies within an area where fill soils were placed on top of saturated alluvium sediments. Some buildings are supported on piles about 40 feet deep. This is likely due to the high potential for differential settlement and liquefaction in this area. Because of the presence of loose saturated soils, compressible peat, the risk of settlement, and seismically induced soil liquefaction, a deep foundation system (e.g. auger cast piles, drilled piers, or driven piles) may be required for the support of new buildings in the vicinity of the Mall. Where peat is not present, preload fills may be used to address differential settlement. Subsurface explorations would be needed to identify appropriate foundations.

Private Amendment Study Areas

Washington State Department of Natural Resources (DNR) Draft Geologic Mapping for King County (2003) identifies continental glacial till (Qgt), as the predominant geologic unit, consisting of unstratified sediment carried and deposited by glaciers.

Soils

Citywide

The two major soil associations found in Kirkland are Alderwood Soil Association and Alderwood-Kitsap-Indianola Soil Association. Each of these has unique characteristics and suitabilities for various land uses (City of Kirkland, 1994). The Alderwood Association is described as moderately well drained, undulating to hill soils that have dense, very slowly permeable glacial till at a depth of 20 to 40 inches. It is found on uplands and terraces. The Alderwood-Kitsap-Indianola Association is described as moderately well drained, nearly level to steep soils that have very slowly permeable glacial till or glacial lake deposits at a depth of 16 to 40 inches. It has and somewhat excessively drained, rolling, deep sandy soils. It is found on uplands and terraces. (USDA, 1973)

Totem Center Study Area

Soils in the Totem Center Study Area include Everett (EvC), Kitsap (KpB), and Seattle (Sk) soil series (USDA, 1973). These soil series are characterized as follows:

- Everett gravelly sandy loam, 5 to 15 % slopes (EvC): This soil is rolling. Runoff is slow to medium and the erosion hazard is slight to moderate. (USDA, 1973)
- Kitsap silt loam, 2 to 8 % slopes (KpB): This undulating soil is on low terraces of major valleys. Water flows on top of the substratum in winter. Permeability is moderate above the substratum and very slow within it. Runoff is slow to medium, and the erosion hazard is slight to moderate. (USDA, 1973)
- Seattle muck (Sk): The subsurface layers are mucky peat, muck, and peat that formed mostly from sedges. Permeability is moderate. There is a seasonal high water table at or near the surface. Runoff ponds, and there is little or no erosion hazard. (USDA, 1973)

Private Amendment Study Areas

Soils in the study area include Alderwood (AgD) and Indianola (InA) soil series (USDA, 1973). These soil series are characterized as follows:

- Indianola loamy fine sand, 0 to 4 % slopes (InA): This soil occupies smooth terraces in long narrow tracts near streams. Runoff is slow and the erosion hazard is slight.
- Alderwood gravelly sandy loam, 15 to 30 % slopes (AgD): Runoff is medium, and the erosion hazard is severe. The slippage potential is moderate. (USDA, 1973)

Geologic Hazards

Kirkland has regulated and mapped geologic hazard areas (see Figure 3-2: Landslide and Seismic Hazard Areas) based on available geologic and soils information (City of Kirkland, 2004).

Landslide Hazard Areas

Citywide

Landslides are highly probable in some steep slope areas, regardless of development activity. These areas have been designated as “unstable slopes.” High landslide hazard areas are found on the Houghton Slope in the Lakeview neighborhood, the south side of the Forbes Valley, the slopes northeast of Totem Lake, and the Highlands neighborhood (City of Kirkland, 1994). Grading operations, land clearing, irrigation, or the load characteristics of buildings on hillsides may trigger landslides. Damage resulting from landslides may include loss of life and property, disruptions to utility systems, or blockage of transportation corridors. For these reasons, development is regulated where landslides are likely (City of Kirkland, 2004).

Totem Center Study Area

A high landslide hazard area is mapped immediately to the north of Totem Lake Mall. A medium landslide hazard area exists south of NE 132nd Street.

Private Amendment Study Areas

There is a medium landslide hazard area immediately to the east of the Private Amendment Area A, between Kirkland Avenue and Second Avenue. There are medium and high landslide areas outside of the Amendment A study area, to the west near Lake Street. There are no mapped landslide hazards in Amendment Area B.

Seismic Hazard Areas

Citywide

The Kirkland Zoning Code (Section 85.13) defines seismic hazard areas as “those areas subject to severe risk of earthquake damage as a result of seismically induced settlement or soil liquefaction, which conditions occur in areas underlain by cohesionless soils of low density usually in association with a shallow groundwater table.” Figure 3-2: Landslide and Seismic Hazard Areas shows seismic hazard areas throughout the City. Seismic hazard areas are found in the Totem Lake area where areas of loose sand, silts, and fill deposits exist in combination with a shallow groundwater table. Other seismic hazard areas occur in the Juanita and Forbes Creek areas and along much of the Lake Washington shoreline due to the

presence of alluvial deposits and younger sand deposits in combination with shallow groundwater (City of Kirkland, 1994).

Totem Center Study Area

A large seismic hazard area exists in the vicinity of Totem Lake Study Area including the Totem Lake Mall property.

Private Amendment Study Areas

No mapped seismic hazard areas exist within the study areas.

Erosion Hazard Areas

Citywide

Erosion hazard areas contain soils that, according to the USDA Soil Conservation Service King County Soil Survey (USDA, 1973), may experience severe to very severe erosion hazard. This group of soils includes, but is not limited to, the following when they occur on slopes of 15 % or greater: Alderwood gravelly sand loam (AgD), Kitsap silt loam (KpD), Ragnar Indianola Association (RdE), and portions of the Everett gravelly sand loams (EvD) and Indianola Loamy fine sands (InD).

Totem Center Study Area

There are no mapped erosion hazard areas in the study area according to soil surveys.

Private Amendment Study Areas

Private Amendment Area A contains potential erosion hazard areas of soil type Alderwood gravelly sand loam (AgD).

3.2.1.2 Water Resources

Surface Water

Citywide

Several large perennial streams as well as smaller spring-fed brooks are located within the City of Kirkland. All of these streams drain westerly towards Lake Washington. All or portions of nine drainage basins are within current City boundaries, as shown on Figure 3-3: Sensitive Areas. Juanita Creek and Yarrow Creek Basins area both partially outside of the Kirkland City Limits. These basins are described in the Kirkland's Streams, Wetlands, and Wildlife Study (The Watershed Company, 1998). Listed from south to north, these drainage basins are: 1) Yarrow Creek, 2) Houghton Slope B, 3) Carillon Creek Basin, 4) Houghton Slope A, 5) Moss Bay, 6) Kirkland Slope, 7) Forbes Creek, 8) South Juanita Slope, and 9) Juanita Creek. Kirkland's largest and most important streams are Juanita Creek and Forbes Creek (Adolfson Associates, Inc., 1998). Both provide critical wildlife corridors and are primary habitat for cutthroat trout and coho salmon.

Lake Washington forms the western boundary of Kirkland. Two important headwater lakes, Totem Lake and Forbes Lake, are located in the portion of the City east of I-405.

There are four areas in Kirkland that have been mapped to contain 100-year floodplains. These are located: around Totem Lake; within the Forbes Creek valley; in Peter Kirk Park; and in the vicinity of Yarrow Bay (see Figure 3-3: Sensitive Areas). Flood hazard areas as

defined by Kirkland are those areas subject to inundation in any given year. Streams, lakes, wetlands, and closed depressions also have floodplains that may also qualify as flood hazard areas (City of Kirkland, 1994).

A general overview of the surface water conditions, organized by drainage basin is described below:

Yarrow Creek Basin

The Yarrow Creek Basin is the southernmost drainage lying partly in the City of Kirkland. Much of the Yarrow Creek Basin actually lies in the City of Bellevue to the south. The two primary areas of ecological importance in the basin are the Yarrow Bay wetlands on Lake Washington at the mouth of Yarrow Creek and the relatively unspoiled headwater area of the creek in Bridle Trails State Park. Yarrow Creek passes under or along roads and railroads for most of its length, including SR 520 and Interstate 405.

Cochran Springs Creek also drains into the Yarrow Bay wetlands. It also has a relatively unspoiled headwater area located in Kirkland's Watershed Park that offers a large block of open space wildlife habitat area.

Carillon Creek Basin

The Carillon Creek Basin is a fairly small basin located towards the southern end of the City. The creek enters Lake Washington at Carillon Point. The lowermost stream section, west of Lake Washington Boulevard, includes a narrow corridor of manicured native plant specimens and an armored stream channel. The upper part of the basin is an island of watershed open space area surrounded by suburban land uses. Though a fairly small creek, springs in this watershed area provide fairly steady, high-quality flows to Carillon Creek.

Urban Drainage Basins: Moss Bay, Kirkland Slope, Houghton Slope B, and Houghton Slope A

The Urban Drainage Basins are located in the central part of the City and include the Moss Bay, Kirkland Slope, and Houghton Slope A and B basins. Four small streams are located in the Urban Drainage Basins. These are Northwest College Creek, Houghton Creek, Everest Creek, and Moss Bay Creek. Most of the urban drainages flow through pipes for considerable distances and enter Lake Washington at the outfall of these pipes. No salmonid fish, neither anadromous nor resident, inhabit any of these creeks. The few, isolated pockets of remaining wildlife habitat in this grouping of small basins include areas at and upslope of Everest Park, the ravine at Kirkland Avenue/Slater Avenue, and the ravine between Lakeview Drive and the railroad tracks and between NE 62nd Street and NE 64th Street bordering the Forbes Creek Basin north of Peter Kirk Elementary School.

Forbes Creek Basin

Forbes Creek drains into the south side of Juanita Bay. The Forbes Creek Basin extends eastward from there, well to the east side of Interstate 405, including Forbes Lake and much of Rose Hill. Extensive wetland and open space areas line both sides of Forbes Creek from its mouth to about half way to Interstate 405. The interstate highway presents a formidable barrier to non-avian wildlife movements, but significant, isolated areas of open space wildlife habitat occur upstream (east) of it as well.

South Juanita Slope Basin

The South Juanita Slope Basin is located to the south of the Juanita Creek basin and drains to Juanita Bay. The basin contains an unnamed creek that has both piped and open sections. The creek drains to Lake Washington through a series of shoreline wetlands, which are known to contain salmonid fish habitat.

Juanita Creek Basin

The Juanita Creek Basin is Kirkland's largest and most northern drainage basin. Much of the basin area lies beyond Kirkland City limits. Unlike the other larger stream basins in the City (Yarrow and Forbes), Juanita Creek is different in that an extensive open space habitat area does not exist near the mouth at Lake Washington. An important corridor for wildlife movement extends upstream from the mouth and along much of the main stem. Other large, but more isolated, blocks of habitat exist in the central and eastern section of the basin.

Stream Classification System

Streams within the City of Kirkland are generally those waters in channels with a defined bed and bank. These resources may be perennial or seasonal and may or may not support fish populations. The Kirkland Zoning Code Chapter 90 (Drainage Basins) classifies streams into three classes:

- **Class A:** Streams used by salmonids and that are the highest quality streams in Kirkland.
- **Class B:** Streams not used by salmonids but which contain perennial flow.
- **Class C:** Streams with seasonal flow that are the least important in Kirkland.

Class A, B, and C streams in the City of Kirkland are generally equivalent to Type 3, 4, and 5 waters as defined in the Washington State Hydraulic Code and used by the Washington State Department of Natural Resources (DNR). Juanita, Forbes, Yarrow, and Cochran Springs Creeks as well as a portion of Carillon Creek have been classified as Class A streams. Kirkland has no streams that meet the State definition of Type 1 (Shorelines of the State) or Type 2 waters (streams wider than 20 feet with significant fish populations). Lake Washington is a Class 1 Shoreline of Statewide Significance and is subject to the Washington State Shoreline Management Act.

Totem Center Study Area

The study area is in the Juanita Creek basin in the vicinity of Totem Lake. The northern portion of the study area contains a stream (both open and piped), and is bordered on the west by another stream (both open and piped). The study area is in close proximity to the wetlands and 100-year floodplain surrounding Totem Lake.

Private Amendment Study Areas

Private Amendment Area A (PLA 6B) is in the Moss Bay basin and contains no surface waters. Private Amendment Area B (LIT) is located in two basins: Moss Bay and Houghton Slope A. Private Amendment Area B is bordered along the east by a piped stream.

Water Quality

Water bodies within the City of Kirkland exhibit water quality conditions generally associated with heavily developed, urban areas. The City continues to conduct water quality monitoring on Juanita Creek, Forbes Creek, and Forbes Lake. The monitoring has been ongoing for several years, and is performed by both City staff and volunteers. Water quality data collected during the monitoring events can be obtained from surface water staff in the Public Works Department.

Monitoring

Juanita Creek

Water quality monitoring was part of a habitat assessment on Juanita Creek performed by King County and City of Kirkland staff in August of 2000. The assessment included monitoring of temperature, dissolved oxygen, pH, and conductivity. Yearly macro invertebrate sampling and identification began in 2001 and will continue indefinitely. The City of Kirkland intends to conduct water quality monitoring for two years starting in summer of 2004. Juanita Creek is regularly monitored by King County in the summer as part of the summer swimming beach bacteria monitoring program. In 1999, King County conducted a water quality study on Juanita Creek collecting samples for pesticides, other organics, metals, suspended solids, and toxicity.

Forbes Creek

The water quality of Forbes Creek has been monitored by City staff and volunteers for the past two years; from spring of 2002 through spring of 2004. The following parameters were monitored: temperature, flow, dissolved oxygen, turbidity, pH, bacteria, phosphorus, nitrate and ammonia, and metals. Yearly macro invertebrate sampling and identification began in 2001 and will continue indefinitely.

Forbes Lake

The water quality of Forbes Lake was monitored by City staff and volunteers in the summer of 2002, and will be monitored again in the summer of 2004. The following parameters were monitored: temperature, dissolved oxygen, turbidity, pH, bacteria, phosphorus, nitrate and ammonia, and metals.

Lake Washington

King County conducts ongoing water quality monitoring in Lake Washington. Water quality is influenced by activities and inputs from the watershed through the influent streams, lake nutrient cycles, ecological interactions, and seasonal or year-to-year variability in weather. Lake responses can vary from short-term responses due to seasonal weather patterns, to long-term responses due to watershed changes. The combination of short-term and long-term trends, seasonality, changes in land use, and ecological interactions, all of which occur simultaneously, make it difficult to detect or predict either the presence or direction of water quality trends in the lake.

King County has conducted ongoing water quality and sediment quality monitoring at a number of locations within Kirkland for over ten years, including Juanita Creek and Yarrow Creek. Monitoring includes measurements of temperature, dissolved oxygen, total suspended solids, turbidity, pH, conductivity, bacteria, phosphorous, nitrate and ammonia, and metals.

Assessment

The Washington State Department of Ecology 2002/2004 Water Quality Assessment lists the following water bodies (and pollutants of concern) as Category 5, polluted waters:

- Yarrow Creek (fecal coliform, dissolved oxygen)
- Forbes Creek (fecal coliform, dissolved oxygen, temperature)
- Juanita Creek (fecal coliform, dissolved oxygen, temperature)

Waters listed as category 5 require the preparation of Total Maximum Daily Loads (TMDLs), or Water Cleanup Plans, which are prepared by the Washington State Department of Ecology

in partnership with local jurisdictions. TMDLs identify the maximum amount of a pollutant allowed to be released into a water body so as not to impair uses of the water.

In addition to the category listing above, sections of Yarrow Creek are listed by Ecology as 4c, impaired by a non-pollutant. The basis for the listing is inadequate stream flow and fish passage barriers, which limit salmonid uses.

Wetlands

Citywide

Wetlands in the City of Kirkland are those areas meeting the definition of wetlands in the Washington State Wetlands Identification and Delineation Manual (Washington Department of Ecology, 1997). Wetlands may include wet pastures, forested swamps, marshes, and shallow ponds. They provide functions in wildlife habitat, stormwater retention and floodwater abatement, water quality improvement, groundwater recharge, recreational/educational opportunities, and shoreline protection. Several large wetlands are located within Kirkland, including some of the largest remaining wetlands on Lake Washington (see Figure 3-3: Sensitive Areas). A number of other important wetlands are also found throughout the City.

The City of Kirkland Zoning Code Chapter 90 (Drainage Basins) classifies wetlands into three types:

Type 1 Wetlands: The most important wetlands in Kirkland; those wetlands that meet any of the following conditions:

- Wetlands contiguous to Lake Washington;
- Wetlands containing at least one-quarter acre of organic soils, such as peat bogs or mucky soils;
- Wetlands equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service, one of which is open water;
- Wetlands that have significant habitat value to state or federally listed threatened or endangered wildlife species; or
- Wetlands that contain state or federally listed threatened or endangered plant species.

Type 2 Wetlands: Those wetlands providing significant wildlife habitat as determined by scoring 22 or more habitat points on the wetland field data forms used by the City.

Type 3 Wetlands: Those wetlands scoring less than 22 points on the wetland field data forms used by the City.

The Kirkland *Streams, Wetlands, and Wildlife Study* (The Watershed Company, 1998) describes wetlands in Kirkland in more detail.

Totem Center Study Area

The study area is in close proximity to the wetlands surrounding Totem Lake. Totem Lake and surrounding emergent shrub wetland plant communities are approximately 20 acres in size. This system receives surface water inflow from urban runoff and two small creeks that drain a small ravine to the northeast of Totem Lake. Totem Lake is a Type 1 wetland.

Private Amendment Study Area

Neither study area contains wetlands, although a small wetland is located to the south of Private Amendment Area B in the vicinity of Terrace Park.

Groundwater

The location of aquifers in Kirkland is unknown. There are no groundwater protection areas identified in Kirkland. Except for the Water District 1 Well, located on the Houghton Slope, which provides potable water to a small number of residences in Kirkland and the Town of Yarrow Point via a pipe crossing under Yarrow Bay, all public water supplies for the City of Kirkland are from the City of Seattle's municipal water supply (City of Kirkland, 1994).

3.2.1.3 Plants and Animals

Plant Resources

Citywide

Figure 3-4: Tree Cover shows the extent of tree canopy in the City of Kirkland. Trees found in Kirkland include western hemlock, western red cedar, red alder, Douglas fir, and big leaf maple. New growth in areas previously cleared for agricultural and urban development consists of grasses, ground covers, and shrubs such as salal, vine maple, Oregon grape, and blackberry. Dominant plants in riparian zones along Lake Washington and Kirkland's streams, creeks, and wetland areas are red alder and other deciduous hardwood trees, cottonwood, willow, Oregon ash, and a variety of understory species (City of Kirkland, 1994).

Plants in wetlands are generally those that are well adapted to survival in saturated soil conditions. These include canary grass, sedges, bulrushes, and spike rushes (in meadows with standing water through much of the growing season); hardhack, red-osier dogwood, red alder, and willow (in scrub-shrub wetlands that are seasonally flooded); western red cedar, Oregon ash, red alder, black cottonwood, vine maple, salmonberry, and cascara (in forested wetlands that are rarely flooded); and a variety of marsh (open-water wetlands) species (City of Kirkland, 1994).

Totem Center Study Area

Vegetation in the study area is generally of an ornamental nature, consistent with the urban setting.

Private Amendment Study Areas

Vegetation in the study area is generally of an ornamental nature, consistent with the urban setting.

Animal Resources and General Terrestrial Habitats

Citywide

Kirkland has several large and significant natural areas that provide a variety of wildlife habitats in this mostly urbanized City. These open space areas are home to many birds, mammals, amphibians, and reptiles that rely on various habitat features for their survival. A comprehensive list of birds, mammals, amphibians, and reptiles that may be found in Kirkland is included in the *Kirkland Streams, Wetlands, and Wildlife Study* (The Watershed Company, 1998). These lists are divided into two sections – one for wildlife species that may be found in Kirkland's "urbanized" areas (including developed commercial, industrial, and residential areas), and one for species expected to be present in Kirkland's wilder, more "non-urbanized" areas.

A sampling of the species, which may be present in Kirkland's "urbanized" habitats, includes:

Birds

- Canada goose
- Mallard duck
- Red-tailed hawk
- California gull
- Downy woodpecker
- American robin
- Song sparrow
- Red-winged blackbird

Mammals

- Opossum
- Pacific mole
- Raccoon
- Eastern gray squirrel
- Big brown bat
- Deer mouse
- Eastern cottontail
- Blacktail deer

Amphibians

- Northwestern salamander
- Western toad
- Pacific treefrog
- Bullfrog

Reptiles

- Western fence lizard
- Northwestern garter snake

A sampling of the species, which may be present in Kirkland's "non-urbanized" habitats, includes:

Birds

- Double-crested cormorant
- Great blue heron
- Wood duck
- Osprey
- Bald eagle
- Cooper's hawk
- Barn owl
- American goldfinch

Mammals

- Beaver
- Muskrat
- Blacktail deer
- Porcupine
- River otter
- Striped skunk

- Townsend chipmunk
- Coyote

Amphibians

- Northwestern salamander
- Bullfrog

Reptiles

- Western pond turtle
- Northwestern garter snake

Wildlife Corridors and Open Space Habitats

Significant wildlife corridors are situated along and through the City's streams and wetlands and within certain municipal parks. According to the 2003 Priority Habitat Species Map (WA Department of Fish and Wildlife, 2003), three habitat areas are identified within Kirkland: wetlands (WET); riparian zones (RIPAR); and urban natural open space (UNOS).

The Yarrow Bay/Cochran Springs/Watershed Park corridor, and the Juanita Bay Park/Forbes Valley corridor create the two most extensive and diverse of these wildlife habitat areas. There are other fairly large habitat areas scattered throughout Kirkland, such as the urban natural open space area near Bridal Trails State Park and wetlands within the Totem Lake neighborhood. Many blocks of open space are associated with wetlands and stream corridors, and have been protected from development because of these designations. Other open space areas are mostly parklands and steep slopes (The Watershed Company, 1998).

Totem Center Study Area

No animal resources within the study area are identified in City reports. However, species adapted to urban settings may be present as described above.

Private Amendment Study Areas

No animal resources within the study area are identified in City reports. However, species adapted to urban settings may be present as described above.

Fish Resources

Figure 3-3: Sensitive Areas shows known salmonid locations, including the Yarrow Bay wetlands, Cochran Springs Creek, Carillon Creek, Forbes Creek and Forbes Lake, Juanita Creek, and Totem Lake. Chinook, coho, and sockeye salmon are known to spawn near Kirkland's Lake Washington shoreline, particularly in Juanita Bay. Cutthroat trout and coho salmon are known to inhabit several creeks in Kirkland, especially in creeks with direct access from Lake Washington. Coho fry are planted in a few of the City's creeks. Non-salmonid fish including stickleback, lamprey, and dace have been observed in some of the City's creeks. No fish species have been detected in any of the Urban Drainage Basins (The Watershed Company, 1998).

Other fish types known to occur in Lake Washington and associated wetlands and streams include bullhead, chub, crappie, carp, whitefish, perch, rainbow trout, and bass (City of Kirkland, 1994).

Species and Habitats of Concern

Chinook salmon were listed as threatened under the Endangered Species Act in 1999. Kirkland is part of the larger Lake Washington/Cedar/Sammamish watershed. Kirkland is working with 26 other local jurisdictions, as well as businesses, environmental groups and interested citizens to implement salmon conservation projects and develop a long-term plan for protecting and restoring salmon habitat in the watershed.

According to the 2003 Priority Habitat Species Map (Washington State Department of Fish and Wildlife), the bald eagle is identified as occurring in the City. The shorelines of Lake Washington, particularly the Juanita Bay and Yarrow Bay areas, provide habitat for the bald eagle. Other species with special state or federal designations that may be found in Kirkland include (The Watershed Company, 1998) ¹:

- Western pond turtle (SE)
- Vaux's swift (SC)
- Pileated woodpecker (SC)
- Purple martin (SC)

Regulatory Environment

Kirkland's sensitive areas regulations (Chapter 85-90) establish special regulations that apply to property containing geologically hazardous areas (erosion hazard areas, landslide hazard areas, seismic hazard areas), and activities, work, and conditions in or near any stream, wetland, frequently flooded area, or lake in the City. These regulations were prepared to comply with the Growth Management Act, Chapter 36.70A RCW. The purpose of these regulations is to protect the environment, human life, and property.

The critical areas regulations contain provisions to regulate development on steep slopes, and require retention of native vegetation as well as on-site erosion, landslide, and seismic hazard control measures. The critical areas regulations provide for protection of streams, lakes, and wetlands by prohibiting or restricting alterations of these resources or their buffer zones. Additional City regulations (Kirkland Municipal Code Chapter 15.52 Storm Water Management) contain controls for on-site stormwater management to prevent water quality degradation and flooding impacts.

Other federal and state laws related to natural resources management in Kirkland include:

Federal

- Clean Water Act (CWA), including National Pollutant Discharge Elimination Systems (NPDES) permits
- Endangered Species Act (ESA)
- National Environmental Policy Act (NEPA)
- Anadromous Fish Conservation Act
- Clean Air Act
- Migratory Bird Treaty Act

¹ SE = State Endangered; SC = State Candidates for possible listing as State Endangered, Threatened, or Sensitive

State

- Growth Management Act (GMA)
- Shoreline Management Act (SMA)
- State Environmental Policy Act (SEPA)
- Watershed Planning Act
- Water Resources Act (RCW 90.82, also referred to as 2514)
- Washington State Salmon Recovery Act (RCW 77.85, also referred to as 2496 or 5595)
- Water Quality Protection Act
- Washington State Hydraulic Code (WAC 232-14-010)

3.2.2 Impacts

3.2.2.1 Impacts Common to All Alternatives

Earth

Both Alternatives would result in the eventual removal or modification of vegetative cover in concert with the construction of approved development projects. Soil disturbance and reduction in soil organic matter increases erosion risk. Erosion impacts could result if development occurs on steep slopes or without adequate on-site erosion control measures. The risk of erosion would be highest in areas with slopes of 15 % or greater, highly erosive soils, or in close proximity to water bodies. When eroded particles move off-site or into streams, sediment impacts on water quality, channel conditions, and aquatic habitat are likely.

Soils in developed areas are subject to compaction, disruption, and contamination by petroleum spills, fertilizers, and industrial wastes. Impervious surfaces seal the soil surface, altering soil drainage and precluding any other uses for the soil. Compacted soil, or soil covered by impervious surfaces, allows for less infiltration of stormwater into the ground, creating additional surface water runoff that could result in increased downstream flooding, erosion, water quality problems, and aquatic habitat degradation.

Both Alternatives would permit development that is at risk of some degree of catastrophic geologic hazards, including landslides and earthquakes. These geologic hazards are generally well mapped or understood, and may be avoided or minimized by siting developments outside of hazard zones. Some developments may occur within these hazard areas because actual risks are unknown or perceived to be at an acceptably low level.

Water Resources

Both Alternatives will indirectly affect surface water resources when increased development results in removal of vegetation and creation of impervious surfaces. These land use practices can cause the same amount of rainfall over a given area to result in corresponding increases in the peak flow and quantity of runoff, and decreases in the time required to deliver runoff to the stream. Without adequate stormwater detention, stream channel responses may include:

- Increased scour of the streambed;
- Decreased bank stability;
- Loss of gravels and cobbles that would otherwise provide aquatic habitat in steeper or more confined reaches;

- Deposition of fine sediment in the gravels and cobbles that may provide habitat in flatter or less confined reaches;
- Loss of physical channel structure that would provide energy dissipation for streams and habitat for aquatic life; and
- Degradation of water quality by sediments and other pollutants, such as heavy metals, nutrients, and petroleum products.

Both Alternatives could exacerbate flooding in mapped flood hazard areas to a small degree.

Potential impacts to Kirkland's lakes and wetlands include increasing sedimentation from tributaries and adjacent land use. Sediment reduces storage volume and limits opportunities for flood moderation, groundwater exchange, and sediment stabilization. Water quality can be modified by dissolved nutrients and contaminants. Excessive nutrients can accelerate the natural process of eutrophication, fostering algal blooms and encouraging other nuisance vegetation, while, at the same time, reducing or eliminating the oxygen supply upon which native plants and aquatic life depend.

Direct impacts to wetlands from increased development could potentially be avoided by implementation of the federal, state, and local rules and ordinances that regulate the filling of wetlands. Alterations consistent with those allowed by these regulations could occur under each Alternative although no-net-loss of functions and values must be demonstrated. Additional losses could still occur if required efforts to restore, enhance, or create wetlands as mitigation are not fully successful and corrective action is not taken. Increased development could also result in direct temporary impacts from road or utility construction.

This DEIS evaluates the effect of growth at the new horizon level of 2022 on natural environment systems, and the effect of proposed minor Natural Environment policy amendments and associated maps described previously in Chapter 2 of this document. The DEIS does not reevaluate the critical areas ordinance amendments passed in 2002 as this action has received separate environmental review, and has been completed and accepted by the City Council and the State.

Plant and Animal Resources

Under both Alternatives, development projects could have both direct and indirect impacts on vegetation, with direct impacts primarily involving the physical removal of vegetation. Indirect impacts would include changes in permeability to infiltrate water. Increased impervious surfaces generally result in increased peak rates and increased volumes of surface water runoff, which may impact the viability of certain vegetation types. Any increases in development could also result in both temporary and permanent impacts to vegetation communities from road construction and utility installation. Temporary impacts can be reduced through the use of appropriate BMPs. Permanent conversions can be mitigated through the planting of native plant species and control of invasive nonnative species. Nonnative invasive plant species may invade and colonize areas where vegetation has been removed and the soils disturbed.

Under both Alternatives, ongoing development activities could reduce the amount of wildlife habitat in the City. Impacts could be both direct and indirect, with direct impacts including loss or conversion of habitat to either unsuitable or less suitable types for many wildlife species currently occupying those habitats. Development of currently vacant or underdeveloped parcels could lead to fragmentation of wildlife habitat, potentially altering habitat connectivity. Indirect effects could include a reduction in wildlife habitat quality and function due to increased human disturbance and associated factors in areas adjacent to areas

of wildlife habitat. Alterations in habitat due to introduction of nonnative plant species could also occur, either through landscaping or the inadvertent spread of nonnative invasive species. All of these factors lead to a decrease in biodiversity and habitat.

All Alternatives would result in a reduction in the quality and quantity of aquatic habitat in the City over time. Development puts greater pressure on the aquatic ecosystems that support fish populations by causing higher water temperatures, sedimentation, increased peak flows, reduced low flows, reduced groundwater, erosion, scour, pollution, stream bank armoring, channelization, and reduced riparian and wetland areas. Salmonid fish species are very sensitive to any change in the stream environment. Development activities can pollute water, degrade in stream and riparian habitat, and alter the natural flow regime of rivers and streams. Direct impacts (e.g., loss or conversion of aquatic habitat to either unsuitable or less suitable types) to fish and fish habitat are expected to be minimal because of current buffer requirements for salmon bearing streams and the timing of in-stream work window periods, which protect fish, streams and/or adjacent vegetation. Additional regulations are in place to provide fish passage, work restrictions near surface waters, and protection of fish and fish habitat.

Indirect impacts would result from increased stormwater runoff from impervious surfaces (e.g., roads, parking lots, and roofs). Impervious surfaces prevent water from soaking into the ground and as impervious surfaces increase, so do the volume, peak flows, and velocity of stormwater runoff into rivers and streams. Increased stream volume, peak flows, and velocity cause greater erosion and sedimentation, disrupt spawning and resting areas, scour out reeds, and increase velocities through culverts making fish passage more difficult. Current State and City regulations require the inclusion of stormwater treatment facilities in most projects that create new or expand existing impervious surface area. These regulations require that stormwater be treated or detained before it is released to local streams to help minimize its detrimental effects on aquatic species and their habitats. However, the regulations adopted to protect fish and fish habitat may not fully eliminate the potential impacts from development and urbanization.

3.2.2.2 Impacts of No Action Alternative

Earth

This Alternative would allow densification in accordance with adopted zoning designations within the current City limits. As described above, densification results in expansion of impervious surfaces, modification of soil structure, and accidental or chronic contamination. The No Action Alternative increases the erosion potential of remaining soils by clearing and grading activities that modify vegetative cover. Densification also decreases the amount of open space and could decrease natural stream and wetland buffer areas that provide for infiltration of surface water and stabilization of sediments.

On a neighborhood basis, the increased potential for soil erosion, based on new development projections, would be most pronounced in neighborhoods with vacant acres or partially developed areas (e.g. Totem Lake, North Rose Hill, and South Juanita with 54, 53, and 58 vacant acres respectively). Erosion hazard areas and landslide hazard areas subject to growth in the No Action Alternative are expected to be adequately protected using the City's existing critical areas regulations to manage development on steep slopes.

Seismic hazards are primarily located in the South Juanita, Totem Lake, North Rose Hill, and Lakeview neighborhoods. The No Action alternative allows residential, retail, commercial, and industrial development in those areas, assuming compliance with the City's critical areas

regulations. Impacts of the No Action Alternative on seismic hazards are expected to be small overall due to implementation of City regulations.

Water Resources

Surface water impacts are generally in direct proportion to the area of a drainage basin in impervious surfaces. The effects of impervious surfaces and other land cover changes under the No Action Alternative include altered surface water flows, increased stormwater quantities, localized flooding impacts, and generation of non-point source pollution to local surface waters.

Stream and lake water quality is expected to decline gradually with increasing development. The greatest amount of projected development is expected in the neighborhoods with vacant and partially developed acreage (see discussion in Sections 3.1.2.2 and 3.4.2.2). South Juanita, Totem Lake, and North Rose Hill have important surface water resources including Juanita Creek, Totem Lake and its surrounding wetlands, Forbes Creek and Forbes Lake that would be subjected to the highest risk of adverse surface water quality and quantity impacts.

Plants and Animals

Ongoing development in Kirkland could result in fragmentation of interconnected wildlife habitat corridors and open space areas used by a variety of plant and animal species. The increase in population, employment, traffic, impervious surfaces, and human activity associated with the No Action Alternative could result in additional use of open space areas that are currently priority habitats. Increased surface water runoff could result in water pollution, including erosion and sedimentation of streams and wetlands that can significantly affect plant and animal species. Continuing loss of potential quality habitat could result in reductions in plant and animal numbers and diversity.

3.2.2.3 Impacts of Proposed Action

Earth

Citywide

Impacts to earth resources would be similar to those described in the No Action Alternative. However, continuing development and increasing densities in Kirkland through the 2022 planning horizon will result in additional soils disturbance related to new construction, especially in high-growth neighborhoods.

Totem Center Study Area

Increased levels of development in the Totem Center Study Area would result in increased potential for soil erosion. Although the study area does contain a high landslide hazard area, the City's critical areas regulations would minimize landslide risks in this area. The southern portion of the study area is in a seismic hazard area. However, given the protection of the critical areas regulations, seismic hazards are expected to be small overall, unless a potentially significant earthquake of greater than building design magnitude should occur.

Private Amendment Study Areas

Increased levels of development in the study areas are not expected to increase the potential for soil erosion due to the fact that both study areas are fully developed. Construction related impacts could increase the potential for soil erosion temporarily.

Water Resources

Citywide

Impacts to water resources would be similar to those described in the No Action Alternative. However, continuing development and increasing densities in Kirkland through the 2022 planning horizon will result in additional impervious surfaces and increased stormwater runoff from new construction, especially in high-growth neighborhoods.

Totem Center Study Area

Increased levels of development in the study area could result in adverse surface water quality and quantity impacts to the open stream segment between NE 132nd Street and NE 128th Street or the open stream segment bordering the study area to the west. Increased stormwater flows could produce additional sedimentation of the important wetlands in the vicinity of Totem Lake. These impacts could be compounded because Totem Lake's stream and wetland systems are upstream of Juanita Creek and its associated wetlands (City of Kirkland, 1994).

Private Amendment Study Areas

Increased levels of development in the study areas may result in indirect surface water quality and quantity impacts to the piped stream segment bordering Private Amendment Area B to the east via the stormwater drainage collection system. This would be further assessed at the time of site-specific review including a review of drainage plans and other site plan information. No significant impacts are identified for the Amendment A area.

Plants and Animals

Citywide

Impacts to plants and animals would be similar to those described in the No Action Alternative. However, continuing development and increasing densities in Kirkland through the 2022 planning horizon could result in additional habitat fragmentation and reduction in open space areas, especially in high-growth neighborhoods.

Totem Center Study Area

Impacts to plants and animals would be minimal as a result of increased development in the study area, as this area is already urbanized. Some removal of vegetation may be necessary for new construction.

Private Amendment Study Areas

Impacts to plants and animals would be minimal as a result of increased development in the study area, as this area is already urbanized. Some removal of vegetation may be necessary for new construction.

Basin Map Amendments

The City is proposing adoption of a new Sensitive Areas map (see Figure 3-3) to more accurately reflect mapped sensitive areas and drainage basin boundaries. This revised map would be officially adopted along with the City's Comprehensive Plan update. As a result of more accurate mapping, the City has modified its drainage basin boundaries, by "splitting" or merging some basins (e.g. South Juanita Slope as a separate basin; Cochran Spring as part of Yarrow Creek basin). City regulatory amendments as part of the Proposed Action include updating definitions of primary and secondary basins to be consistent with new basin boundaries. Stream buffer regulations vary based on whether the stream is located in a primary or secondary basin, with greater requirements applying in primary basins. The proposed amendments to the definitions of primary and secondary basins are minor since none of the more accurately defined basins would change from primary to secondary. A basin already defined as "primary", Carillon Creek, shows slightly expanded boundaries. A slightly larger area would be subject to primary basin standards than is the case under the No Action. However, the added area to the Carillon Creek basin is already largely developed and there is likely to be no significant difference between the No Action and Proposed Action Alternative in this case.

3.2.3 Mitigation Measures

3.2.3.1 Incorporated Plan Features

Kirkland's GMA Comprehensive Plan was adopted in 1995. Although the GMA does not require a comprehensive plan element for critical areas, Kirkland's 1995 plan included a Natural Environment Element, which provided goals and policies supporting the City's critical areas designations and regulations. In early 2000, as part of an annual comprehensive plan update, Kirkland updated the Natural Environment Element to more fully reflect GMA goals and requirements.

In August 2003, Kirkland adopted its *Natural Resource Management Plan*, which comprehensively summarizes the City's natural resource objectives, current practices, and emerging issues. This plan establishes a comprehensive framework to facilitate consideration of future actions related to natural resource management. It is intended to function as a reference document for future City practices, programs, projects, comprehensive plan elements, and development regulations related to natural resources management.

The Plan includes guiding principles based on requirements of law or accepted science, including, but not limited to the following summary list:

- Interdependence of Natural Systems
- Manage Natural Systems Across Boundaries
- Use a Multidisciplinary Approach
- Use a Variety of Management Tools (City practices and programs, public involvement/education, acquisition of prime resource land, incentives, regulation and enforcement)
- Concentrate Efforts in Areas that Will Yield Greatest Benefits
- Manage Resources by Drainage Basin
- Pursue Restoration or at a Minimum Enhancement
- Use Current Knowledge, Technology, and Industry Standards
- Monitor Results and Use Adaptive Management
- Ecological and Economic Benefits of Significant Tree Canopy Cover

- Manage Soil as a Valuable Component of the Ecosystem
- Retain Vegetation where Needed to Stabilize Slopes

In 2004, minor changes to the Natural Environment Element of the City's Comprehensive Plan are proposed to further emphasize the City's commitment to consideration of best available science and protection or enhancement of the habitat of anadromous fish and to incorporate some key concepts from the City's Natural Resource Management Plan. These amendments include an updated version of Kirkland's Sensitive Areas Map, which serves as a guide to approximate locations of known critical areas and drainage basins.

The proposed 2004 Comprehensive Plan also includes a new Framework Goal FG-7 and a revised Policy NE-1.5 and a new Policy NE-2.4 in the Natural Environment Element to encourage low impact development techniques to reduce impacts on the natural environment.

3.2.3.2 Applicable Regulations and Commitments

Chapter 85 of the Kirkland Zoning Code establishes special regulations that apply to development on property containing geologically hazardous areas, including erosion hazard areas, landslide hazard areas, and seismic hazard areas. Chapter 90 of the Kirkland Zoning Code applies regulations to activities, work, and conditions in or near any stream, wetland, frequently flooded area, or lake in the City. The designation and classification of these sensitive areas is intended to assure preservation and protection of their important ecological functions from loss or degradation, and to restrict incompatible land uses. Chapter 15.52 of the Kirkland Municipal Code requires that post-development storm water flow onto adjacent properties may not exceed pre-development flow in order to minimize off-site storm water impacts.

Kirkland's Shoreline Master Program (SMP), adopted pursuant to the Washington State Shoreline Management Act of 1971, designates all parcels along Lake Washington as Shoreline Environments. The detailed regulations in Kirkland's SMP implement this policy.

Federal and state regulations listed above in the Regulatory Environment section apply to natural resources within the City of Kirkland.

3.2.3.3 Other Recommended Mitigation Measures

The City of Kirkland is in the process of developing a revised Surface Water Management Plan. Additional mitigation measures to protect and/or restore surface water bodies, including streams, lakes, and wetlands, may be included in this document.

The City also will be developing a revised Shoreline Master Program (SMP). Pursuant to Washington state requirements, Kirkland's SMP will be updated by December 1, 2009.

Totem Center Study Area

Due to local seismic and landslide hazards in the study area, it is recommended that a geotechnical consultant develop soil suitability studies done for each project specific review to ensure that proposed development in the area is feasible.

Private Amendment Study Areas

No proposed mitigation is recommended other than compliance with the City's critical areas regulations.

3.2.4 Significant Unavoidable Adverse Impacts

3.2.4.1 Earth

Both Alternatives would result in increased urbanization in the City. An unavoidable consequence will include a corresponding increase in erosion and sedimentation. Sediment reaching lakes, wetlands, and streams could have adverse impacts on the nutrient balances and other water quality indicators in these receiving waters. A greater population could also be at risk from the adverse impacts of damage to buildings and infrastructure should an earthquake or landslides occur.

Water Resources

Direct impacts would be minimized with implementation of federal, state, and City regulations, including critical area regulations. Adverse impacts to water resources that may occur despite attempts to mitigate them include:

- Decreases in vegetative cover, resulting in accelerated runoff and erosion processes, elevated water temperatures, and increased stress on aquatic organisms;
- Increases in impervious surfaces, resulting in accelerated runoff, increased volumes of runoff, decreased water quality, and decreased groundwater recharge;
- Erosion and sedimentation of streams, lakes, and wetlands due to increased flow rates and volumes, resulting in the decline of nutrient balances, substrate quality, and habitat availability;
- Decline and eventual loss of some wetland functions for hydrology, water quality, and habitat; and
- Increase in pollutants from stormwater runoff to streams, wetlands and Lake Washington.

The extent to which these indirect and/or cumulative impacts could be reduced or offset will depend on implementation and enforcement of adopted City plans and codes, and the effectiveness of pending City Surface Water Management Plan Update, the effectiveness of WRIA plans, as well as City restoration plans for fish and wildlife habitat that may be associated with its Shoreline Master Program update. The level of significance of impacts would be more precisely determined through project-specific environmental review.

Plant and Animal Resources

Potential indirect impacts include the loss and reduced function of vegetation communities as a result of population growth and development within the City under both Alternatives. A reduction in the amount of vegetation communities would reduce habitat for wildlife. Additional development under any Alternative would result in loss of larger tracts of native vegetation. Vegetation diversity (i.e., number of different native plant species and structure) would decline as the larger tracts of vegetation are developed.

Wildlife habitat could be lost and reduced in function and value as a result of population growth and development within the City under all Alternatives. The reduction in habitat values for some species of wildlife would result in an increase in populations of those species adapted to more urban habitats. Over time, some re-growth of native vegetation would occur within the City as residential areas mature. With this re-growth would be an incremental improvement in habitat values for some wildlife species, primarily songbirds and small mammals.

Fish habitat could be lost or reduced in function and value as a result of population growth and development within the City under all Alternatives. Over time, changes in land use and development patterns would likely result in increased risk of impacts on fish habitat and species. Overall, greater human activity, culvert replacements, increased storm runoff, modified hydrology, and lowered water quality from commercial and roadway traffic sources could result from these Alternatives, all of which would negatively impact fisheries and aquatic habitat.

The extent to which these indirect and/or cumulative impacts could be reduced or offset will depend on implementation and enforcement of adopted City plans and codes, and the effectiveness of pending City Surface Water Management Plan Update, the effectiveness of WRIA plans, as well as City restoration plans that may be associated with its Shoreline Master Program update. The level of significance of impacts would be more precisely determined through project-specific environmental review.

3.3 Land Use Patterns

This section addresses the City's current physical land use pattern and the expected change in land uses over time from implementation of the future land use plans of the Action and No Action alternatives. Alternatives' consistency with state and regional laws and policies is addressed in Section 3.3 Relationship to Plans and Policies.

3.3.1 Affected Environment

3.3.1.1 Current Land Use

Citywide

Land Use and Distribution

The City of Kirkland is located in King County, immediately adjacent to the eastern shore of Lake Washington. The City is bounded by the communities of Bellevue, Clyde Hill and Yarrow Point to the south, Redmond to the east, and unincorporated King County to the north, northwest and northeast. The City of Kirkland's gross land area consists of approximately 7,000 acres. Excluding public rights-of-way, the net land area is approximately 5,200 net acres. The net land area represents the City's developable land base.

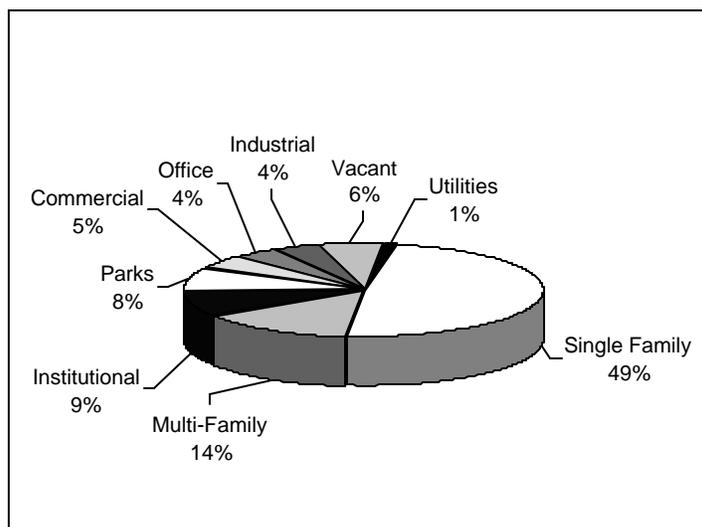
As shown in Figure 3-5, the predominant land use in the City is residential, which comprises 63% of the current land use in Kirkland. Single family residential constitutes 49% and multi-family residential 14% of the total land area in the City. Institutional uses account for approximately 9% of the total land area. Parks/Open Space constitutes 8% of the total land area in the City. Other land uses in the City include: commercial (5%), office (4%), industrial (4%), vacant lands (6%), and utilities (1%).

As shown in Figure 3-6 Existing Land Use Map, existing single-family residential uses are distributed throughout the City. In general, Kirkland's residential neighborhoods are well established with a mix of housing types and sizes. Multifamily uses are typically concentrated near activity areas and commercial centers such as Downtown and Totem Lake Urban Center, along Lake Washington Blvd, and within the South Juanita neighborhood.

Kirkland has a diverse economic base with several commercial centers, mixed use/retail/office districts, business parks, and industrial complexes. Commercial and office

uses are located in neighborhood centers found throughout the City such as Downtown Kirkland, Juanita Village, Totem Lake Urban Center, Rose Hill Business District, Market Business District, Houghton Neighborhood Center, and Carillon Point. Industrial uses tend to be located adjacent to the Burlington Northern Santa Fe (BNSF) railroad right-of-way, and are primarily located within the Totem Lake, Everest, and Moss Bay neighborhoods.

Figure 3-5 Existing Land Use as a Percentage of the City's Total Land Area



Source: Kirkland Land Use Element, Table LU-1; City of Kirkland Community Profile, January 2003.

Parks/Open space are dispersed throughout the City with the largest park areas located along Lake Washington such as Juanita Bay Park and Yarrow Bay Park; in or near Downtown; and within the South Juanita and Norkirk neighborhoods. Private institutions such as the Lake Washington Technical College, Northwest College, and Evergreen Healthcare Center and public and private K-12 schools account for the majority of land currently being used for institutional purposes.

Density and Intensity of Development

The intensity of residential development is measured through density, which is calculated as the number of dwelling units per developable acre (du/ac). As of 2001, the average residential density in the City of Kirkland is 7.16 dwelling units per acre. Residential densities vary by neighborhood from an average of 2.68 du/ac in the Bridle Trails neighborhood to 17.25 du/ac in the Moss Bay neighborhood (which includes Downtown Kirkland). Please refer to Table 3-1, below for a detailed description of residential development in each of the City's neighborhoods.

Table 3 - 1 Residential Development

Neighborhood	Total Acres in Residential Use (Excluding rights-of-way)	Total Units	MF	SF	Residential Density (Units/Residential Acre)	Population (Estimated)
Bridle Trails	311	834	135	699	2.68	2,104
Moss Bay	300	1,351	361	990	4.50	3,279

Neighborhood	Total Acres in Residential Use (Excluding rights-of-way)	Total Units	MF	SF	Residential Density (Units/Residential Acre)	Population (Estimated)
Houghton						
Everest	86	610	393	217	7.13	1,271
Highlands	221	959	108	851	4.34	2,462
Lakeview	157	1,408	1,158	250	8.96	2,706
Market	224	904	197	707	4.03	2,234
Moss Bay	140	2,413	2,170	243	17.25	4,468
Norkirk	264	1,481	298	1,183	5.60	3,683
North Juanita	240	1,857	972	885	7.73	4,074
North Rose Hill	532	2,825	1,329	1,496	5.31	6,333
South Juanita	551	3,674	2,353	1,321	6.66	7,668
South Rose Hill	279	1,195	249	946	4.28	2,964
Totem Lake	119	1,746	1,743	3	14.62	3,076
Totals	3,426	21,257	11,466	9,791		46,322

Source: City of Kirkland, 2004.

For non-residential uses, the intensity of development is measured through floor area ratios, which is calculated as the ratio of developed floor area in a use to the total land area in that use. Floor area ratios are influenced by factors such as the type of use, building height, setbacks, and parking requirements. On a Citywide basis, the floor area ratios can be generally described as shown in Table 3-2. The floor area ratios averaged over the City are 0.28 FAR for commercial uses, 0.56 FAR for office uses, and 0.35 FAR for industrial uses.

Table 3 - 2 Non-Residential Floor Area

Land Use Type	Total Land Area (acres)	Total Land Area (Sq. Ft.)	Total Building Sq. Ft.	Average Floor Area Ratio
Commercial	286	12,458,160	3,445,567	0.28
Office	184	8,015,040	4,477,769	0.56
Industrial	210	9,147,600	3,221,381	0.35
Total	680	29,620,800	11,144,717	

Source: City of Kirkland Community Profile, January 2003 and the City's transportation model.

As of 2001, the City of Kirkland has approximately 11,145,000 square feet of existing floor area dedicated to non-residential uses. Of that developed total, approximately 40% are dedicated to office uses (4,500,000 sq. ft.), 31% are dedicated to commercial uses (3,445,000 sq. ft.), and 29% are dedicated to industrial uses (3,200,000 sq. ft.). The largest percentage of office uses is located in the Lakeview Neighborhood. The largest percentage of commercial and industrial uses is located in the Totem Lake Neighborhood.

Totem Center Study Area

Land Use and Distribution

As shown in Figures 2-2 Totem Center Study Area and 3-6 Existing Land Use, the Totem Center Study Area is located in the greater Totem Center area of the Totem Lake Neighborhood and is generally bounded by I-405 to the west, NE 132nd Street to the north (north City boundary), Evergreen Healthcare Center to the east, and NE Totem Lake Way to the south. The study area comprises 70.9 acres excluding public rights of way and does not include the Evergreen Healthcare Center. The existing land use in the study area consists of office, commercial (including Totem Lake Mall), and multi-family residential uses. The existing land use breakdown for the Totem Center Study Area is shown in Table 3-3.

Table 3 - 3 Existing Land Use-Totem Center Study Area

Land Use Type	Existing Building
Residential	200 units
Office	308,888 square feet
Commercial	329,587 square feet
Industrial	0
Institutions	0

Source: City of Kirkland 2003 Capacity Analysis, Kirsty Burt GIS.

Land uses adjacent to the study area include single family residential north of NE 132nd St., I-405 to the west, institutional uses (Evergreen Healthcare Medical Center) and multifamily residential to the east, and commercial and office uses to the south.

Density and Intensity of Development

At a neighborhood level, the Totem Lake Neighborhood has the greatest percentage of commercial and industrial acreage in the City. Currently, the Totem Center Study Area is characterized by development of low to moderate intensity, typically one to two story buildings. Although the Totem Center Study Area primarily consists of office and commercial uses, one residential development for a total of 200 multi-family dwelling units currently exists within the study area. The density of this multi-family residential development is approximately 18 dwelling units per acre (du/ac). The average FAR of office and commercial development in the Totem Center Study Area is 0.23 FAR and 0.29 FAR respectively.

Private Amendment Study Areas

Two private amendment requests are being considered as a part of the Comprehensive Plan Update. The City of Kirkland has decided to conduct a broader review of the area surrounding the private property owners' request to look at similarly situated properties. The existing land use framework for these areas are shown in Figure 3-6 and Table 3-4 generally described below:

Amendment A

The Lakeshore Clinic PLA 6B Study Area, Amendment A, consists of approximately 9.4 acres (excluding right-of-way) and is located in the Moss Bay Neighborhood of Kirkland.

The study area is bounded by 2nd Avenue S to the north, 7th Avenue S to the south, 2nd Street S to the west, and 3rd Pl S to the east. Existing land uses within the study area include: professional office (medical/dental offices), institutional uses (churches, funeral home), and single family residential. Adjacent land uses include: single-family and multi-family residential to the south, west, and east and downtown commercial, office, and residential development to the north.

The Lakeshore Clinic PLA 6B Study Area currently includes eight single-family residences for an approximate density of 8 du/ac. The office space in the study area has an approximate FAR of 0.19.

Amendment B

The Sedorco Partnership 6th Street South Study Area, Amendment B, consists of approximately 15.6 acres (excluding right-of-way) and is located in the Everest Neighborhood of Kirkland. The study area is bounded by the BNSF railroad to the west, 6th Street S to the east, and the commercial area to the south. The predominant land use in the study area is light industrial with some limited office space associated with the industrial uses. There are currently no residential uses within the study area. Land uses adjacent to the study area include office and neighborhood commercial uses (Houghton Shopping Center) to the south; BNSF railroad and industrial uses to the west; multi-family residential and offices to the east, and a mix of offices and industrial uses to the north.

The FAR for industrial uses in the study area is approximately 0.43. The approximate FAR of the current office use in the study area is 0.16.

Table 3 - 4 Existing Land Use-Private Amendment Study Areas

Land Use	Amendment A (PLA6B) Development	Amendment B (LIT) Development
Residential	8 units	0
Office	28,656 square feet	7,244 square feet
Commercial	0	0
Industrial	0	262,937 square feet
Institutions	54,520 square feet	0

Source: City of Kirkland 2003 Capacity Analysis, Kirsty Burt GIS.

3.3.1.2 Comprehensive Plan Designations and Zoning

Citywide

Description of Land Use Designations and Zoning Districts

The Comprehensive Plan Land Use Map, Figure 2-4, depicts land use designations reflecting the predominant use allowed in each area of the City. These land use designations are reflected in a broad variety of zoning districts on the Kirkland Zoning Map, Figure 2-5 which implements the Comprehensive Plan Land Use Map. The Land Use Map and the Zoning Map are generally consistent. The Comprehensive Plan Land Use Map is used as a base for the Zoning map and is then the Zoning Map is overlaid with specific zoning district information. The Zoning Map is an expression of the

Comprehensive Plan Land Use Map but provides greater detail about the specific types and intensity of development allowable within each land use category. The major land use categories mapped on Kirkland's Comprehensive Land Use Map are shown in and generally described as follows:

Residential

Land Use

Residential development can be described as falling into one of three categories:

- Low Density Residential;
- Medium Density Residential; and
- High Density Residential.

Under the Current Comprehensive Plan, Low Density Residential is the predominant residential use designation and includes attached and detached single-family units ranging from 1-9 dwelling units per acre, Medium Density Residential includes attached and detached residential uses at 8 to 14 dwelling units per acre. High Density Residential includes multifamily at 15 units or more per acre.

Zoning

Residentially designated areas are depicted on the Zoning Map, Figure 2-5, according to zoning districts that provides greater detail about density, minimum lot sizes, setbacks, and other development standards. The following are examples of residential zoning districts within the City of Kirkland:

Low Density Residential Zones

- RS 35/RSX35
- RS 12.5/RSX 12.5
- RS8.5/RSX 8.5
- RS 7.2/RSX 7.2
- RS 5.0/RSX 5.0
- PLA 6C, 6E
- PLA 16
- WD II

Medium Density Residential Zones

- RM 5.0
- RM 3.6
- WD I
- WD III
- PLA 2, 3B
- PLA 6F, H, K
- PLA 7C
- PLA 9
- PLA 15B
- PLA 17

High Density Residential Zones

- RM 2.4
- RM1.8
- PLA 5A, D, E
- PLA 6A, D, I, J

- PLA 7A, B

In general, the numbers associated with the residential zoning districts correspond to minimum lot area per unit. For example, for a RS35 zoning district, the minimum lot size is 35,000 sq. ft. For the RM 5.0 zoning district, the minimum lot size per unit is 5,000 sq. ft.

Commercial

Land Use

Commercially designated areas may include retail, office, and multifamily uses, depending on the location. Commercial areas can range in size and function from small residential markets servicing the immediate neighborhood to regional draws such as in Totem Lake and Downtown.

Zoning

Areas designated commercial on the land use map can be further described on the Zoning Map as Neighborhood Business (BN), Community Business (BC), Central Business District (CBD), Juanita Business Districts (JBD 1-2, 4-6), Freeway Commercial Districts (FC I-III), Planned Areas (PLA 8, PLA 10A, PLA 13A), and North Rose Hill Business Districts (NRH 1A, NRH 1B, and NRH 4).

Office

Land Use

Office land use designations include:

- Office- providing services other than production, distribution, or sale or repair of goods or commodities and;
- Office/Multi-family-areas where both office and medium or high-density residential uses are allowed. Uses may be allowed individually or within the same building.

Zoning

On the Zoning Map, these office areas are further described according to the Professional Office and Professional Office Residential zoning districts (PO, PR 8.5, PR 5.0, PR 3.6, PR 2.4, PR 1.8, JBD 3, PLA 3A, PLA5B, PLA 5C, PLA 6B; PLA 10B, C; PLA 11; PLA 13B; PLA 15A; PLA 17B, C; FC III; NRH 2; NRH 3; NRH 5; and NRH 6).

Industrial

Land Use

Industrially designated lands are predominantly connected with manufacturing, assembly, processing, wholesaling, warehousing, distribution of products, and high technology.

Zoning

The corresponding zoning districts for industrially designated lands include: Light Industrial Technology (LIT), Industrial Limited Commercial (ILC), and Planned Areas (PLA 6G and PLA 11) zoning districts.

Light Manufacturing Park

Land Use

Lands designated Light Manufacturing Park contain places of business activity that includes light manufacturing, high technology enterprises, warehousing, wholesale activities, and limited retail and office uses. Light Manufacturing uses do not involved activities that create

significant offsite noise, light or glare, odors, smoke, water quality degradation, visual blight or similar impacts.

Zoning

On the Zoning Map, Light Manufacturing Park areas are shown as Planned Areas (PLAs), which are planned districts with development regulations specifically designed for that area. There is currently only one area within the City, located in the North Rose Hill neighborhood, which is zoned for Light Manufacturing Park.

Institutions

Land Use

Institutionally designated areas include higher educational facilities and hospitals for which special planning districts have been developed.

Zoning

Institutional uses such as Evergreen Healthcare Medical Center, Northwest College, and Lake Washington Technical College are depicted on the zoning map as Planned Areas (PLA).

Public Facilities

Land Use

Existing public uses such as schools and government facilities are depicted on the Land Use Map with a public facilities overlay. However, only parks/open spaces and the Houghton Landfill are identified as “Public Use Zones” on the Zoning Map.

Zoning

On the Zoning Map, public and private schools are typically located within single-family residentially zoned areas and are not individually classified on the zoning map as institutions or public facilities. Northwest College, Lake Washington Technical College and Evergreen Healthcare Medical Center are classified as institutions and are zoned as “Planned Area” on the Zoning Map. As noted above, parks/open spaces and the Houghton Landfill site are zoned as “Public Use Zones.”

Parks/Open Space

Land Use

Parks/Open space areas designated on the Comprehensive Land Use Map are associated with natural or landscaped areas used to meet active or passive recreational needs, protect environmentally sensitive areas, and/or preserve natural landforms and scenic views.

Zoning

On the Zoning Map, park/open space areas are classified as “Public Use Zones”.

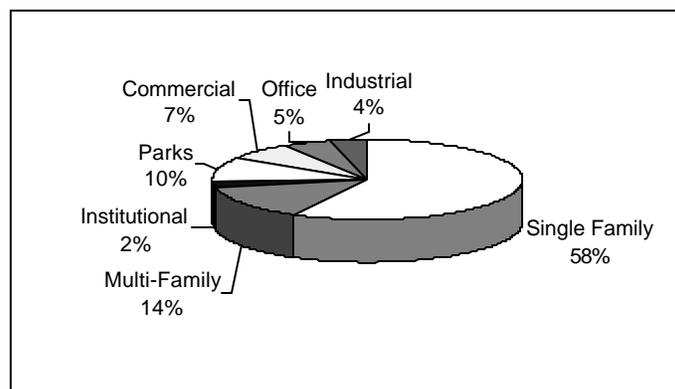
Other Zoning Districts

In addition to the zoning districts described above, there are additional overlays depicted on the City’s Zoning Map including areas of Planned Areas (PLA), Planned Unit Developments (PUDs), Historic Landmarks (HL), areas where Adult Entertainment uses are allowable (AE), and Equestrian Areas (EQ). Planned areas (PLA) are planned districts with development regulations specifically designed for that area.

Current Citywide Zoning

The City has calculated the amount of land allocated to each land use/zoning category (City of Kirkland Community Profile, 2003). As shown in Figure 3-7, 72% of the land in Kirkland is zoned for residential development. Single Family Residential zoning accounts for 58% of the total land area in the City; Multi-family zoning (medium and high density residential areas) accounts for 14%. Non-residential uses account for 28% of zoning in the City. Parks/Open Space (Public Use Zone) comprises 10% of the total land area in the City. Other zoning as a percentage of total City acreage includes: Commercial (7%), Office (5%); Industrial (4%) and Institutional (2%). In general, the land area currently dedicated to each zoning category closely mirrors the percentage breakdown of existing land uses in the City. Exceptions include single-family residential and institutional uses. Existing single-family uses comprise roughly half of the existing land use in the City; slightly more land, 58%, is zoned single family residential. Existing institutional uses currently accounts for 9% of the total land area in the City, yet institutional zoning only accounts for 2% of the total land area in the City. This is largely attributable to the fact that uses such as public and private schools and churches are typically located within single-family residentially zoned areas and are not individually classified on the zoning map as institutions. On the zoning map, the only institutions designated are major institutions such as Evergreen Healthcare Center, Northwest College, or Lake Washington Technical College.

Figure 3-7 Zoning as a Percentage of Total City Acreage



Source: City of Kirkland Community Profile, January 2003.

Totem Center Study Area

The Totem Center Study Area includes two land use designations: Commercial and Office/Multi-family. Policies within the Totem Center section of the Totem Lake Neighborhood Plan support more intensive development within the Totem Center area, including minimum development thresholds; high density residential development (including incentives to support housing in mixed use areas); design principles for development within Totem Center, including at Totem Lake Mall; transportation facilities to support intensive development (such as the proposed Totem Center transit station); and community-oriented features, such as an open space network and community centered functions and activities.

The corresponding zoning districts include Totem Lake 1A and 1B (TL1 and TL2) which allow office and high density residential and Totem Lake 2 (TL2) which allows a wide range of uses, including commercial and high density residential.

Private Amendment Study Areas

The land use designation for Amendment A, the Lakeshore Clinic PLA 6B Study Area, is currently Medium Density Residential, which appears to have been applied in error since the existing uses and zoning also support office use. The correct land use designation would be Office/Multifamily. The study area is a Planned Area (PLA) with a zoning classification of medium density Multi-family Residential RM 3.6. This zone classification requires a minimum lot area of 3,600 sq. ft. per residential unit and a density of approximately 12 dwelling units/acre.

The land use designation for Amendment B, the Sedorco Partnership 6th Street South Study Area, is currently designated Industrial on the Comprehensive Plan Land Use Map with a zoning classification of Light Industrial Technology (LIT). The LIT zoning district allows for a variety of industrial uses such as warehousing, manufacturing, wholesale trade, and high technology.

3.3.2 Impacts

The focus of this section is to describe the potential future impacts of the proposed land use plans of the Proposed Action and No Action Alternatives including changes in activity levels and patterns as growth occurs according to future land uses; land use compatibility; and the capability of the land to absorb future growth. The analysis includes a brief cumulative analysis of City growth patterns.

The categories of impacts addressed include:

- Changes in activity levels and land use patterns;
- Land Use Compatibility;
- Capability of the land to absorb densities.

3.3.2.1 Impacts Common to All Alternatives

Changes in Land Use Patterns and Activity Levels

Citywide

As described in Section 3.3.1.1 Current Land Use, the predominant land use in the City is residential. Existing residential uses account for 63% of the total land use in the City, of which single family residential comprises 49%. Future land uses identified on the Comprehensive Plan Land Use Map, Figure 2-4, maintains the predominance of residential uses in the City. Land use changes will not greatly alter land use patterns. Instead, existing land use patterns will be intensified relative to current conditions.

The Land Use concept articulated in Kirkland's Comprehensive Plan focuses on:

- Maintaining a balanced and complete community by retaining the community's character and quality of life, while accommodating growth and minimizing traffic congestion and service delivery costs.
- Goals and policies that promote an orderly, compact, well-designed land use pattern, responsive to both the natural and physical environment.
- A land use pattern that supports a multimodal transportation system and results in more efficient service delivery. A key aspect to this is placing urban neighborhoods around commercial development areas or activity areas.

- Protects existing single-family residential neighborhoods and concentrates higher density residential areas in or near commercial centers and transportation hubs.

Implementing the Comprehensive Plan's land use concept will involve some intensification of land use through infill and redevelopment in every neighborhood of the City, some to a greater extent than others. Many of the City's older neighborhoods are predominantly built out, and infill and redevelopment will not greatly alter existing land use patterns relative to current conditions.

The Comprehensive Plan primarily focuses new growth into and around the City's commercial activity areas. The most noticeable changes in land use patterns would occur in these areas. For both the No Action and Action alternatives, opportunities to accommodate significant future growth are provided in the Totem Center Urban Center of the Totem Lake Neighborhood as well as continued densification in Downtown Kirkland. To a lesser degree, the Rose Hill Business District along NE 85th Street and the North Rose Hill Business District also accommodate future growth. Other existing commercial districts in the City are also maintained and strengthened through infill and redevelopment.

For both the Proposed Action and No Action alternatives, there would be an increase in total amount of land committed to housing and employment. New residential, commercial, industrial, and institutional construction and development would continue. There will be increased employment opportunities. As new development is occupied, it would result in higher levels of activity in the surrounding area through attraction of new businesses, expansion of existing businesses, and development of activity areas and mixed-use development. Depending on the types of uses, these impacts could be experienced at any time during the week. Increased activity levels may be incompatible with activity levels of adjacent residential or commercial neighborhoods.

Direct, construction-related impacts associated with the No Action and Proposed Action Alternatives would include dust, traffic delays, noise, and general inconvenience. Cumulative impacts would include a reduction in vacant lands over time; increased urban activity such as traffic, noise, glare and pedestrian activity; and loss of some natural vegetation on currently vacant lands (to be replaced by required landscaping).

Areas that are currently vacant (304 acres or 6% of total land in the City) would be developed with urban uses over time. Vacant and partially vacant lands are distributed throughout the City, however the Totem Lake (54 acres), North Rose Hill (53 acres), and South Juanita (58 acres) neighborhoods currently have the largest amount of vacant land available in the City. In addition, some land uses may eventually be converted to other uses, and underutilized properties may be redeveloped over time. The City's extensive parks and open space system, which currently accounts for 8% of the City's existing land use and 10% of City zoning, will help to relieve the continued intensification of existing land use patterns and the absorption and development of vacant lands. Land uses along the Lake Washington waterfront should remain stable. As a prime destination in the City for both residents and visitors, it is likely that the general increase in population and employment will result in increased human activity along the waterfront as well as the City's parks and open space areas.

Totem Center Study Area

The Totem Center Study Area will experience the most noticeable changes due to the higher rate of construction of office, commercial, and residential development planned for the area as compared to the rest of the City, the potential redevelopment of Totem Lake Mall, and future development plans for the Evergreen Healthcare Medical Center. The Totem Lake Neighborhood Plan, adopted on January 15, 2002, sets forth a vision for the Totem Center

that focuses on a dense, compact community, with a mix of business, commercial and residential uses and a high level of transit and pedestrian activity. Within the Totem Center, neighborhood plan goals, policies, and zoning promote increased density and intensity of development. It is anticipated that vacant or underutilized properties will redevelop over time to accommodate the City's projected growth. With infill and redevelopment in the Totem Center Study area there would be associated changes in land use and visual character. Over time, the Totem Center Study Area will experience an increase in high-density housing, office, and commercial uses. This will cause changes in height, bulk, and scale in the Totem Center Study Area (see Section 3.6 for Aesthetics analysis). The extent of the land use, visual, and aesthetic impact will depend on the values and preferences of those viewing the change; the quality of architectural features, site design, landscaping, and other urban design elements incorporated into the development; and how well the image presented by the overall scale and form of the development incorporates the features of the local setting. This is described in greater detail in Section 3.6, Aesthetics. In addition, the 200 residents in existing residential developments in the Totem Center Study Area may be displaced if redevelopment occurs.

Private Amendment Study Areas

Under either of the Alternatives, changes to land use patterns and activity levels would be expected. In Private Amendment Study Area A, residential development would be expected to increase. Institutional and office uses would continue and Area A would continue to provide some employment. The overall mix of these uses is expected to differ between the alternatives. Please refer to Section 3.3.2.3 for additional discussion.

In Private Amendment Study Area B, office uses are expected to increase and industrial uses to decrease under either Alternative. The relative magnitude of changes to office and industrial uses differs by alternative, please refer to Section 3.3.2.3 for additional discussion. Under either alternative, Private Amendment Study Area B would continue to provide some employment.

Land Use Compatibility

Citywide

With increased densification and intensification of land uses, new developments with larger buildings, greater lot coverage, and increased parking areas could result in localized compatibility impacts if adjacent properties are of a lower scale or less urban in character. Impacts could include increased visual contrast in building scale and potential for increased shadowing and incremental change in local character. The magnitude of these impacts would generally depend on the compatibility of future development with the surrounding built environment including bulk and scale, building form, and site design.

As the City continues to densify, environmentally sensitive areas would experience direct and indirect consequences of development (see Section 3.2 Natural Environment, for more information).

Totem Center Study Area

As is the trend Citywide, land use changes in the Totem Center Study Area focus on intensification and densification of uses. As part of a planned Urban Center, the study area will experience increased development of office, commercial and residential uses. Land use compatibility issues will likely be associated with this infill and redevelopment and changes in the intensity of development in the study area. For example, the area immediately north of

NE 132nd Street is currently single family residential and of a much lower scale and intensity than what is planned for the northern portion of the Totem Center Study Area. Increased activity levels may be incompatible with activity levels of adjacent residential to the north. This area could likely experience direct impacts associated with construction such as dust, traffic delays, noise, and general inconvenience. Other impacts could potentially include increased shadowing on the single-family residential development to the north during winter months. Aesthetic impacts are discussed in Section 3.6. Cumulative impacts would include increased urban activity such as traffic, noise, glare, pedestrian activity.

Changes in the type of development in the Totem Center Study Area will occur as well from more of an auto-oriented development pattern to a much more compact, mixed use, pedestrian and transit-oriented development type. Transit-oriented and mixed-use development will help to reduce the number of single occupancy trips to, from, and within the study area. This supports the vision of a compact, efficient multimodal neighborhood. To some, the change from low-rise development to more intensive, transit and pedestrian oriented development may be perceived as an environmental benefit and an expected evolution of an urbanizing landscape, while others may be less receptive to changes in scale and intensity of development.

Private Amendment Study Areas

With changes to the mix of residential, office, and industrial uses in the two private amendment study areas, the potential for land use conflicts at the boundaries between less intensive and more intensive uses increases. The magnitude of these impacts will depend on the design compatibility of different uses relative to building height, bulk and scale. Existing City Zoning Code standards for building modulation and landscape buffers between land uses of differing intensities will help mitigate any potential impacts.

Capability of Land to Absorb Densities

The discussion of the ability of the land to absorb the planned density and intensity of development for both the No Action and Action Alternative impacts is addressed under section 3.3.2.2 and 3.3.2.3 below.

3.3.2.2 No Action Impacts

For the purpose of this analysis, the No Action Alternative represents the continuation of the City's current Comprehensive Plan (adopted July 1995, with amendments through December 9, 2003) through the adopted 2012-planning horizon. The City's Comprehensive Plan Land Use Map under the No Action Alternative is provided in Figure 2-4. As described in Chapter 2, the No Action Alternative does not include any technical or editorial amendments to Comprehensive Plan policies, any procedural Zoning Code amendments or consideration of any private Comprehensive Plan amendment requests. The No Action Alternative analysis provides a snapshot of the impacts that could be expected at the mid-point of growth to 2022, and provides a basis for comparison to assess the impacts that are likely to be experienced with population and employment growth between 2012 and 2022. The No Action Alternative is assessed in terms of the ability of the land use designation to accommodate projected growth.

Changes in Land Use Patterns and Activity Levels

Due to the fact that the 2012 No Action Alternative is a continuation of the existing Comprehensive Plan, the land use patterns Citywide would not change significantly. However, there would be changes in the activity levels due to increased densification and intensification of development over time. This supports the City's desire to maintain a balanced and complete community that retains the community's character and quality of life, while accommodating growth and minimizing traffic congestion and service delivery costs.

The impacts of the No Action alternative Citywide would be similar to the impacts described in Section 3.3.2.1, Impacts Common to All Alternatives, but to a lesser degree generally for the No Action Alternative because it represents a mid-point of growth to 2022.

Land Use Compatibility

The impacts associated with land use compatibility for the No Action Alternative would be similar to the impacts described in Section 3.3.2.1, Impacts Common to All Alternatives.

Capability to Land to Absorb Densities

Citywide

The No Action Alternative is represented by the current Comprehensive Plan, which as adopted in 1995. Based on 1991 data, the City estimated a capacity of 24,400 dwelling units and 38,600 jobs in Kirkland. The City's target for residential units was 24,501 or a range from 24,258 to 25,327 units. The employment target was 30,464 jobs. At the time of adoption of the 1995 Comprehensive Plan, the City had adequate capacity to meet their dwelling unit (considering the range) and employment targets. Table 3-5 depicts the 2012 housing and employment targets and assumed capacity.

In 1995, when the current Comprehensive Plan was adopted, the City estimated that 24,501 residential dwelling units would accommodate a population of 50,756 persons (see Table 3-5 below). Compared to 2003 existing housing inventory of 22,120 dwelling units, an additional 2,138 to 3,207 dwelling units are required to meet the City's 2012 growth target. Based on the capacity assumption used with the 1995 Plan, the City has capacity for another 2,280 dwelling units, or adequate capacity to meet the 2012 growth target range.

Under the No Action alternative, the City currently exceeds their employment target with an excess of 4,379 employees provided over the 2012 target of 30,464 employees. 2003 employment also exceeds the employment capacity that was estimated in 1991 as part of the 1995 Comprehensive Plan adoption. The No Action alternative would not correct this discrepancy.

Table 3 - 5 No Action Alternative Housing and Employment Targets and Capacity

Citywide	1991	2003	Capacity ⁵	2012 Target
Population^{1,2}	40,753	45,630	50,547	50,756
Housing Units	18,664	22,120 ³	24,400	24,501 ⁴ (range 24,258 - 25,327)
Employment	21,864	34,843 ³	38,600	30,464 ⁴ (range 29,664 - 31,664)

¹Year 1991 and 2003 based on State Office of Financial Management. Year 2012 based on 2004 Comprehensive Plan Update statistics. Capacity population applies similar persons per household as for 2012 target ²The City is assigned a household target as the method to accommodate the forecasted population. ³Source: City of Kirkland 2003 Existing/Future Capacity Analysis. ⁴Source: Countywide Planning Policies for King County, November 2002, added to year 1991 employment and households. ⁵Capacity analysis done by the City in 1991 and cited in the 1995 Community Profile, City of Kirkland.

Totem Center Study Area

The No Action Alternative does not include specific residential or employment capacity estimates or growth forecasts for the Totem Center Study Area. The 1991 capacity estimate and 2012 targets were established prior to adoption of the updated Totem Lake Neighborhood Plan. Because the Neighborhood Plan increased the potential density and intensity of development that can occur in the neighborhood, including in the Totem Center Study Area, it is likely that the capacity estimate 1991 development for the 1995 Comprehensive Plan is inconsistent with the updated estimate, described under the Proposed Action discussion below. The No Action Alternative would not correct this inconsistency.

Private Amendment Study Areas

Amendment A

The No Action Alternative does not include specific residential or employment capacity estimates or growth forecasts for Private Amendment Request Study Area A. 2003 development in Study Area A consists of eight dwelling units, 28,656 square feet of office space, and 54,520 square feet of institutional uses. In 2003, development in Study Area A provided an estimated 115 jobs. It is not known how the estimated development capacity for this area relates to existing development or 2012 targets.

Amendment B

The No Action Alternative does not include specific residential or employment capacity estimates or growth forecasts for Private Amendment Request Study Area B. 2003 development in Study Area B consists of 7,244 square feet of office space, and 262,937 square feet of industrial uses. In 2003, development in Study Area B provided an estimated 476 jobs. The existing LIT zoning designation does not allow residential development, so it is likely that the 1991 capacity estimate for this area did not include any residential capacity. It is not known how the capacity estimate prepared for the 1995 Comprehensive Plan relates to other existing development or targets.

3.3.2.3 Impacts of Proposed Action

The analysis for the Proposed Action includes a Citywide assessment of the impacts that are likely to be experienced with population and employment growth between 2012 and 2022.

The Proposed Action is assessed in terms of the ability of the land use designation to accommodate projected growth. Between current 2003 conditions and 2012, the impacts for the Proposed Action are similar to that of the No Action alternative. With the exception of the proposed private amendment requests, land use designations do not change between the Proposed Action and No Action alternatives. Zoning amendments are anticipated to occur in the Totem Center under the Action Alternative, which will affect scale and distribution of development within the study area. The impact analysis of the Proposed Action addresses the ability of the future land use designations to accommodate 2022 population and employment growth forecasts, analyzes the impacts associated with zoning changes in the Totem Center, and analyzes two private amendment requests to amend the Future Land Use Map for two areas of the City. The City's Comprehensive Plan Land Use Map under the Proposed Action Alternative is provided in Figure 2-6.

Changes in Land Use Patterns and Activity Levels

The impacts of the Proposed Action Alternative at Totem Center would be similar to the impacts described in Section 3.3.2.1, Impacts Common to All Alternatives.

Land Use Compatibility

The impacts associated with land use compatibility for the Proposed Action would be similar to the impacts described in Section 3.3.2.1, Impacts Common to All Alternatives.

Capability of the Land to Absorb Densities

Citywide

In 2003, the City updated its land use capacity estimates as part of its preparation for the Comprehensive Plan update. The updated estimates indicate that the City has capacity for 27,974 residential dwelling units and 53,128 jobs (refer to Table 3-6 below). As Table 3-6 shows, the City's updated 2022 residential growth target equals 27,311 dwelling units, and the employment target equals 41,184 jobs. The City's residential capacity exceeds its target by 663 dwelling units and employment capacity exceeds its target by 11,944 jobs. Although the City's updated residential target is very close to estimated capacity, both the residential and employment targets are within estimated capacity.

Table 3 - 6 Citywide 2022 Housing and Employment Targets and Capacity

	2000	2003	Capacity of Proposed Plan ⁵	2022 Target ¹
Population^{1,4}	45,054	45,630	56,670	55,327
Housing Units²	21,831	22,120	27,974	27,311
Employment²	32,384 ³	34,843	53,128	41,184

¹Year 2000 and 2003 based on State office of Financial Management. Year 2022 based on 2004 Comprehensive Plan Update Statistics. Capacity population applies same persons per household as 2022 target. ²2000--2022 net household target equals 5,480 households. Year 2000--2022 net employment target equals 8,800 jobs. ³Year 2000 employment based on City estimates. State Employment Security Department/PSRC estimates of employment were later found to have significant discrepancies. ⁴The City is assigned a household target as the method to accommodate the forecasted population. ⁵Capacity analysis prepared by the City in June 2003. Capacity may extend beyond 2022.

Compared to 2003 existing housing inventory of 22,120 dwelling units, an additional 5,191 dwelling units are required to meet the City's 2022 residential growth target. Based on the 2003 capacity estimate, the City has capacity for another 5,854 dwelling units, or adequate capacity to meet the 2022 growth target.

Compared to the 2003 employment estimate of 34,843 jobs, an additional 6,341 jobs are need to meet the City's 2002 employment growth target. Based on the 2003 capacity estimate, the City has capacity for another 18,285 jobs, or adequate capacity to meet the 2022 growth target.

Totem Center Study Area

The Totem Lake TL1A & TL1B zones allows for uses such as offices, high density multifamily residential, assisted living facilities, parks, and institutions such as churches and schools. Retail uses and restaurants are allowable as accessory uses. The Totem Lake TL2 zone allows for office, retail and high density residential uses that must be planned through the Conceptual Master Plan process or be compatible with an approved conceptual master plan. The Totem Lake TL1A, TL1B, TL2 zones refine the development standards for the study area including lot coverage, height, bulk, and scale of development.

The capacity and growth forecast estimates provided for the Totem Center Study Area are based on updated City capacity and target data, adjusted to match the Totem Center Study Area boundaries (see Table 3-7). Based on these estimates, the 2003 residential capacity of the Totem Center Study Area is 902 dwelling units. The 2003 employment capacity of the Study Area is 3,117 jobs. Estimated 2022 growth forecast for the Study Area are 790 dwelling units and 2,683 jobs. Residential capacity in the Study Area exceeds the growth forecast by 112 dwelling units and employment capacity exceeds the growth forecast by 479 jobs.

Table 3 - 7 2022 Housing and Employment Capacity-Totem Center Study Area

	2003 Land Use Totem Center Study Area	Totem Center Study Area Capacity¹	Totem Center Study Area Estimated² Forecast
Residential (units)	200	902	790
Office (square feet)	308,888	575,712	403,189
Commercial (square feet)	329,587	475,000	361,616
Industrial (square feet)	0	0	
Employees (jobs)	1,895	3,117	2,638

Source: City of Kirkland 2003 Capacity Analysis, Jones & Stokes.

¹ Capacity analysis prepared by the City in June 2003. Capacity may extend beyond 2022. ² Based on study area's estimated capacity compared to Citywide estimated capacity and then the percent applied to the Citywide targets to determine study area's general forecasted share of the Citywide targets.

Compared to 2003 Study Area housing inventory of 200 dwelling units, an additional 590 dwelling units are required to meet the estimated Study Area 2022 residential growth forecast. Based on the 2003 Study Area capacity estimate, there is capacity for another 702 dwelling units, or adequate capacity to meet the 2022 growth forecast.

Compared to the 2003 Study Area employment estimate of 1,895 jobs, an additional 743 jobs are needed to meet the estimated Study Area 2022 employment growth forecast. Based on the 2003 capacity estimate, the Study Area has capacity for another 1,222 jobs, or adequate capacity to meet the 2022 growth forecast.

In both the No Action and Proposed Action, existing residents may be displaced from the existing residential developments if redevelopment occurs in the Totem Center Study Area on the residential parcel.

Private Amendment Study Areas

Table 3-8 summarizes existing, growth forecast and estimated land use capacity for the private amendment requests.

Amendment A

Private Amendment Request A would increase the allowable residential density in the Planned Area 6B zone from medium density to high density (Multifamily-RM3.6 to Multifamily-RM1.8). The land use designation would be corrected from Medium Density Residential to Office/Multi-Family and would increase the allowable residential density from 12 units/acre to 24 units/acre.

Table 3 - 8 Private Amendment Study Areas Land Use Capacity

	2003 Land Use	Estimated Capacity ⁴	2022 Growth Forecast ⁵
Amendment Request Study Area A²			
Residential (units)	8	185	185
Office (s.f.)	28,656	28,656	17,937
Commercial (s.f.)	0	0	0
Industrial (s.f.)	0	0	0
Employees¹	115	115	84
Amendment B³			
Residential (units) at 12 units per acre	0	43	28
Office (s.f.)	7,244	116,244	45,549
Commercial (s.f.)	0	0	0
Industrial (s.f.)	262,937	144,121	140,499
Employees¹	476	681	387

Source: Email communication from Thang Nguyen, April 14, 2004 ¹ Does not include institutions or special generators. ²For PLA6B, the City assumes that 60% of the study area will redevelop in the future and that 40% will see no change. ³For Sedorco, the City estimates 86 residential units if 100% site is residential at 12 units per acre and no office. If developed with offices there is a future capacity of 236,379 square feet if considering 100% office. ⁴ Capacity analysis prepared by the City in June 2003. Capacity may extend beyond 2022. ⁵ Based on study area's estimated capacity compared to Citywide estimated capacity and then the percent applied to the Citywide targets to determine study area's general forecasted share of the Citywide targets. Source: City of Kirkland 2003 Capacity Analysis.

The capacity and growth forecast estimates provided for the Private Amendment Request Study Area A are based on updated City capacity and target data, adjusted to match the Study Area boundaries. Based on these estimates, the 2003 residential capacity of the Amendment A Study Area is 185 dwelling units. The 2003 employment capacity of the Study Area is 115 jobs. Estimated 2022 forecasts for the Study Area are 185 dwelling units and 84 jobs. Residential capacity in the Study Area matches the growth forecast and employment capacity exceeds the forecast by 31 jobs.

Compared to 2003 Study Area A housing inventory of 8 dwelling units, an additional 177 dwelling units are required to meet the estimated Study Area A 2022 residential growth forecast. Based on the 2003 Study Area A capacity estimate, there is capacity for an additional 177 dwelling units; capacity matches the forecast.

The 2003 Study Area A employment estimate of 115 jobs exceeds the 2022 estimated employment forecast by 31 jobs. This is because existing office development is expected to decline slightly as residential development increases. As shown in Table 3-8, capacity for office development in the Study Area remains sufficient to maintain an employment capacity of 115 jobs.

An increase in multi-family residential development in the study area is consistent with the Comprehensive Plan land use concept to concentrate growth near commercial activity areas, as described in greater detail in Section 3.4 Relationship to Plans and Policies. In terms of land use patterns, residential densification is compatible with recent growth trends in the vicinity of the study area--adjacent land uses includes new multi-family residential housing. The addition of up to 185 multifamily units in the study area will not significantly affect the character of the neighborhood as a mixed office and residential area. There are currently eight single-family residences in the study area; however, the study area is not a single-family neighborhood now nor is it anticipated to be in the future. There are pockets of single-family residential development to the north and south of the study area that may experience impacts associated with increased activity levels. Increases in high-density residential development in proximity to downtown allows the City to accommodate growth and also maintain existing single-family residential development in other parts of the City. The study area's proximity to Downtown Kirkland will help to achieve the desired compact and efficient urban character.

Amendment B

Under Amendment B, the Sedorco Partnership Private Request Study Area, the land use designation would change from Industrial to Office/Multifamily and rezone from LIT (Light Industrial Technology) to 12 units per acre (PR 3.6) or potentially up to 24 units per acre (PR1.8). An alternative zone class could be PLA where area-specific standards could be instituted. This change would add residential capacity at this location that does not exist under the No Action Alternative.

The capacity and growth forecast estimates provided for the Private Amendment Request Study Area B are based on updated City capacity and target data, adjusted to match the Study Area boundaries. Based on these estimates, the 2003 residential capacity of Study Area B is 43 dwelling units. The 2003 employment capacity of Study Area B is 681 jobs. Estimated 2022 growth forecasts for Study Area B are 28 dwelling units and 387 jobs. Residential capacity in the Study Area exceeds the growth forecasts by 15 dwelling units and employment capacity exceeds the growth forecast by 294 jobs.

Compared to 2003 Study Area B housing inventory of 0 dwelling units, 28 new dwelling units are required to meet the estimated Study Area B 2022 residential growth forecast. Based on the 2003 Study Area B capacity estimate, there is capacity for 43 dwelling units, or adequate capacity to meet the 2022 growth forecast.

The 2003 Study Area B employment estimate of 476 jobs exceeds the 2022 estimated employment growth forecast by 89 jobs. This is because existing industrial development is expected to decline as residential development increases. As shown in Table 3-8, office development is expected to increase in the Study Area, but not at a rate that will fully replace all of the employment lost by the decline in industrial development. Over time, employment capacity in Study Area B will increase as new office development occurs. The estimated employment capacity in the Study Area is 681 jobs, which exceeds both existing employment (476 jobs) and the 2022 estimated growth forecast (287 jobs).

For this analysis of Study Area B, the City assumes that the Sedorco Partnership Property develops with one-half office use and one-half residential use at a density of 12 units/acre. Depending on the mix of office and residential uses on this site, different amounts of office and residential development could occur. For example, the site has capacity for a total of 86 units if fully developed with residential units at a density of 12 units/acre. If the density is increased to 18 units or 24 units acre the capacity of the site increases accordingly, to a maximum of 173 units if fully developed at 24 units/acre. Similarly, if full development of office use is assumed, the site has capacity for a total 236,379 square feet of development.

Based on the City's development assumptions, future development in Study Area B would generally be compatible with the adjoining commercial designation to the south and mixed office/residential development to the east. At higher residential densities, such as 18 to 24 units/acre, density would be significantly greater than that permitted to the east, but would be compatible with the commercial area to the south.

Over time, changes in activity levels may be observed over current conditions, as current industrial lands are redeveloped with new high-density housing. Direct, construction-related impacts associated with the Proposed Action would include dust, traffic delays, noise, and general inconvenience. Cumulative impacts would include increased urban activity urban activity such as traffic, noise, glare and pedestrian activity.

Neighborhood Plan Maps and Zoning Map Corrections

Neighborhood Plan Map and Zoning Map (split zone) corrections under the proposed action correct previous inconsistencies or mapping errors. These changes will not significantly alter land use capacity.

3.3.3 Mitigation Measures

This section describes how goals and policies, applicable regulations, and other recommended mitigation measures address the land use pattern impacts associated with the No Action and Action Alternatives.

3.3.3.1 Incorporated Plan Features

The goals and policies of the Comprehensive Plan are designed to implement the community's vision for Kirkland. Goals and policies directly address the land use pattern impacts associated with the No Action and Proposed Action alternatives including an orderly and compact land use pattern that promotes mobility and access to goods and services; effective transitions between different land uses and housing types; locating the most dense residential areas close to services and transportation hubs; balancing land use changes with neighborhood character; and providing a range of densities.

- With both the No Action and Proposed Action Alternatives, a greater concentration of population and employment growth in and near commercial activity areas protects existing single family residential neighborhoods, concentrates higher density residential areas in or near commercial centers and transportation hubs, and promotes a multi-modal development pattern that is orderly, compact, efficient, and well designed, responsive to both the natural and physical environment.
- The Proposed Action includes policy refinements to the Land Use Element to accommodate new population and employment growth targets which focus on efficient use of land to accommodate Kirkland's share of the regionally adopted 20-year population and employment targets.
- The Totem Lake Neighborhood Plan contains goals and policies to support a compact, transit and pedestrian-oriented Totem Center as part of an urban center.

For the Totem Center, policies support redevelopment of the area to accommodate future growth:

- Policy LU5.4. Support Totem Lake's development as an Urban Center with a diverse pattern of land uses.

- ◆ Recognize Totem Center, the area around Totem Lake Mall and Evergreen Healthcare Medical Center as the ‘core’ district where the highest densities and intensities of land use are focused.

3.3.3.2 Applicable Regulations

- The City of Kirkland’s Zoning Code, Title 20, contains provisions to mitigate for development impacts by addressing setbacks, impervious surface coverage, critical areas, and public spaces.
- For both the No Action and Proposed Action Alternatives, design standards and the design review process will moderate the level of perceived urbanization within the City. Design standards and design review will address topics such as site design, pedestrian orientation, buffers, height, bulk, and scale, and other building design criteria to help mitigate some of the perceived effects of increased urban development.
- At the Totem Center Study Area, zoning provisions promote a compact and efficient development pattern. Code provisions provide incentives to support mixed-use development, increased densities, building height, and concentration of uses, and include regulations to minimize impacts related to transition, shadowing and massing.

3.3.3.3 Other Recommended Mitigation Measures

- To achieve planned densities and use land efficiently, use this EIS review of the Totem Center study area and private amendment requests. This advanced environmental review would allow for application of the categorical exemption for new residential and mixed-use development per RCW 43.21C.229.

3.3.4 Unavoidable Significant Impacts

Over time, implementation of either the No Action or Action Alternatives could convert vacant, partially developed, and redeveloped properties to additional or new single-family, multifamily, office, commercial, and industrial uses. Due to densification and intensification of uses, the City will also continue to add to its urban character.

3.4 Relationship to Plans and Policies

This section evaluates the consistency of the proposed City of Kirkland Comprehensive Plan Update with relevant local, regional and state plans and policies.

3.4.1 Affected Environment

3.4.1.1 Washington Growth Management Act

The Washington State Legislature adopted the Washington Growth Management Act (GMA) in 1990 per RCW 36.70A. The GMA contains a comprehensive framework for managing growth and coordinating land use with infrastructure. A selected summary of the major provisions of the GMA together with specific provisions that directly pertain to the alternatives is provided below.

The GMA contains broad planning goals to guide local jurisdictions in determining their vision for the future and in developing plans, regulations, programs and budgets to implement that vision. The 13 goals address:

- Urban Growth
- Transportation
- Economic Development
- Permits
- Open space and recreation
- Citizen participation and coordination
- Historic Preservation
- Reduce Sprawl
- Housing
- Property Rights
- Natural Resource industries
- Environment
- Public facilities and services

The goals are not ranked in any order but can be balanced by the jurisdiction. The goals discourage sprawling development, encourage development in urban areas with adequate public facilities, encourage economic development throughout the state consistent with comprehensive plans, encourage efficient multimodal transportation systems, provide for the protection of property rights, and require that adequate public facilities and services necessary to support development be available when new development is ready for occupancy.

Under GMA, the Washington Office of Financial Management (OFM) is directed to prepare 20-year county population forecasts for use in GMA comprehensive plans. The projections are updated every five years. Each county's projection is expressed as a range, with low and high thresholds. This range is intended to allow local governments reasonable discretion in determining their local population projection. For King County, the OFM projection to 2025 range between 1,894,659 and 2,318,368 persons. Based on an estimated 2003 County population of 1,779,300, this is the addition of 115,359 to 539,068 people to King County. The County, through a collaborative intergovernmental process established by the Growth Management Planning Council, allocates the population as growth targets to individual jurisdictions. Forecasts prepared by the Puget Sound Regional Council are used to establish the County employment projection. Kirkland's fair share allocation of housing and employment targets for the years 2000-2022 would result in a 2022 estimated residential population of 57,361 person and 41,184 jobs.

The GMA requires that local development regulations be consistent with and implement comprehensive plans. Review and update of comprehensive land use plans and supporting development regulations for consistency with the GMA and for internal consistency is required on a scheduled basis established in the legislation. The City of Kirkland is required to complete its update on or before December 1, 2004 and every 10 years thereafter.

A fundamental requirement of the GMA is early and continuous public participation in the development and amendment of plans and development regulations. Public participation procedures that are described in the procedural rules (WAC 365-195-600) include broad dissemination of proposals and alternatives, opportunity for written comment, public meetings after effective notice, provision for open discussion, communication programs, information services, and consideration of and response to public comments.

A central concept of the GMA is that comprehensive plans must be internally and externally consistent. Internally, each GMA comprehensive plan must demonstrate that land use

element, capital facilities element and financing plan are consistent. If funding is not available to support the proposed land use pattern at the adopted level of service, the jurisdiction is required to reassess the land use pattern and/or the level of service until balance is reached. Externally, local comprehensive plans are required to be consistent with the comprehensive plans of other jurisdictions with common borders or related regional issues. Standards for transportation level of service should be regionally coordinated.

In order to ensure consistency with GMA requirements, each county or City that is preparing a GMA comprehensive plan or implementing development regulations is required to submit the proposed plan or regulations to the state for review and comment before final adoption.

Discussion

The City's GMA Comprehensive Plan, adopted in 1995, meets the broad requirements of the GMA. Under either Alternative, Plan policies would continue to comply with the major goals of the GMA that seek to focus growth in urban areas with adequate services, provide for environmental protection, encourage economic development, support efficient transportation systems, protect private property rights and require that adequate public services are available concurrent with new development.

The Proposed Action amendments are based in part on a City review of GMA requirements in comparison to a review of its Comprehensive Plan and development regulations, as well as based upon the City's review of its own community vision and changes in conditions since the Comprehensive Plan was adopted. Regarding the GMA requirements in particular, the City prepared the "Review and Evaluation Report of Kirkland's Comprehensive Plan and Development Regulations for Compliance With GMA and New State Laws" dated September 2002. The report is available in Appendix F. The report was available for review by the public. The State accepted the findings in the City's report and the scope of work for the Comprehensive Plan/Zoning Code Update project.

As part of the Evaluation Report, the City determined what sections of the Comprehensive Plan and development regulations were and were not in compliance with GMA and new State Law. All sections of the Comprehensive Plan and development regulations were determined to be in compliance, except for adding a definition for an emergency plan amendment and essential government facility, adding a secured community facilities process, updating the State Transportation facilities list and updating the City's Shoreline Master Program and Surface Water Manual. Several "action items" in the Evaluation Report, including to add processes for emergency plan amendments and secured community facilities, and to update the State Transportation lists, are addressed in the Proposed Action Alternative in this DEIS. The other key items identified for review and amendment including the City's Shoreline Master Program and Surface Water Manual, and these are the subject of separate work programs and environmental reviews outside of this DEIS.

As required by the GMA, the City has conducted a comprehensive public involvement program for this update. This has included the 2002 "Community Conversations" program. Through this program, over 900 people provided early comment and input on the City's future via a variety of methods, including face-to-face meetings, responding to a program on the City's cable channel or responding via the City's website. Community conversations were held by various sectors of the community - neighborhood associations, businesses, community groups, condominium associations, schools, and City staff. Public involvement opportunities have also been, and will continue to be, available through the public meetings, workshops and hearings that are planned as part of the review process for the Comprehensive Plan Update.

Because the No Action Alternative only addresses the 2012 time horizon, it is not consistent with the GMA requirement to accommodate housing and employment for the next 20-year period. As described in Chapter 2, this Alternative is not a likely course of action for the City. It does, however, provide a basis for comparison of conditions at the 2012 and 2022 planning horizons that allow the public and decision-makers to make more informed decisions about future growth in the City.

The Proposed Action would extend the Comprehensive Plan planning horizon to 2022, consistent with GMA requirements. The Proposed Action would also amend Comprehensive Plan policies to incorporate a number of changes that are recommended and/or required by GMA, including:

- Text revisions regarding emergency amendment procedures and essential public facilities
- Updates to various parts of the text to ensure plan consistency, particularly as it relates to extension of the time horizon to 2022
- Text revisions to ensure consistency with a number of functional plans, including the Natural Resource Management Plan, Housing Strategy Plan, Surface Water Utility Plan, and Non-Motorized Transportation Plan
- Text revisions to ensure consistency with recently neighborhood plan updates, including the North Rose Hill Plan and Totem Lake Neighborhood Plan

Other Proposed Action amendments are described in Chapter 2. As required by GMA, the City will submit its updated Plan for review by the State for review and comment prior to final adoption.

3.4.1.2 Shoreline Management Act

The Shoreline Management Act (Chapter 90.58 RCW) requires all local governments with 'shores of the state' within their boundaries to develop and administer a shoreline master program. A shoreline master program regulates new development and use of shorelines along rivers and larger streams, lakes over 20 acres and marine waterfronts. Local jurisdictions have the primary responsibility for initiating the planning required by the Shoreline Management Act and administering the Shoreline Master Program.

The Department of Ecology recently adopted new guidelines for shoreline management in the state in December 2003. This requires cities and counties to update their shoreline master programs to be consistent with the new guidelines. Cities in King County are required to update their Shoreline Master Programs by December 1, 2009.

Shorelines are classified into specific "environment designations" based on their physical, biological and development characteristics. Historically, Shoreline Master Programs have used primarily four basic environment designations ("natural", "conservancy", "rural" and "urban"). New state guidelines recommend six designations: "natural," "rural-conservancy," "urban conservancy," "high-intensity," "shoreline residential," and "aquatic." Local governments may modify state recommended classifications to better accommodate shoreline areas with unique characteristics. Policies and regulations are developed for each designation, reflecting the specific purpose and intent of each environment and responding to its specific conditions.

Overall policy goals of the Shoreline Management Act and guidelines for shorelines of the state (WAC 173-26-176) in order of preference include:

- Recognize and protect the statewide interest over local interest;
- Preserve the natural character of the shoreline;

- Result in long term over short term benefit;
- Protect the resources and ecology of the shoreline;
- Increase public access to publicly owned areas of the shorelines;
- Increase recreational opportunities for the public in the shoreline;
- Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary.

Shoreline Master Programs typically address land use, economic development, public access, recreation, circulation and transportation, conservation, historic and cultural resources, flood management, and policy and regulations addressing the physical development and management of shorelines.

Discussion

The No Action and the Proposed Action do not differ in their consistency with the Shoreline Management Act requirements. Kirkland's Shoreline Master Program (SMP), adopted pursuant to the Washington State Shoreline Management Act of 1971, designates all parcels along Lake Washington as Shoreline Environments. The City has not updated the SMP in response to the recently adopted new guidelines, but is scheduled to complete this update prior to the required deadline of December 1, 2009.

3.4.1.3 VISION 2020

VISION 2020, developed by the Puget Sound Regional Council and its member governments, including King, Kitsap, Pierce and Snohomish counties, is a growth strategy and transportation plan for the central Puget Sound region. It is intended to provide a coordinated framework for guiding growth and transportation actions over the next twenty years. Vision 2020 is supported by Destination 2030, the Metropolitan Transportation Plan for the central Puget Sound region and the transportation element of VISION 2020. Destination 2030 establishes investment principles that emphasize coordination among the state, counties, cities, towns, ports, and transit agencies. The plan outlines a process for developing clear lines of public accountability that directly link investments with measurable improvement.

Vision 2020 identifies eight key topic areas to guide regional growth and development. Each of these topic areas and supporting framework goal is listed below.

- **Urban growth areas** . Locate development in urban growth areas to conserve natural resources and enable efficient provision of services and facilities. Within urban growth areas, focus growth in compact communities and centers in a manner that uses land efficiently, provides parks and recreation areas, is pedestrian-oriented, and helps strengthen communities. Connect and serve urban communities with an efficient, transit-oriented, multimodal transportation system.
- **Contiguous and orderly development**. Coordinate provision of necessary public facilities and services to support development and to implement local and regional growth planning objectives. Provide public facilities and services in a manner that is efficient, cost-effective, and conserves resources. Emphasize inter-jurisdictional planning to coordinate plans and implementation activities and to achieve consistency.
- **Regional capital facilities**. Strategically locate public facilities and amenities in a manner that adequately considers alternatives to new facilities (including demand management), implements regional growth planning objectives, maximizes public benefit, and minimizes and mitigates adverse impacts.

- **Housing**. Provide a variety of choices in housing types to meet the needs of all segments of the population. Achieve and sustain an adequate supply of low-income, moderate-income and special needs housing located throughout the region.
- **Rural areas**. Preserve the character of identified rural areas by protecting and enhancing the natural environment, open space and recreational opportunities, and scenic and historic areas; supporting small-scale farming and forestry uses; and permitting low-density residential living and cluster development maintained by rural levels of service. Support cities and towns in rural areas as locations for a mix of housing types, urban services, cultural activities, and employment that serves the needs of rural areas.
- **Open space, resource protection and critical areas**. Use rural and urban open space to separate and delineate urban areas and to create a permanent regional green space network. Protect critical areas, conserve natural resources, and preserve lands and resources of regional significance.
- **Economics**. Foster economic opportunity and stability, promote economic well-being, and encourage economic vitality and family wage jobs while managing growth. Support effective and efficient mobility for people, freight, and goods that is consistent with the region's growth and transportation strategy. Maintain region-wide information about past and present economic performance. Assess future economic conditions that could affect the central Puget Sound region.
- **Transportation (Destination 2030)**. Develop a transportation system that emphasizes accessibility, includes a variety of mobility options, and enables the efficient movement of people, goods and freight, and information.

Discussion

Consistent with the guidance provided in Vision 2020, policies under either alternative of the Kirkland Comprehensive Plan:

- **Urban Growth Areas**. Under either Alternative, the Comprehensive Plan would accommodate future growth within the urban area. The No Action Alternative plans for growth through 2012, while the Proposed Action extends the time horizon to the next 20-year period, or through 2022.
- **Contiguous and orderly development**. Under either Alternative, Comprehensive Plan policies provide for efficient delivery of public services within the urban area and seek to coordinate on an inter-jurisdictional basis on regional issues.
- **Regional capital facilities**. Under either Alternative, Plan policies address regional capital facilities and call for coordination with local and state jurisdictions on transportation facilities and emphasize regional efforts to plan for future public facilities and utilities. However, only under the Proposed Action Alternative would the Plan goals and policies meet state requirements for addressing the process for essential public facilities and be updated for State Transportation projects.
- **Housing**. Under either Alternative, Plan policies support the goals of housing diversity and housing affordability.
- **Rural Areas**. Rural area policies are not applicable to Kirkland's Comprehensive Plan.
- **Open space, resource protection and critical areas**. Under either Alternative, Plan policies seek to protect critical areas, conserve natural resources and establish a permanent green space network. Because Kirkland is in an urban area, park and open

space policies are primarily focused on creating a green space network within the urban area, rather than providing for separation of urban and rural areas.

- **Economics.** Under either Alternative, Plan policies support a strong and diverse economy consistent with community values. Policies address the need to maintain a strong job and wage base, encourage businesses that provide a range of goods and services to the community and consider economic benefits when making land use decisions.
- **Transportation.** Under either Alternative, Plan policies support development of a balanced multimodal transportation system that supports the City's land use plan and integrates with the regional transportation system. Goals and policies describe the connection between transportation and land use, establish means to increase travel options, provide for mobility within the system, describe desirable characteristics of transportation facility design, discuss the financial aspects of a transportation system, and encourage coordination with other jurisdictions. Policies also directly address freight mobility and movement of goods.

3.4.1.4 Countywide Planning Policies

GMA requires that counties adopt countywide planning policies to provide an agreed-upon framework within which cities and counties can develop comprehensive plans (RCW 36.70A.210). The purpose of these policies is to express a regional vision and help measure consistency of local plans. The GMA also specifies subjects that must be addressed in the policies, including policies for urban and rural uses.

King County Countywide Planning Policies were adopted in 1994, with revisions through December 2003, in accordance with the Growth Management Act. The Countywide Planning Policies address critical areas, land use patterns, transportation, community character and open space, affordable housing, orderly development and provision of urban services, essential public facilities, economic development, and regional finance and governance. Municipal and county comprehensive plans should be consistent with the Countywide Planning Policies. The key issues addressed by the Countywide Planning Policies are the establishment of the Urban Growth Boundary and Potential Annexation Areas and housing and employment targets for each jurisdiction.

A selected summary of policies under each of the major topic headings in the Countywide Planning Policies is provided below.

- **Critical Areas.** Policies provide guidance to protect and enhance natural ecosystems through comprehensive plans and policies, and develop regulations that reflect natural constraints and protect sensitive features. Policies address overall environmental protection, wetlands protection, aquifers, fish and wildlife habitat, frequently flooded areas, geologically hazardous areas, air and water quality, and implementation.
- **Land Use Patterns.** Policies provide guidance to address resource lands, rural areas, urban areas, urban centers, activity areas, and urban growth outside of urban centers. The policies establish an Urban Growth Area (UGA), determine the amount of household and employment growth to be accommodated within the UGA in the form of targets, and identify methods to phase development within this area in order to bring certainty to long-term planning and development within the County.
- **Urban Centers.** Policies establish criteria for designation of Urban Centers within the County. Urban Centers are areas of concentrated employment and housing, with direct

service by high-capacity transit, and a wide range of other land uses such as retail, recreational, public facilities, parks and open space.

- **Affordable Housing.** Policies address parameters for the distribution of affordable housing, including housing for all income groups, a diversity of housing types.
- **Transportation.** Promotes a balanced, multi-modal transportation system that provides for a variety of mobility options which links Urban Centers; requires all jurisdictions in the County, in coordination with other regional jurisdictions, to develop a balanced transportation system, financing strategies, and land use plans to support regional mobility and the Countywide vision; and provides direction on key topics to address within transportation plans such as freight mobility, non-motorized transportation, and tools to evaluate concurrently for long range transportation planning.
- **Community Character and Open Space.** Policies aim to promote good community character and address cultural resources, urban design, civic architecture and landmarks, open space, and infill development.
- **Orderly Development and the Provision of Urban Services.** Policies support phasing within Urban Growth Areas to ensure the integrity of the Countywide land development pattern.
- **Siting Essential Public Facilities.** Current policies identify a need to establish a regional process for the siting of essential public facilities such as utility and transportation corridors, airports, wastewater treatment plants, solid waste landfills, higher education, correctional and in-patient treatment facilities and energy generating facilities.
- **Economic Development.** Policies support infrastructure investments in to Urban Centers and Manufacturing/Industrial Centers that strengthen, expand and diversify the regional economy. Economic development in the region should support the Countywide land use pattern.

Discussion

The City of Kirkland's Comprehensive Plan, under either Alternative, is generally consistent with the provisions of the King County CPPs. The following is an overview of consistency with the major topic areas:

- **Critical Areas** – Kirkland has adopted critical areas ordinances that address overall environmental protection, wetlands protection, aquifers, fish and wildlife habitat, frequently flooded areas, geologically hazardous areas and water quality. The City has also updated these ordinances to incorporate best available science and special consideration of anadromous fisheries as required in RCW 36.70A.172. Please refer to Chapter 2 and the Natural Resource section of this EIS for additional discussion.
- **Land Use Patterns** – Under either alternative, land use policies would accommodate urban levels of growth in the City and provide specific guidance for urban growth within the City. The No Action Alternative plans for growth through 2012, while the Proposed Action extends the time horizon to the next 20-year period, or through 2022.
- **Urban Centers** – The City has one designated Urban Center in the Totem Lake Neighborhood. The Downtown is designated as a Major Activity Area. Under either Alternative, land use designations in these areas provide for concentrated employment and housing and services to meet the needs of these intensive centers.
- **Affordable Housing** – Under either Alternative, goals and policies in the Housing Element of the Plan identify housing affordability at all income levels as a key goals.

Identified measures to meet this goal include a combination of appropriately zoned land, regulatory incentives, financial subsidies and planning techniques.

- **Transportation** – Under either Alternative, Comprehensive Plan policies provide for a multi-modal transportation system, with special focus on increasing travel options in Urban Centers and between activity areas. Policies address inter-jurisdictional coordination, including information about state facilities. Goals and policies provide guidance regarding the linkage between land use and transportation and address non-motorized transportation, including specific projects. Goals and policies do not address freight mobility in the City.
- **Community Character and Open Space** – Under either Alternative, the Comprehensive Plan would include a Community Character Element that addresses sense of community, historic resources, accommodating change and the character of the built and natural environment.
- **Orderly Development and the Provision of Urban Services.** Because Kirkland is located in a developed Urban Growth Area, CPP policies that address phasing of growth are not directly applicable.
- **Siting Essential Public Facilities.** Under either Alternative, the Land Use Element of the Comprehensive Plan would address siting of essential public facilities. However, only under the Proposed Action Alternative would the Plan goals and policies meet state requirements for addressing the process for siting essential public facilities, consistent with new state law, and for updating State Transportation projects. In addition, the Zoning Code as a process for siting of transportation facilities regulated as “government facilities” in the Use Zone Charts and a process for siting secured transitional facilities.
- **Economic Development.** Under either Alternative Comprehensive Plan policies support infrastructure investment in the Totem Lake Urban Center.

3.4.1.5 City of Kirkland Comprehensive Plan

The Kirkland Comprehensive Plan was originally adopted in 1977 and has been updated regularly. Following passage of the GMA, the City in 1995 adopted a major update to the Comprehensive Plan to achieve compliance with GMA provisions. The current 1995 Plan consists of goals, policies and supporting narrative. The Plan is divided into two major sections. The first section includes goals and policies that are applicable on a Citywide basis.

For each Citywide Plan element, the current 1995 Plan provides a central concept that is the basis for the goals and policies. The central concept of the existing Plan for each Plan element is described below. This description of Plan elements is applicable to the Plan under the No Action Alternative as well.

Citywide Plan Elements

Introduction – The Introduction to the Comprehensive Plan provides history, a community profile, and a guide to the Comprehensive Plan.

Vision Statement/Framework Goals – This section contains a future vision for Kirkland. The Framework Goals express fundamental principles for guiding growth and development over the next 20-year time horizon. The Framework Goals are:

- FG 1** – Maintain and enhance Kirkland’s unique character.

- FG 2** – Maintain vibrant and stable residential neighborhoods with housing for a diversity of income, age, and ethnic groups and lifestyles.
- FG 3** – Promote a healthy economy.
- FG 4** – Protect and preserve environmentally sensitive areas and prominent natural features.
- FG 5** – Identify, protect and preserve the City’s historic resources, and enhance the identity of those areas and neighborhoods in which they exist.
- FG 6** – Maintain and enhance Kirkland’s strong physical, visual and perceptual linkages to Lake Washington.
- FG 7** – Provide accessibility within and between neighborhoods, public spaces, and business districts.
- FG 8** – Create a transportation system that allows the mobility of people and goods by providing a variety of transportation options.
- FG 9** – Maintain existing park facilities, while seeking opportunities to expand and enhance the current range and quality of facilities.
- FG 10** – Maintain existing levels of service for important public facilities.
- FG 11** – Plan for a fair share of regional growth, consistent with state and regional goals to minimize low-density sprawl and direct growth to urban areas.
- FG 12** – Promote active citizen involvement in development decisions and planning for Kirkland’s future.
- FG 13** – Establish development regulations which are fair and predictable.

General Policies – General goals and policies address plan consistency, intergovernmental coordination and citizen participation. Intergovernmental policies include:

- Goal GP-1:** Cooperate and coordinate with all levels of government to achieve effective, efficient and responsive governance for Kirkland’s citizens.
- Policy GP-1.2** Actively participate with other jurisdictions in planning for issues of common regional or subregional interest.
- Policy GP – 1.3** Work with adjacent jurisdictions and other governmental agencies to better coordinate on planning activities or development decisions.

Community Character – The goals of the Community Character Element are to support Kirkland’s sense of community, promote preservation and enhancement of the City’s historic identity, accommodate change, and strengthen the City’s built and natural environment.

Natural Environment – The Natural Environment Concept states that the fundamental goal of this Element is to protect natural systems and features from the potential negative impacts of nearby development and to protect life and property from certain environmental hazards.

Goals and policies are organized under Environmental Quality, and Natural Water Systems topic headings.

Land Use – The Land Use Concept states that the fundamental goal of the Land Use Element is to maintain the community’s character and quality of life, while accommodating growth and minimizing traffic congestion and service delivery costs. This element includes the Land Use Map and land use definitions, as well as goals and policies for growth management, land use/transportation linkage, residential land uses, and commercial land uses.

Existing land use designations identified on the Land Use Map and a summary of their definitions are:

Low Density Residential – Detached or attached single family residential uses from one to seven dwelling units per acre.

Medium Density Residential – Detached, attached or stacked residential units at 8 to 14 dwelling units/acre.

Office – Uses providing services other than production, distribution, or sale or repair of goods and commodities.

Office/Multifamily – Areas where both office and medium- or high-density residential uses are allowed.

Commercial – May include retail, office, and/or multifamily uses, depending on the location. Retail uses are those that provide goods and/or services directly to the consumer, including services not usually allowed within an office use.

Industrial – Uses predominantly connected with manufacturing, assembly, processing, wholesaling, warehousing, distribution of products and high technology.

Light Manufacturing Park – Places of business activity that include light manufacturing, high-technology, warehousing, wholesale activities and limited retail and office uses.

Institutions – Existing uses such as schools and hospitals for which special planning districts have been developed.

Public Facilities – Existing public uses such as schools and government facilities.

Parks/Open Space – Natural or landscaped areas used to meet active or passive recreational needs, protect environmentally sensitive areas, and/or preserve natural landforms and scenic views.

Housing Element – The Concept of the Housing Element is to preserve neighborhood quality while improving housing opportunities for all residents. Goals and policies address neighborhood quality, housing diversity, and housing capacity.

Economic Development – The Economic Development Concept focuses on building on the strengths of existing businesses while recruiting targeted new businesses. Goals and policies address community values, Kirkland's economic role, commercial and industrial areas, work force opportunities, capital infrastructure, revenue and tax base, and partnership with public, private and regional organizations.

Goal ED-4 states a goal of retaining industrial areas for light manufacturing, assembly, warehousing/distribution, wholesaling, high-technology and office uses. Supporting Policy ED-4.2 states that light industrial uses that provide a mix of light industrial and office uses and provide opportunities for small- to medium-size companies and start-up high-technology enterprises should be encouraged. The policy also identifies areas where commercial uses should not be allowed, including the Everest area included in Private Amendment Request B.

Transportation – The Transportation Element concept states that plan policies seek to develop and maintain a balanced multimodal transportation system that supports the City's land use plan and integrates with the regional transportation system. Goals and policies address the transportation/land use linkage, increasing travel options, maintaining mobility, design of transportation facilities, finance, and regional coordination.

Goals and policies that address inter-governmental coordination include the following.

Goal T-8 Actively work to identify, review and resolve interjurisdictional transportation concerns in or affecting the Kirkland Planning Area.

Policy T-8.1: Participate in the Eastside Transportation Partnership (ETP).

Policy T-8.2: Participate in the planning, design, funding, and development of a regional high-capacity transit system as a travel option for regional passenger design.

Policy T-8.3: Coordinate transportation plans with the transportation and land use plans of neighboring jurisdictions and special districts, as appropriate, to identify opportunities to maximize benefits while minimizing financial expense.

Policy T-8.4: Pursue interlocal agreements which will require development within neighboring jurisdictions to mitigate significant impacts on Kirkland's transportation system, and require development within Kirkland to mitigate significant impacts on transportation systems of neighboring jurisdictions.

Policy T-8.5: Coordinate parking policies with adjacent jurisdictions.

Policy T-8.6 Cooperate with adjacent jurisdictions to develop a regional network of facilities for non-motorized transportation.

Policy T-8.7: Strive to meet federal and state air quality standards.

Parks, Recreation and Open Space – The Parks, Recreation and Open Space Element Concept supports the provision of accessible and well-maintained facilities and services for current and future residents. Goals and policies address parks and open space and natural resource conservation.

Utilities – The Utilities Element Concept supports the continued provision of adequate utility services to support existing and future development. The Utilities Element addresses water, sewer, surface water, electric power, natural gas and telecommunications.

Public Services – The Public Services Element Concept is to support the provision of adequate public services to support existing and future development and the correction and prevention of any existing deficiencies in public services. The Element addresses fire and emergency medical services, police protection, solid waste collection and transfer, schools and libraries.

Capital Facilities – The Capital Facilities Element states a three-fold purpose: (1) to establish sound fiscal policies to guide Kirkland in planning for public facilities; (2) to identify facilities needed to support growth identified in the Comprehensive Plan; and (3) achieve and maintain adopted standards for levels of service and to exceed the adopted standard where possible.

Goals and policies are intended to guide construction of capital improvements to accommodate growth, and ensure that the City's existing infrastructure is maintained.

Neighborhood Plans

The second part of the Comprehensive Plan consists of goals and policies for specific neighborhoods in the City. The City's 13 neighborhoods include: Lakeview, Moss Bay, Houghton, Bridle Trails, Everest, North Rose Hill, South Rose Hill, North/South Juanita, totem Lake, and Market/Norkirk/Highlands. The Plan also includes an element for the Northshore Planning Area in unincorporated King County, immediately north of the City. The neighborhood plan elements allow a more detailed examination of issues affecting smaller geographic areas and clarify how broader City goals and policies apply to each

neighborhood. The Plan notes that it is intended that each neighborhood plan be consistent with Citywide elements. However, where inconsistencies occur, the Citywide elements prevail.

The Private Amendment Requests are located in the Moss Bay Neighborhood and the Everest Neighborhood. Relevant policies and land use designations in each of these neighborhoods are summarized below. Goals and policies for the Totem Center area of the Totem Lake Neighborhood are also described.

Totem Lake Neighborhood Plan

The Totem Lake Neighborhood is located in the northeast corner of Kirkland. The Neighborhood is generally bounded by NE 132nd Street on the north, Slater Avenue and I-405 on the east, and the boundary created by established single-family residential areas to the south and west. The Totem Lake Neighborhood includes Totem Center, which has been designated as an Urban Center in the King County Countywide Planning Policies. This EIS includes an analysis of the Totem Center area contained in Totem Lake (TL) 1 and TL 2 designation areas in order to allow future SEPA categorical exemption of new residential and mixed-use development per RCW 43.21C.229.

Goal TL-2 states that intensive growth should be focused within Totem Center. Goals for the Totem Center seek to strengthen the role of Totem Center for employment, provide a variety of high-density residential uses, ensure that public and private development contributes to the inviting character of Totem Center, support and strengthen the role of Evergreen Healthcare Center Medical Center in the community; and expand and strengthen the retail focus on the Totem Lake Mall, among others.

Moss Bay Neighborhood Plan

The Moss Bay Neighborhood Plan generally includes the central part of Kirkland, bounded by the north side of Central Way on the north, the BNSF right-of-way on the east, NE 68th Street on the south and Lake Washington on the west. The last major update to the Neighborhood Plan was in 1987.

The Moss Bay Neighborhood includes the area proposed for re-designation under Private Request A. The Private Request A study area is currently designated in the Comprehensive Plan as Planned Area 6B. The Plan describes Planned Area 6B as follows:

The lands along State Street are designated as Subarea B. Much of this land is already developed with office uses making future office development also appropriate. Multifamily development should also be allowed due to its compatibility with offices and adjacent residential uses. Such multifamily development should occur at a density of 12 dwelling units per acre.

The land use designation for this area is Medium Density Residential, which allows for multifamily residential uses at 8 to 14 dwelling units per acre. Surrounding land use designations include High Density Residential (15 or more dwelling units/acre) to the east and west; Commercial (retail, office and/or multi-family, depending on the location) to the north; and Low Density (1-7 dwelling units/acre) and Medium Density designations to the south.

Everest Neighborhood Plan

The Everest Neighborhood is generally bounded by the BNSF right-of-way on the west, I-405 on the east, NE 68th Street on the south and NE 85th Street on the north. The last major update to the Neighborhood Plan was in 1988.

The Everest Neighborhood includes the area proposed for re-designation under Private Request B. The majority of the Private Request B study area is currently designated in the Comprehensive Plan as Industrial. Industrial uses are defined as those uses primarily associated with manufacturing, processing, assembly, wholesaling, warehousing, distribution of products and high technology. The southern portion of the study area is oriented toward NE 68th Street and is designated Commercial. As described in the Comprehensive Plan, the Commercial land use designation may include retail, office and/or multifamily uses, depending on the location.

Land use designations surrounding the study area include Industrial to the west (across the BNSF ROW) and north, Commercial designations to the south, and an Office/Multifamily designation to the west. The Comprehensive Plan describes the Office/Multifamily designation as appropriate for office and medium- or high-density residential uses.

The Everest Neighborhood Plan narrative states that “Light Industrial uses exist and should continue to be permitted on the west side of 6th Street South and to the northeast along the railroad tracks to Kirkland Avenue.” The Plan provides specific development standards for future light industrial development in this area.

Discussion

Citywide Plan Elements

Overview

As established by the GMA, the City is required to demonstrate that land use element, capital facilities element, and financing plan are consistent. If funding is not available to support the proposed land use pattern at the adopted level of service, the City is required to reassess the land use pattern and/or the level of service until balance is reached. Under either alternative, the City would maintain its current fundamental pattern of land use designations. Although some levels of service for certain public services are proposed for change, these are not expected to impact overall Plan consistency. Please refer to Appendix A (SEPA Environmental Checklist) for a discussion of public services and the Transportation Section of this DEIS for discussion of transportation levels of services.

Under the No Action Alternative, no policy changes or amendments are proposed. Text would not be updated, existing inconsistencies would not be corrected and map corrections would not be made. Overall, the continued use of outdated information and lack of corrections to text and maps would likely result in internal inconsistencies within the Comprehensive Plan as well as with other plans used by the City.

Under the Proposed Action, the proposed text amendments include minor editorial changes, map corrections, updated level of service standards (transportation facilities, fire and emergency medical services, surface water management, water distribution, and solid waste collection and recycling), supplemental and updated information, and the incorporation of a Human Services Element based on existing City goals. The Proposed Action also includes housekeeping corrections to correct boundary lines on Comprehensive Plan and Zoning Maps that split property parcels, and procedural amendments to the Zoning Code. As described above, these changes are based on existing City direction and are not expected to result in any consistency impacts to the Comprehensive Plan.

The following identifies potential impacts that would result from changes to specific elements of the Comprehensive Plan under the Proposed Action.

Plan Elements

Introduction – Proposed amendments to this Element will provide supplemental historical information, an updated community profile, and updated information on preparation of the Comprehensive Plan process. No consistency impacts are anticipated.

Vision Statement/Framework Goals – The updated Vision Statement includes additional text on the social character of the Kirkland, references to the Downtown and Totem Center as commercial and residential centers. References to the transportation system, public services, and natural systems have been updated.

New Framework Goals have been added, existing Framework Goals have been revised and renumbered. Changes include:

New FG 2 – Support a strong sense of community.

Revised Text FG 3 – Maintain vibrant and stable residential neighborhoods and mix use developments, with housing for a diversity of income, age, and lifestyles.

Former FG-3 – “Promote a health economy” has been deleted.

New FG 4 – Promote a strong and diverse economy.

Revised Text FG 5 – Protect and preserve environmentally sensitive areas and maintain a healthy environment.

New FG 7 – Encourage low impact development and sustainable building practices.

Revised Text FG 9 – Provide accessibility to pedestrians, bicyclists, and alternative mode users within and between neighborhoods, public spaces, and business districts and to regional facilities.

New FG 12 – Ensure public safety.

Revised Text FG 13 – Maintain existing adopted levels of service for important public facilities.

New FG 15 – Solve regional problems that affect Kirkland through regional coordination and partnerships.

Revised Text FG 16 – Promote active citizen involvement and outreach education in development decisions and planning for Kirkland’s future.

Updated Comprehensive Plan goals and policies are based on the updated Vision Statement and Framework Goals, therefore, no consistency impacts are anticipated. For both Private Amendment Requests, the changes would support FG-3 in providing opportunities for mixed use development and/or housing for a diversity of income, age and lifestyles.

General Policies – This Element contains minor editorial changes and amendments. New text in Section D. Plan Amendment, provides an updated description of the Comprehensive Plan amendment process and a definition for emergency plan amendments with a reference to the new review process in the development regulations.

Community Character – The proposed Community Character Element contains updates and editorial changes to the background narrative, minor text changes to some policies and incorporates a list of historic resources and community landmarks in the City. In addition, a new policy has been added for mitigating impacts from noise, light, glare and odor. No consistency impacts are anticipated.

Natural Environment – The updated Natural Environment Element contains updated background information and references Kirkland’s Natural Resource Management Plan. It also contains the following five maps from the Natural Resource Management Plan: Sensitive Areas (updated), Topography, Landslide and Seismic Hazard Areas, Impervious Surfaces and Tree Canopy.

Proposed goals and policies include new policies, revised text and re-organization of existing text. The topic areas for policies include Managing the Natural Environment, Natural Water Systems, Vegetation, Soils and Geology, and Air. New policies under the Managing the Natural Environment and Natural Water Systems include:

Policy NE-1.2: Concentrate efforts in areas that will yield the greatest benefits.

Policy NE-1.4: Pursue opportunities for restoration and enhancement of natural features and systems. Require site restoration if land surface modification violates adopted policy or development does not ensue within a reasonable period of time.

Policy NE- 1.5: Make information concerning natural systems and associated programs and regulations available to all stakeholders. Work toward creating a culture of stewardship by fostering programs that support sound practices, such as low impact development and sustainable building techniques. Model good stewardship techniques in managing trees, streams, wetlands, shorelines and other natural features and systems in the public realm.

Policy NE-1.6: Strive to minimize human impacts on habitat areas.

Policy NE-2.4: Improve management of stormwater runoff from impervious surfaces by employing low impact development practices where feasible through City projects, incentive programs, and development standards.

Policy NE 2.6: Regulate development of land along the shoreline of Lake Washington to:

- ◆ Preserve the resources and ecology of the water and shorelines;
- ◆ Avoid natural hazards;
- ◆ Promote visual and physical access to the water;
- ◆ Preserve navigation rights; and
- ◆ Minimize the creation of armored structures, and explore incentives and opportunities to restore natural shoreline features and habitats.

Policy NE 2.7: Support regional watershed conservation efforts.

Goals and policies for Vegetation, Soils and Geology and Air topics are all new. These goals and policies emphasize maintaining vegetation and tree cover, promoting sound soil practices, providing for future update of geologic hazard area guidance based on upcoming watershed planning work, and improving the air quality, including:

Policy NE-3.1: Work toward increasing Kirkland’s tree cover to 40%.

Policy NE-3.2: Preserve healthy mature native vegetation whenever feasible.

The policy includes controlling noxious and invasive plants.

Policy NE-3.3: Ensure that regulations, incentive, and programs maximize the potential benefits of landscaping.

Policy NE-4.1: Introduce standards and programs to promote sound soil management practices.

Policy NE-4.2: Consider updating policies and regulations for geologic hazard areas in light of new watershed conservation plan, once it has been completed.

Policy NE-4.3: Retain vegetation where needed to stabilize slopes.

Goal NE-5: Improve air quality and reduce Kirkland's contribution to climatic change.

These proposed policies are consistent with pertinent proposed Framework Goals and with policy direction in other elements of the Comprehensive Plan.

Land Use – Under the Proposed Action, the concept of maintaining a balanced and complete community is added to the Land Use Concept. Other changes include recognition of Totem Lake Center and the Downtown as opportunities for new growth, and identification of more housing options as part of the Concept.

Under the proposal the definitions of Low Density Residential would be corrected to be consistent with existing land use designations and comparable zones for low density areas of seven to nine dwelling units/acre for detached dwelling units for RS5000 zoning. In the past, these residential densities in detached units have been always been considered low density zones. Similarly, the definition of Medium Density Residential would be corrected to include detached residential units at 10 to 14 units per acre for RM5000 and RM3600 zoning. Other definitions contain small editorial changes.

Land use policies under the Growth Management; Land Use/Transportation Linkage; Residential Land Uses; Open Space, Recreation and Resource Protection; and Regional and Community Facilities would not change significantly under the Proposed Action. Proposed changes would reflect the goal of a balanced and complete community and efficient use of land.

Commercial land use policies include updated definitions of the types of commercial areas and updated policies. New or significantly revised commercial land use policies include:

New Policy LU 5.2 – Maintain and strengthen existing commercial development areas by focusing economic development within them and establishing development guidelines.

Revised Policy 5.4 – Support Totem Lake's development as an Urban Center with a diverse pattern of land uses. Recognize Totem Center, the area around Totem Lake Mall and Evergreen Healthcare Medical Center as the "core" district where highest densities and intensities of land use are focused.

- ◆ Create a compact area to support the planned transit center and promote pedestrian activity.
- ◆ Encourage uses which will provide both daytime and evening activities.
- ◆ Provide sufficient public open space and recreational activities.
- ◆ Enhance the natural condition and function of Totem Lake.
- ◆ Affirm or create a "sense of identity" for the Totem Lake Urban Center.
- ◆ Provide an interconnected street system for pedestrian and vehicular access.

New Policy LU 5.5 – Enhance and strengthen the commercial viability of the Rose Hill Business District by implementing the NE 85th Street Subarea Plan.

New Policy LU 5.6 – Encourage increased residential capacity in the North Rose Hill Business District (NRHBD) to help meet housing needs.

Deleted Policy LU 5.4 – Maintain and strengthen other existing commercial development areas by focusing economic development within them and establishing development guidelines.

Revised Policy LU 6.1 – Provide opportunities for light industrial and high technology uses.

Overall, these policies update and supplement established land use direction, rather than establishing any new direction. Only Policy LU-6.1 reflects a change in direction. Under the *proposed* Plan, the City supports providing opportunities for industrial uses rather than under the *adopted* Plan of preserving land for industrial uses. However, the proposed policies generally are not expected to result in any consistency impacts on a Citywide basis.

Both Private Amendment Requests would be consistent with the Land Use policies to promote compact land use patterns that support multimodal transportation systems and that help meet our housing targets, to facilitate infill and the efficient use of land, and to provide housing close to shops and services. It should be noted, however, that proposed Private Amendment B would result in the conversion of existing Light Industrial designated land to an Office/Multifamily designation. The amendment would be inconsistent with the *adopted* Policy LU-6.1, but would be less inconsistent with the *proposed* change to Policy LU-6.1. This request would reduce opportunities for light industrial and/or high technology uses. However, given that businesses next to the BNSF railroad no longer use the railroad for receiving and sending of goods, the location of office/residential uses to the east and the close proximity of the neighborhood commercial district to the south for shopping and services, the study area may be more appropriate for office/residential uses.

Housing Element – New and revised housing policies focus on retaining community character, providing for affordable housing, and increasing housing supply and choice. Updated supporting narrative and text is also provided. The City’s 2002 Housing Strategy Plan would be integrated. It identifies strategies in the following categories to promote housing for all economic segments:

- Zoning and Subdivision Regulations (e.g. small lots, planned unit development procedures, accessory dwelling units, transit-oriented development, etc.);
- Design and Neighborhood Character Issues (e.g. residential development in business districts, small lot standards, horizontal façade regulations, etc.);
- Streamlining/Innovative Housing (e.g. permit process simplifications, flexible site development and short platting standards, permit review timelines, manufactured housing allowances, cottage homes, etc.);
- Affordable Housing/Special Needs (e.g. special bonuses for affordable housing, expedited permit review for projects with affordable component, single room occupancy units, group home standards, etc.);
- Direct Forms of Assistance (e.g. CDBG funds, fee waivers for affordable housing, surplus land, etc.);
- Indirect forms of Assistance (e.g. work with local banks, loan guarantees, employer assisted housing, inventory public property and existing multifamily properties, etc.); and
- Regional/Statewide Initiatives (e.g. cooperative relationship in achieving regional fair share of housing, continue membership in “A Regional Coalition for Housing,” develop benchmarks, implement property tax exemptions per State law, etc.).

New and updated information represents a continuation of existing policy direction and is not expected to result in consistency impacts. Both Private Amendment Requests would provide the opportunity for affordable housing with increased densities in Private Amendment A and new housing in Private Amendment B.

Economic Development – Under the Proposed Action, the Economic Development Element is significantly reorganized and re-structured from the current Plan. The proposed Element identifies three key strategies for the Kirkland economy: diversifying the tax base, providing job opportunities, and providing goods and services to the community. Goals and policies address these key issues.

When compared against policies in the *adopted* Comprehensive Plan, Private Amendment Request B would not be consistent with Economic Development Goal ED-4 and supporting Policy ED-4.2. This goal and policy call for the preservation of existing industrial areas. Approval of Private Amendment B would remove the Industrial land use designation at the Amendment B location and replace it with an Office/Multifamily designation. *Proposed* Economic Development policies under the Proposed Action are silent as to the goal of retaining existing industrially designated lands. Please refer to the discussion of the Land Use Element above for additional policies regarding industrial land retention.

Transportation – The proposed Transportation Element contains updated transportation data, supplemental information and minor changes and updates to goals and policies. New or significantly revised policies relate to level of service standards and are listed below:

Revised Policy T 5.1 – Develop an approach for measuring level of service based on the standards described below in Policies T-5.2, T-5.3, and T-5.5.

Revised Policy T 5.2 - By the year 2022, strive to achieve a mode split of 65% single occupant vehicle (SOV) and 35% transit/other mode.

Revised Policy T 5.3 – Utilize the peak-hour vehicular level of service standards shown in Table T-2 – a two part standard for the transportation subareas and for individual system intersections. Improve LOS for Individual Signalized System Intersections for LOS V/C ratio from 1.4 to 1.3. Provide a new 2022 Transportation Project List. (Please refer to the Transportation Element of this Draft EIS for additional discussion of level of service standards).

New Policy T 5.4 – Require new development to mitigate site specific transportation impacts.

Revised Policy T 5.5 – Strive to achieve a level of service standard by 2022 of 59 miles of bicycle facilities and 155 miles of pedestrian facilities in the Non-Motorized Transportation Plan.

The Proposed Action includes a new transportation project list that extends to the 2022 horizon and discussion of state transportation plans and policies.

The proposed Transportation Element supports and is consistent with the proposed future land use plan at the proposed transportation levels of service. Please refer to the Transportation Section of this Draft EIS for additional discussion of transportation issues.

Parks, Recreation and Open Space – The proposed Parks, Recreation and Open Space Element contains only minor editorial changes and is not expected to result in any consistency impacts.

Utilities – The proposed Utilities Element contains updated background information and editorial changes to goals and policies. Substantive changes include revised level of service standards for water distribution, and surface water management. This Element also includes new surface water and telecommunication policies:

Goal U-4 – Provide surface water management facilities programs and services that provide adequate drainage and minimize flooding while protecting and enhancing the water quality and habitat value of streams, lakes and wetlands.

Policy 4.1 – Adopt surface water design standards for new development and redevelopment that incorporate best available research and technology in protecting water resources in economical and feasible manner.

Policy U 4.2 Adopt and implement standards for control of runoff and erosion from construction sites.

Policy U-4.3 Minimize the surface water impacts of development through the use of environmentally “low impact development” techniques.

Policy U-4.4 Minimize environmental damage from spilling of materials into the storm drainage system.

Policy U-4.5 Require businesses and residents to take steps to prevent stormwater pollution.

Policy U-4.6 Assess the quality of water and habitat in local streams and lakes to evaluate the effectiveness of utility standards and programs and to focus future efforts.

Policy U-4.7 Ensure that privately owned stormwater facilities are operated and maintained in a manner that maximizes their quantity and quality control benefits.

Policy U-4.9 Coordinate basin planning, pollution prevention, and restoration activities with neighboring jurisdictions.

Policy U-4.10 Participate in regional surface water resources and fish resource conservation planning efforts.

Policy U-4.11 Ensure compliance with State and Federal regulations related to surface water quality and fisheries resources.

Goal U-5 Ensure adequate and competitively priced telecommunication infrastructure, facilities and services.

Policy U-5.1 Manage the City’s existing and planned telecommunication improvements to optimize service delivery opportunities in Kirkland.

Policy U-5.2 Use partnerships to achieve cooperation and cost-sharing in building telecommunication systems and providing service.

Policy U-5.3 Review and update City policies, procedures and regulations to facilitate the installation and maintenance of telecommunication systems.

The revised levels of service and updated policies are consistent with the proposed land use plan and adequate to meet future growth needs. Please refer to Appendix A (SEPA Environmental Checklist) for additional discussion of utility service.

Public Services – The proposed Public Services Element includes updated background information on fire protection and emergency medical services, police protection, solid waste and recycling collection, schools, solid waste transfer, and library. Levels of service for fire and emergency medical services are updated to reflect response times in emergency and non-emergency situations. Solid waste and recycling level of service goals are also identified. All other proposed changes are generally editorial in nature.

The revised levels of service are consistent with and adequate to meet future growth needs. Please refer to Appendix A (SEPA Environmental Checklist) for additional discussion of utility services.

Capital Facilities –The Proposed Action would continue the three key purposes of the Element as described in the current Plan, but would revise the third purpose to read “Establish adopted levels of service.” The proposed Element would incorporate information from other elements related to levels of service and would update and supplement the discussion of levels of service and concurrency.

Goals and policies for levels of service are updated to be consistent with the transportation, utilities and public services elements. Other policy amendments include:

Updated Financial Feasibility Policy CF- 5.2 -- Consider adjustments to the adopted levels of service, land use plan, and/or revenue sources if funding is not available to finance capacity projects for capital facilities and utilities; and

Deleted Potential Annexation Area Policy CF-7.2 -- Provide City utilities only in areas willing to annex to the City or willing to commit to future annexation. Some utilities may be provided to areas that cannot annex immediately, but are willing to commit to future annexation into the City.

An updated Capital Facilities Plan is also provided, with funded, utility funded and bonded projects for the next six-year period (2005 – 2009).

The proposed Capital Facilities Element includes a discussion of consistency with other plans. This discussion includes functional and management plans that have been considered as part of the development of the Capital Facilities Element. Based on this analysis, no consistency impacts are anticipated.

Human Services – The proposed Plan includes a new Human Services Element. The central concept of this Element supports the provision of services that are utilized by those considered more vulnerable and/or at risk, including youth, seniors, and those in need. This Element represents those services that seek to enhance the quality of life for citizens of the community.

Goals include:

Goal HS-1: Build a community in which families, neighbors, schools, and organizations all work together to help young people to become happy, competent, and responsible members of the community.

Goal HS-2: Maintain and improve the quality of life for Kirkland residents 50 years and older.

Goal HS 3: Provide funds to non-profit human service providers to improve the quality of life for low and moderate income residents.

This new Element supports existing City activities and direction. It is consistent with Framework Goal FG-2 and with the rest of the proposed Comprehensive Plan.

The Proposed Action also includes amendments to the Comprehensive Plan Implementation Strategy and Appendices. These amendments would update information and bring implementation measures into consistency with the updated Plan goals and policies.

Neighborhood Plans

The City is proposing a minor housekeeping change to the neighborhood plans that includes map corrections to make the City’s neighborhood plan maps consistent with current

neighborhood boundaries. This change will improve consistency within the Comprehensive Plan.

Totem Lake Neighborhood Plan policies are discussed below in support of a future potential SEPA categorical exemption of new residential or mixed-use development. The Moss Bay and Everest Neighborhood Plans are discussed below in the context of the proposed Private Amendment Requests.

Totem Lake Neighborhood Plan

Proposed development in the Totem Center area of the Totem Lake neighborhood is consistent with and would implement adopted City policies for this area. Depending on the bulk and scale of buildings in this area, future development in the northern portion of the study area may be inconsistent with existing King County land use designations and the existing development pattern north of NE 132nd Street. However, adopted development and design standards intended to address potential impacts in the vicinity of NE 132nd Street would likely mitigate any potential impacts. Please refer to the Aesthetics and Land Use sections of this EIS for additional discussion of these issues.

Moss Bay Neighborhood Plan

Proposed Private Amendment A would change the City's Future Land Use Map designation for this area from Medium Density Residential to Office/Multi-Family. This change would correct an existing inconsistency between Plan policies and the Future Land Use Map.

The Proposal would also increase the permitted density from 12 dwelling units/acre to 24 dwelling units per acre. If approved, this change would match the existing high-density residential development designation to the east and west. It would also be generally consistent with the Commercial land use designation to the north. Re-designation of Study Area A could be inconsistent with Low and Medium Density designations to the south. However, existing development standards that establish buffers between differing residential densities could minimize this potential impact. Please refer to the Land Use section of this EIS for additional discussion of potential impacts to land use patterns.

Everest Neighborhood Plan

Proposed Private Amendment B would change the City's Land Use Map designation for this area from Industrial to Office/Multifamily. This proposed change would generally be consistent with surrounding land use designations, including Commercial and Medium Density Residential designations to the south and an Office/Multifamily designation to the east. It may also be consistent with the land designation and allowed uses in the PLA6G zone to the west, across the BNSF ROW. This land may be developed with light industrial and/or office, or with residential if the entire site south of 7th Street South and west of BNSF tracks is included. If the land to the west is development with residential uses, existing development standards that establish buffers between differing uses could minimize potential compatibility impacts.

Please refer to the Land Use Element, Housing and Economic Development Element sections above for additional discussion of this Private Amendment Request.

3.4.1.6 Adjacent Local Government Plans

Adjacent jurisdictions include the cities of Bellevue, Redmond, and unincorporated King County. The GMA requires that the City of Kirkland's Comprehensive Plan is compatible with the plans of adjacent jurisdictions. For the purposes of this analysis, the key

Comprehensive Plan elements to analyze for compatibility are land use, transportation, and capital facilities elements.

City of Bellevue

Bellevue adjoins Kirkland along Kirkland's south boundary, extending from Lake Washington on the west to Kirkland east boundary at 132nd Ave NE on the east. Bridle Trails State Park, which is located in unincorporated King County is also located in this area.

Adjacent Land Use Designations

Bellevue land use designations immediately south of Kirkland City limits include Low Density Residential (up to 1.8 dwelling units/acre) in the area in the vicinity of Bridle Trails State Park and generally east of I-405. West of I-405, residential designations include Medium Density Single Family Residential (up to 3.5 dwelling units/acre), Medium Density Multifamily Residential (up to 20 dwelling units/acre). Non-residential designations include Office and General Commercial. These designations are primarily focused around the I-405/SR 520 interchange.

Transportation and Capital Facilities

The Transportation Element of the Bellevue Comprehensive Plan identifies specific transportation levels of service for sub-areas of the City, referred to as Mobility Management Areas (MMAs). The MMAs adjacent to Kirkland are North Bellevue and Bridle Trails. The adopted LOS for North Bellevue is D+ and for Bridle Trails C.

The Transportation Element also contains policies that address the interjurisdictional nature of transportation. Selected policies are listed below:

POLICY TR-1a. Work proactively and cooperatively with other Eastside jurisdictions and regional and state agencies to plan, design, fund and construct regional transportation projects that carry out the City's transportation and land use goals.

POLICY TR-4. Work with other jurisdictions to achieve a jobs/housing balance that makes it possible for people to live closer to where they work.

POLICY TR-8. Coordinate with other Eastside jurisdictions, the private sector, and the transit provider to develop and implement uniform or compatible transportation demand management regulations and strategies that are consistent with and implement the state Commute Trip Reduction Act.

POLICY TR-29. Inform, consult with, and otherwise involve other affected jurisdictions in the City's transportation planning efforts.

POLICY TR-30. Develop and implement strong interjurisdictional agreements for cooperative solutions to land use and transportation problems that cross the City border.

POLICY TR-31. Establish multi-jurisdictional Mobility Management Areas or other agreements for joint adoption and implementation of transportation goals and measures, including concurrency management and assessment of impact fees, in areas that have significant cross-border trips.

Discussion

In the area adjacent to the City of Bellevue, Kirkland land use designations include Low Density Residential, Park/Open Space and Office. Land use designations in the cities of Bellevue and Kirkland are similar in character and consistent with one another.

Transportation policies that seek to coordinate and manage transportation issues on a regional basis are consistent with goals and policies in the General and Transportation Chapters of the Kirkland Comprehensive Plan.

Under either the No Action or Proposed Action Alternatives, proposed transportation policies address the need to coordinate transportation and land use plans, non-motorized systems and transit systems with adjacent jurisdictions. Because Bellevue, Kirkland and Redmond use a consistent transportation modeling and analysis process, there are no anticipated inconsistencies in the transportation coordination.

City of Redmond

Kirkland adjoins the City of Redmond along Kirkland's east boundary. In this area, Kirkland's east boundary follows 132nd Ave NE. Redmond's boundary also generally follows 132nd Ave NE, although there are small pockets of unincorporated lands in this area (see Figure 2-1). The City of Redmond has adopted land use designations for these areas, which are included in the description below.

Adjacent Land Use Designations

In general, the majority of the area adjacent to Kirkland's east boundary is designated for Low-Moderate Density Residential. The Low-Moderate Density Residential designation permits single-family residential uses, their accessory uses and public and semi-public uses. Permitted residential densities range from four to six units per acre.

There is a small area of Neighborhood Commercial designation at the northeast corner of the intersection of 132nd Ave NE/NE 70th Street. This designation is intended to allow for limited retail and service businesses and other businesses that serve the immediate neighborhood. Examples of permitted uses include food stores, day care centers, dry cleaning, personal care and medical and dental services

Large Lot Residential designation is located in this area, south of NE 70th Street. The Large Lot Residential designation permits single-family residential uses, equestrian residential opportunities and the keeping of animals consistent with the size of the property. The permitted residential density is one unit per acre.

To the north, in the vicinity of 132nd Ave NE and NE 124th Street, property is designated High Density Residential, Business Park and Manufacturing Park.

Permitted uses in the High Density Residential designation include multiple-family housing, accessory uses associated with residences and public and semi-public uses. Residential densities range between 20 to 30 units per acre. Higher densities may be allowed in appropriate areas to encourage the development of affordable housing and senior housing.

The Business Park designation is intended to provide for research and development, software development and manufacturing, high technology, biotechnology research and manufacturing and similar uses that do not compete with Downtown Redmond. Allowed uses include research and development, manufacturing and wholesale businesses which are conducted entirely within a building, will not generate noise or vibration outside the building and will not generate significant risk of ground water contamination, explosion or upset. Corporate offices and general offices also are allowed uses.

The Manufacturing Park Designation supports existing manufacturing activities and related businesses and reserves land for future manufacturing development. Allowed uses include manufacturing, high technology manufacturing, research and development, light industrial

uses and essential public facilities. Office uses are limited to accessory uses that support these primary uses.

Transportation and Capital Facilities

The City of Redmond manages its transportation level of service standards by transportation management districts. The two districts in the vicinity of the City of Kirkland are the Willows Sammamish Valley (north of Redmond Way NE) and Grass Lawn (south of Redmond Way NE). The adopted LOS for Willows Sammamish Valley is D-, with a maximum volume to capacity ratio of 0.90. The adopted LOS for Grass Lawn is D+, with a maximum volume to capacity ratio of 0.85.

Selected Transportation Element policies that address regional transportation issues include:

TR-13 Develop interlocal agreements with neighboring jurisdictions that require development within Redmond to mitigate significant impacts that it generates on the transportation system of neighboring jurisdictions in violation of that jurisdiction's concurrency service standard. Prior to entering into such an agreement, the City shall require that the concurrency service standards of the neighboring jurisdiction are consistent with policies TR-9 through TR-12.

TR-14 Develop interlocal agreements with neighboring jurisdictions that require development within the neighboring jurisdictions to mitigate significant impacts that it generates on the transportation system of Redmond.

TR-80 The City shall support the continuous, comprehensive and cooperative transportation planning process conducted by the Puget Sound Regional Council (PSRC) pursuant to its designation as the Puget Sound's Metropolitan Planning Organization (MPO). The primary forum for the development of regional transportation systems plans and strategies shall be the PSRC. The City of Redmond shall submit its local transportation plan to the PSRC for review and certification of conformity with the Regional Transportation Plan, as dictated by county, state and federal guidelines

TR-81 The Eastside Transportation Program shall be the primary forum for the development of Eastside transportation systems plans and strategies. The City shall participate in the Eastside Transportation Program on an ongoing and cooperative basis and shall work to implement as appropriate plans and policies adopted by the Eastside Transportation Program.

TR-82 The City shall coordinate the development of local transportation plans, programs and policies through the Eastside Transportation Program to the extent that they are of sub-regional significance.

Discussion

In the area adjacent to the City of Redmond, the primary Kirkland land use designation is Low Density Residential. Other designations include Commercial (in the vicinities of NE 70th Street and NE 124th Street), Office (at NE 85th Street), and Public Facilities (Lake Washington Technical College), and High Density Residential, Commercial and Industrial in the Totem Lake area. Land use designations in the cities of Redmond and Kirkland are similar in character and consistent with one another.

Transportation policies that seek to coordinate and manage transportation issues on a regional basis are consistent with Kirkland's plans. Because Bellevue, Kirkland and Redmond use a consistent transportation modeling and analysis process, there are no anticipated inconsistencies in the transportation coordination.

King County

Unincorporated King County adjoins the City of Kirkland in several areas. The largest area is located along the City's north and northwest boundaries. This area is identified in the King County Comprehensive Plan as the Northshore Neighborhood. It includes the Kingsgate, Juanita and Finn Hill neighborhoods.

Pockets of unincorporated King County land are also found along the City's east boundary, between Kirkland and Redmond, and along the south boundary, between Kirkland and Bellevue. Each of these areas is described below.

Adjacent Land Use Designations

To the north and northwest, the City of Kirkland adjoins the Northshore Planning Area in unincorporated King County. The primary land use designation in this area is Urban Residential Medium (4-12 dwelling units/acre). There are also areas of High Density (greater than 12 dwelling units/acre) Residential designations located on the north side of NE 132nd Street between 100th Ave NE and I-405. In this same area, a small Community Business Outside Center designation is located at NE 132nd Street east of 100th Ave NE. Community Business Center designation is also found north of NE 132nd Street along 100th Ave NE.

To the west, a small area of High Density Residential designation is located immediately west of Kirkland along NE Juanita Drive. A King County Owned Open Space designation is located west of Kirkland at NE 124th Street.

To the east, unincorporated areas located between Kirkland and Redmond are primarily designated Urban Residential Medium (4-12 dwelling units/acre). Unincorporated areas in the vicinity of 132nd Ave NE and NE 124th Street include High Density Residential (12 dwelling units/acre or greater) and Industrial. South of NE 70th Street, property is designated as Low Density Residential (1 dwelling unit/acre). An Other Park designation is located at 132nd Ave NE/NE Old Redmond Road. Other Park Space is also designated for the Bridle Trails State Park, located south of NE 60th Street.

The King County Comprehensive Plan includes policies that address urban areas. Specific policies that address inter-jurisdictional issues include:

U- 201 King County should work with the cities to focus countywide growth within their boundaries and should support annexations within the Urban Growth Area when consistent with the King County Comprehensive Plan and Countywide Planning Policies. An annexation proposal is consistent with the King County Comprehensive Plan when:

- ◆ The proposed annexation area is: 1) wholly within the Urban Growth Area and 2) within the City's designated Potential Annexation Area;
- ◆ The City is planning for urban densities and efficient land use patterns consistent with the Countywide Planning Policies;
- ◆ Adopted Countywide goals and policies for urban services, environmental and cultural resource protection will be supported; and
- ◆ Long-term protection of King County-designated Urban Separators is ensured.

U- 202 King County shall not support annexations or incorporations that would apply zoning to maintain or create permanent, low-density residential areas unless such areas are part of an urban separator or are environmentally constrained, rendering higher densities inappropriate.

U- 203 The Interim Potential Annexation Area Map, adopted as part of the Countywide Planning Policies illustrates the PAAs adopted in the comprehensive plans of individual jurisdictions:

- ◆ King County should support the annexation of PAAs claimed solely by one City as shown on the interim PAA map, In accordance with policy U-201.
- ◆ Areas claimed by more than one City as shown on the interim PAA map should be resolved through interlocal agreements between the cities, with the participation of affected citizens.
- ◆ King County shall work with cities adjacent to unclaimed urban areas and service providers to develop a mutually agreeable strategy and time frame for annexation of these areas. The Interim PAA Map will be updated to reflect these changes, as needed.

U- 204 Cities in King County have identified the contiguous areas to be annexed, called "Potential Annexation Areas" (PAAs). Individual City PAAs will be final when:

- ◆ The City and the County enter into a PAA Boundary Agreement identifying annexation areas; or
- ◆ The City's Comprehensive Plan reflects the area shown on the Interim Potential Annexation Area Map at the end of this chapter and does not include any areas that are jointly claimed by adjacent cities.

U- 208 King County and the cities shall collaboratively address level-of-service standards and costs. King County and the cities may share the costs of needed capital improvement programs and other services.

U- 209 If a City desires a level-of-service higher than King County's service standard, the City should be responsible for paying all of the incremental costs of the higher level-of-service above what the County would provide.

Northshore Planning Area Policies

CP-710 King County should improve motorized and non-motorized transportation circulation east and west across the I-405 corridor to provide relief in the congested Totem Lake and Kingsgate areas. The County should also cooperate with other jurisdictions.

CP-721 King County should transfer ownership of County-owned property located north of NE 145th, south of 148th Street, west of 124th Avenue NE and east of 119th Avenue NE to the cities of Bothell and Kirkland in order to preserve it for park and open space purposes.

Discussion

As it adjoins the Northshore Planning Areas, Kirkland land use designations include Office/Multifamily and High Density Residential in the Totem Lake area, Low Density Residential along NE 132nd Street west of I-405, and continuing along the western boundary of the City to NE 120th Street. South of NE 120th Street, Kirkland land use designations change to Office/Multifamily, High Density Residential and Park/Open Space (Juanita Beach Park). With the exception of the Totem Lake area, the King County land use designations are generally consistent with the adjoining land use designations in the City of Kirkland.

In the Totem Lake area, King County land use designations establish a pattern of Urban Residential Medium development. This area is zoned for single family residential development at a density of 6 to 8 dwelling units per acre. Adjacent to these uses, on the

south side of NE 132nd Street, the City of Kirkland has a designated Urban Center, with office, service, and high-density residential uses. The building height and bulk and overall activity associated with this intensive level of development may be inconsistent with the existing low density uses and zoning located immediately to the north in unincorporated King County. However, adopted development standards, including buffer requirements, building setbacks, lighting standards and other measures may minimize these impacts. Please refer to the Land Use and Aesthetics sections of this EIS for additional discussion.

King County identifies specific policies for future coordination of annexations in urban areas. Kirkland has identified the portion of the Northshore Planning Area north to approximately NE 145 Street and west to Lake Washington as its Potential Planning Area and is working in coordination with King County regarding potential future annexation of this area.

Town of Yarrow Point

The Town of Yarrow Point adjoins the City of Kirkland in the extreme southwest corner of the City. This area of common boundary begins immediately north of SR 520 and extends north a short distance to Lake Washington. The Town of Yarrow Point land use designation in this area is R-15,000, low density residential at a density of 2.9 dwelling units per acre (15,000 minimum lot size).

Discussion

The current City of Kirkland land use designations in this area include Low Density Residential and Park/Open Space. There is also a small area of Medium Density Residential that is not directly adjacent to the joint Yarrow Point/Kirkland boundary, but is in close proximity.

The City is proposing corrections to the Land Use Map as described below and in Appendix B of this Draft EIS. The two areas of proposed change are referred to as Lakeview 1 (LV1) and Lakeview 6 (LV6) in Appendix B.

- Lakeview 1 -- Correct the land use designation within the western portion of the Yarrow Bay Park and Wetlands from Park/Open Space to Low Density Residential. The Planned Area 2 land use designation would be retained, which allows a maximum residential density of one dwelling unit/acre. This change is to correct a prior mapping error.
- Lakeview 6 -- For the existing Medium Density Residential designation, change the designation to Low Density Residential with a maximum density of one dwelling unit per acre. This change will match the land use map and text in the neighborhood plan.

The existing Low Density Residential designation and the proposed changes to the Parks/Open Space and Medium Density Residential designation in this area would not conflict with the existing low density residential density designation in the Town of Yarrow Point.

Town of Clyde Hill

The Town of Clyde Hill adjoins the City of Kirkland in the extreme southwest corner of the City. The boundary extends on the north and south sides of SR 520 for a short distance in the vicinity of 96th Avenue NE. In this area, the Town of Clyde Hill land use designation is R-1, which allows low density residential development with a minimum lot size of 20,000 square feet.

Discussion

The City of Kirkland land use designation in this area is Low Density Residential. No change is proposed for this area and existing land use designations in Clyde Hill and Kirkland are compatible.

3.4.1.7 Mitigation Measures

3.4.1.8 Incorporated Plan Features

The goals and policies of the Comprehensive Plan are designed to implement the state and regional requirements and the community's vision for Kirkland. Goals and policies achieve consistency with applicable state, regional, and local plans as described in this Section of the Draft EIS.

Applicable Regulations and Commitments

- As required by GMA, submit the updated Plan for review by the State for review and comment prior to final adoption.
- Establish a schedule to ensure a complete update of the Kirkland Shoreline Master Program by the state mandated deadline of December 1, 2009.

3.4.1.9 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated.

3.5 Population, Employment, Housing

The purpose of this section is to identify current population, employment, and housing levels and conditions; to describe target or forecast levels of population, employment, and housing growth at the years 2012 and 2022; and, to compare forecast targets/growth to the Alternatives' capacity for growth. While the Land Use Patterns section in 3.3 describes potential changes in land use including comparing existing land use to future land use and capacity for growth, this section reviews more broadly the overall growth targets assigned to the City through growth management planning processes compared to overall capacity to accommodate the growth targets. The City's goals and policies with respect to economic development and housing are addressed in Section 3.4 Relationship to Plans and Policies.

3.5.1 Affected Environment

3.5.1.1 Population

Current Population

The City's Comprehensive Plan identifies and responds to current and envisioned community characteristics and needs. A description of Kirkland's population, racial makeup, age distribution, and income characteristics is provided below based upon the *City of Kirkland Community Profile*, January 2003, the State Office of Financial Management (OFM) population estimates as of April 1, 2003, and the City's 2003 Capacity Analysis:

- Since its incorporation in 1905, the City of Kirkland has grown to approximately 12 times its original geographic size. This growth occurred via numerous annexations through the decades along with the consolidation of the cities of Kirkland and Houghton in 1968. The City grew significantly during several decades, including the 1940s and 1960s when it at least doubled in size. The 1980s also were a significant growth period for the City, primarily due to the annexations of Rose Hill and South Juanita in 1988.
- The population at the time of incorporation in 1905 was approximately 532, and in 2003 equaled 45,360. The population more than doubled in the decade between 1910 and 1920. Subsequent growth has been fairly steady, with the exception of the 1940s, 1960s and 1980s. Population growth in those decades accompanied dynamic growth in the City's land area. A closer look at the City's population growth since 1980 reveals the impact of the annexations of Rose Hill and South Juanita in 1988. Those annexations added 16,119 people to the City overnight and accounted for 76 % of the City population increase between 1980 and 1990. There have been no further annexations to the City since 1988. The City does have a designated Potential Annexation Area.
- In 1990, Kirkland's population equaled 40,052, and in 2000 equaled 45,054. As of 2003, the population equaled 45,360. Kirkland's average population growth rate between 1990 and 2000 has been 12.5 % compared to 15.2 % in King County as a whole. Kirkland's overall population accounts for 2.6 % of the total King County population.
- Since 1990, the racial diversity of Kirkland's population in 2000 more than doubled from 7.2% to a 16.9% minority population. Comparatively, King County had a minority population increase from 15.2% to 26.6%.
- The median age in Kirkland is 36.1 years. Since 1990, the percentage of Kirkland's children under the age of 18 has decreased from 20.7% to 18.5% while the percentage of seniors over age 65 has increased from 9.6% to 10.2%.
- The U.S. Census Bureau defines median income as "the amount which divides the income distribution into two equal groups, half having incomes above the median, half having incomes below the median." The 1999 King County median income is \$53,157 for a reporting household, which is an increase of 46.9% from \$36,179 in 1989. For Kirkland, the 1999 median income is \$60,332, which is an increase of 57% from \$38,437 in 1989 and 13.5% above the King County median. The distribution of household incomes in Kirkland shows a lower percentage of incomes below \$34,999 and a higher percentage of incomes above \$35,000 than King County. In 2000, the average household size in Kirkland was 2.063 persons per household. Of those households with incomes greater than \$100,000, Kirkland has a 22.2% share of its total households compared to 18.7% of King County households. Approximately 3.9% of Kirkland family households, 12% of female single-parent households, and 5.3% of individuals have incomes at or below the poverty threshold for 1999.

Figure 3-8 provides a map of US Census Tracts in the City, by which demographic data is available.

Forecast Population

The Puget Sound Regional Council (PSRC) prepares population forecasts for a four-County region of King, Kitsap, Pierce, and Snohomish Counties, and uses the forecasts to prepare regional land use and transportation plans. PSRC forecasts may be compared to other forecasts. Table 3-9 identifies forecast population by the PSRC Forecast Analysis Zones

(FAZ). FAZ numbers 5305 and 5306 generally include the majority of the Kirkland City limits, but are not identical. See Figure 3-9.

Table 3 - 9 Puget Sound Regional Council Population Forecast for Kirkland

FAZ	Population
Year – 2010	
5305	24,565
5306	23,493
Total 2010	
	48,058
Year – 2020	
5305	27,296
5306	26,594
Total for Year 2020	
	53,890
Year – 2030	
5305	29,949
5306	29,168
Total for Year 2030	
	59,117

Source: PSRC 2002

These population forecasts are comparable to the population that results from household targets as described below.

In accordance with the GMA, Kirkland participates in regional forums to develop growth allocations for a succeeding 20-year planning period. State OFM population projections for King County are divided among all King County jurisdictions through an interactive process. See Chapter 2 for a discussion. The County chooses to measure progress towards population allocations by the number of dwellings built and occupied. Based on household targets, the year 2012 and year 2022 population forecasts are as follows:

- As part of its initial GMA Comprehensive Planning efforts, the City of Kirkland was allocated a household growth target of 5,837 households between 1992 and 2012. This is a mid-point within a range as described further below. When added to 1991 households, the City's total households in the year 2012 were forecast as 24,501, leading to a projected 2012 population of 50,756.²
- In conjunction with King County and other East King County cities, Kirkland was allocated a future growth target of 5,480 households between the years 2000 to 2022. The City's current households (year 2000 of 21,831) plus target households (5,480) is estimated to lead to a year 2022 population of 55,327. This is a revised population forecast from the 2022 population of 57,631 noted in the 2003 Community Profile. The City revised the population number since then to correct for the declining persons per household (PPH).

² Based upon proposed Comprehensive Plan data amendments.

The City must plan for these targets in its Comprehensive Plan. The City has grown by 576 persons between 2000 and 2003 towards the population forecast.

3.5.1.2 Employment

Current Employment

The City contains over 30,000 jobs currently. Table 3-10, Puget Sound Regional Council Employment Estimates, provides employment estimates by job sectors. The highest percentage of all jobs reported within the City of Kirkland was finance, insurance, real estate and services sector.

Table 3 - 10 Puget Sound Regional Council Employment Estimates for Kirkland
 (State Employment Security Department Data)

Jurisdiction	Const/Res	FIRES	Manuf-acturing	Retail	WTCU	Education	Government	Total
2000	3,316	12,630	2,332	7,971	8,554	1,333	2,691	38,828
2002	2,384	12,529	2,196	6,755	3,195	1,405	3,128	31,593

Note: Includes jobs that are reported to the State as covered by unemployment insurance. RETAIL Retail Trade; FIRES Finance, Real Estate, Services; MANU Manufacturing; WTCU Wholesale Trade, Communication, Utilities. Source: PSRC 2000 and 2002

Year 2000 employment estimates by the State Employment Security Department (as reported by the PSRC) have been found inaccurate by the City because they included total employees for some Kirkland-based corporations even if the employees worked in separate King County/regional locations outside of Kirkland. The City prepared its own employment estimates for the years 2001 and 2003 as shown in Table 3-11 below:

Table 3 - 11 City of Kirkland Employment Estimates

Year	Office	Industrial	Commercial	Special Generators and Institutions	Total
2001	18,027	6,110	5,454	2,793	32,384
2003	19,878	5,653	6,251	3,062	34,843

Source: City of Kirkland, June 17, 2003

The 2000 Census reported that 28,347 (75.2%) of Kirkland's residents are employed. This is slightly higher than the 70.1% employment of the King County population. The majority of these jobs span several sectors: professional (16.7%), education and health care (14.2%), transportation, warehousing and utilities (13.2%), and manufacturing (11%) (City of Kirkland, January 2003).

Currently, major employers in Kirkland represent a wide range of business ventures, including Evergreen Healthcare Center, City of Kirkland, Kenworth Truck Co. the corporate offices of a major manufacturer of heavy duty trucks, as well as retail and wholesale outlets (City of Kirkland, January 2003).

Forecast Employment

For purposes of regional land use and transportation planning, the PSRC prepares forecasts of employment as shown in Table 3-12. Year 2010 through 2030 forecasts are reported for the Forecast Analysis Zones of 5305 and 5306 which generally correspond to the City of Kirkland City limits, but are not identical (see Figure 3-9). The PSRC forecasts that employment (not including the construction and resource sector) in Kirkland will reach 41,825 in 2010, 46,825 in 2020, and 51,880 by 2030.

Table 3 - 12 Puget Sound Regional Council Forecast Employment for Kirkland

FAZ	RETAIL	FIRES	MANU	WTCU	GOV/ED	TOTEMP
Year 2010						
5305	5,354	9,445	872	6,855	1,771	24,297
5306	3,966	7,109	1,206	1,862	3,385	17,528
Total Year 2010	9,320	16,554	2,078	8,717	5,156	41,825
Year 2020						
5305	5,265	10,734	871	6,658	1,832	25,360
5306	4,783	9,484	1,167	2,989	3,070	21,493
Total Year 2020	10,048	20,218	2,038	9,647	4,902	46,853
Year 2030						
5305	5,298	11,624	816	7,104	1,915	26,757
5306	5,598	11,885	1,055	3,421	3,164	25,123
Total Year 2030	10,896	23,509	1,871	10,525	5,079	51,880

Notes: RETAIL Retail Trade; FIRES Finance, Real Estate, Services; MANU Manufacturing; WTCU Wholesale Trade Communication Utilities.; GOV/ED Government/Education; TOTEMP Total Employment

These PSRC employment forecasts are higher than the City's target employment forecasts as described below.

In accordance with Countywide Planning Policies, Kirkland participates in regional forums to allocate employment growth for a succeeding 20-year planning period. The year 2012 and year 2022 employment targets are as follows:

- As part of its initial GMA Comprehensive Planning efforts, the City of Kirkland was allocated an employment growth target of 8,600 between 1992 and 2012. When added to 1991 employees of 21,864, the City's total employment in the year 2012 was forecast as 30,464 (this is roughly the mid-point of a future target employment range, 29,664 to 31,164 jobs). The City has already exceeded its 2012 employment target when compared to existing employment levels described previously.
- In conjunction with King County and other East King County cities, Kirkland was allocated a future employment growth target of 8,800 jobs between the years 2000 to 2022. The City's current jobs (year 2000 approximation of 32,384) plus target jobs (8,800) is estimated to lead to a year 2022 employment level of 41,184.

The City must plan for these targets in its Comprehensive Plan. The City has increased its employment by about 2,459 jobs between 2000 and 2003 based on the City's own capacity estimates. (See Table 3-11.)

3.5.1.3 Housing

Current Housing

The City of Kirkland has seen household sizes declining similar to trends in other communities; density patterns consistent with City plans; and increases in housing costs. The following household information is summarized from the *City of Kirkland Community Profile*, January 2003 and the State Office of Financial Management (OFM) housing estimates as of April 1, 2003:

- Kirkland has seen a steady decrease in average household size from 2.31 persons per household in 1980 to 2.28 persons per household in 1990, to 2.063 persons per household in 2000. The primary reason for this decline in average household size is a decrease in the number of children per household. In 1980, there was an average of 0.69 children per household in Kirkland; in 1990, that number dropped to 0.57 children per household; and in 2000 that number dropped even further to 0.43 children per household. Another factor in the decreasing average household size is single-person households. The percentage of single person households in Kirkland has increased over the past decade, from 30.1% of households in 1990 to 35.6% in 2000.
- The trend of decreasing household size over the past few decades has been seen throughout King County. Household growth has consistently increased at a greater rate than population growth, indicating a decrease in the average household size. Average household sizes are expected to continue to decline in the future.
- The housing stock in Kirkland grew from 18,061 units in 1990 to 21,939 units in 2000 to 22,577 in 2003 (OFM, 2003). This represents a 21.5% increase in residential units. During that same time period, King County's housing stock increased 14.7% (from 647,343 to 742,237 units). Kirkland's share of the total county housing stock increased from 2.8% to 2.9% between 1990 and 2000. In 2000, 44.3% of Kirkland's housing was in single-family units and 55.4% was in multi-family units. Comparatively, in 1990 48.8% was in single-family units and 51.2% was in multi-family units. In 2003, the split between single-family and multifamily was about 46.1% single family and 53.9% multifamily (based on City 2003 Capacity analysis). Throughout the county, the multifamily housing stock increased significantly faster than the single-family stock during the last decade.
- Kirkland permit data reported for 1996-2000 Buildable Lands Report shows that building permits for 627 single-family units and 1,449 multi-family units were issued. When the permit data was grouped into different zoning classifications, average residential densities ranged from a low of 4.17 units per acre in the low density zones to a high of 64.98 units per acre in the high density CBD zones and consumed a net land area of 190.08 acres. However, the land use inventory shows that overall residential densities, based on neighborhood, range from an average of 3 units per acre in Bridle Trails to a high of 17 units per acre in the Moss Bay neighborhood. As of 2001, the average residential density in Kirkland was 7.16 units per residential acre (*2003 Community Profile*).

For the years 2000 through 2003 (which relates to growth target progress described later), the City issued building permits were as follows:

- ◆ Year 2000, 132 net units,
- ◆ Year 2001, 347 net units,
- ◆ Year 2002, 195 net units,
- ◆ Year 2003, 114 net units

This is total of 788 issued permits since the year 2000.

- The Seattle-Everett Real Estate Report indicates that the average Kirkland apartment rent has increased from \$624 in 1990 to \$1,241 in 2001 or 98.9%. Average Kirkland home sales prices were \$172,196 in 1996 and increased to \$267,508 in 2000. Because of a change in the reporting methods in 1995, comparative data on average home sales prices are not available for the years 1990-1995. Comparisons of Kirkland housing sales prices to other eastside cities and King County shows that Kirkland is above the County median, but lower than the median Bellevue and Mercer Island sales prices.
- Housing affordability is a function of income, housing costs, and interest rates. The average apartment rent in Kirkland in 2001 was \$1,241 per month, compared to \$841 per month in King County as a whole. The median housing value reported in the Census for owner-occupied units in Kirkland was \$283,100, compared to \$236,900 in King County. As reported by the U.S. Census Bureau, housing value is the respondent's estimate of how much the property (house and lot, mobile home and lot, or condominium unit) would sell for if it were for sale. The average 2000 single-family sales price in the Greater Kirkland area was \$267,508 (Seattle-Everett Real Estate Reports). The 1996 average sales price was \$172,196. A Regional Coalition for Housing (ARCH) reports that the affordable home price for a median income household (\$65,800 for a family of 4) for the year 2000 in King County was \$183,000.

Housing affordability measures the burden of expenditures for housing relative to resident's income. A standard assumption in this measure is that households should pay no more than 30% of their income for housing. The 2000 Census reported gross rent and monthly owner housing costs as a percentage of household income. For Kirkland renters, 32.6% devote 30% or more of their incomes to housing costs. Similarly, 26% of Kirkland owner-occupied units devote 30% or more of their incomes to housing costs.

The affordability gap for the median income household - the difference between the average single-family sale price and the affordable price - increased from \$58,300 in 1990 to \$84,508 in 2000.

Forecast Housing

The PSRC prepares household forecasts for the region for purposes of regional plans as described above. Table 3-13 identifies forecast households by the PSRC Forecast Analysis Zones (FAZ). FAZ numbers 5305 and 5306 generally include the majority of the Kirkland City limits, but are not identical. See Figure 3-9.

Table 3 - 13 Puget Sound Regional Council Household Forecasts for Kirkland

FAZ	LIHH	LMIHH	UMIHH	UIHH	Total Households
Year – 2010					
5305	1,839	2,346	3,124	4,022	11,331
5306	2,170	2,530	2,821	3,117	10,638
Total Year – 2010	4,009	4,876	5,945	7,139	21,969
Year – 2020					
5305	2,240	2,739	3,592	4,217	12,788
5306	2,720	2,910	3,291	3,317	12,238
Total Year - 2020	4,960	5,649	6,883	7,534	25,026
Year - 2030					
5305	2,610	3,166	4,072	4,374	14,222
5306	3,193	3,290	3,691	3,431	13,605
Total Year - 2030	5,803	6,456	7,763	7,805	27,827

Notes: LIHH Lower Income Households; LMIHH Lower Middle Income Households; UMIHH Upper Middle Income Households; UIHH Upper Income Households. Source: Puget Sound Regional Council, 2002

The forecasts indicate a higher number of dwellings affordable to middle and upper income levels. The total household forecasts are a little lower in the year 2030 than the City's 2022 household target as described below.

In accordance with the GMA, Kirkland participates in regional forums to develop growth allocations for a succeeding 20-year planning period. State OFM population projections for King County are divided among all King County jurisdictions through an interactive process. The County chooses to measure progress towards population allocations by the number of dwellings built and occupied. The year 2012 and year 2022 household forecasts are as follows:

- As part of its initial GMA Comprehensive Planning efforts, the City of Kirkland was allocated a household growth target of 5,837 households between 1992 and 2012. When added to 1991 households, the City's total households in the year 2012 were forecast as 24,501. This is within a household target range of 24,258 and 25,327 housing units.
- In conjunction with King County and other East King County cities, Kirkland was allocated a future growth target of 5,480 households between the years 2000 to 2022. The City's current households (year 2000 of 21,831) plus target households (5,480) are estimated to lead to year 2022 households of 27,311.

The City must plan for these targets in its Comprehensive Plan. The City has added 788 dwelling units (based on building permits) between 2000 and 2003 towards the household target, leaving a residual net household target of 4,692.

In addition to planning for overall household targets, the City is required to plan for its fair share of affordable housing. The *Countywide Planning Policies for King County* indicate that:

Each jurisdiction shall specify the range and amount of housing affordable to low and moderate-income households to be accommodated in its comprehensive plan. Each jurisdiction shall plan for a number of housing units affordable to households with incomes between 50 and 80 % of the County median household income that is equal to 17 % of its projected net household growth. In addition, each jurisdiction shall plan for a number of housing units affordable to households with incomes below 50 % of median income that is either 20 % or 24 % of its projected net household growth.

Based on the policies, the City is required to plan for 17 % of its future housing stock as affordable to low income households, and 24 % of its future housing stock as affordable to very low-income households. Applied to housing targets, this would result in the following numbers by income level:

- Low Income, 50 - 80 % of County median household income: 932 units.
- Very Low Income, below 50 % of County median household income: 1,315 units.

Between 1993-2002, Kirkland's annual average target for creating low income housing was 70 units and moderate income housing was 50 units. Actual units provided were 13 low income units and 25 moderate units. (Source: ARCH 1/04)

3.5.2 Impacts

The primary focus of this impact analysis is the consistency of the population, employment and housing growth with the available land supply and official OFM population and City employment forecasts/targets. It also compares the distribution of the forecast growth in the City.

For both alternatives, the City's capacity analysis is an assumption of what is likely to happen based on several factors (see Appendix D). Because several of these factors can change over time, the City reviews its capacity on an annual basis as part of its review of the transportation level of service and monitoring of housing and employment targets.

3.5.2.1 Impacts Common to All Alternatives

Population, employment and housing will increase under any of the Alternatives reviewed, to different degrees. Additional population growth will increase the demand for housing.

Secondary, indirect impacts of growth would likely include potential encroachment near natural environmental resources, increases in demand for facilities, infrastructure, and other effects. These secondary impacts are described in other sections of this Draft EIS and the SEPA Checklist in Appendix A.

3.5.2.2 Impacts of No Action Alternative

The No Action Alternative accommodates growth to the year 2012. A comparison of growth targets to growth capacity is presented in Table 3-14.

Table 3 - 14 No Action Growth Targets and Capacity

Citywide	1991	2003	Capacity ³	2012 Target
Housing Units	18,664	22,120 ¹	24,400	24,501 ² (range 24,258 - 25,327)
Employment	21,864	34,843 ¹	38,600	30,464 ² (range 29,664 - 31,664)

¹Source: City of Kirkland 2003 Existing/Future Capacity Analysis. ²Source: Countywide Planning Policies for King County, November 2002, added to year 1991 employment and households. ³Capacity analysis done by the City in 1991 and cited in the 1995 Community Profile, City of Kirkland.

In 2012, population and household levels would increase over current households. Plan capacity would accommodate 2012 targets particularly considering target ranges. The City has already exceeded its Year 2012 target employment, although there is greater capacity for employment according to 2012 capacity estimates. Household and employment distribution is further described below.

Employment

In the year 2012, total employment targets (existing plus future) would be allocated to neighborhoods as shown in Table 3-15:

Table 3 - 15 No Action: Employment by Neighborhood

Neighborhood	2003 Employees ¹	2003 Percent Share	2012 Target Employees ²	2012 Percent of Total	2003 - 2012 Net Target Employees ²	2012 Net Percent of Total
Lakeview	8,152	23%	8,246	22%	94	3%
Moss Bay	5,243	15%	5,999	16%	757	26%
Houghton	494	1%	514	1%	21	1%
Bridle Trails	604	2%	604	2%	0	0%
Everest	2,132	6%	2,389	6%	257	9%
South Rose Hill	259	1%	408	1%	148	5%
North Rose Hill	1,947	6%	2,290	6%	343	12%
Market	838	2%	923	2%	84	3%
Norkirk	933	3%	1,008	3%	75	3%
Highlands	0	0%	0	0%	0	0%
South Juanita	1,047	3%	1,093	3%	46	2%
North Juanita	9	0%	60	0%	50	2%

Neighborhood	2003 Employees ¹	2003 Percent Share	2012 Target Employees ²	2012 Percent of Total	2003 - 2012 Net Target Employees ²	2012 Net Percent of Total
Totem Lake	13,227	38%	14,314	38%	1,087	37%
Sum	34,885	100%	37,847	100%	2,962	100%

Source: City of Kirkland 2003; Jones & Stokes, this analysis. ¹The total employment in 2003 includes special generators and institutions. Because the neighborhood breakdown of special generators (e.g. hospital) and institutions (e.g. retirement homes, day care centers, etc.) was available by TAZ and neighborhood for the year 2002 and the general employment estimates are based on 2003 data, the results are slightly different than the 2003 gross employment estimate of 34,843. ²Appendix D provides a description of the method to develop 2012 target estimates. It is a different method than the development of the official 2012 King County target allocation which is 30,464, a number which has already been exceeded.

The Totem Lake Neighborhood with the Evergreen Healthcare Center has the greatest share of 2012 employment estimates, followed by the Lakeview Neighborhood. In terms of net increase between 2003 and 2012, Totem Lake and Moss Bay Neighborhoods are slated for the greatest share.

Households

In 2012, total households targets (existing plus future) would be allocated to neighborhoods as shown in Table 3-16:

Table 3 - 16 No Action: Housing by Neighborhood

Neighborhood	2003 Dwellings	2003 Percent Share	2012 Target Dwellings ¹	2012 Percent Share	2003 - 2012 Net Target Dwellings ¹	2012 Net Percent Share
Lakeview	1,617	7%	1,669	7%	52	2%
Moss Bay	2,469	11%	2,836	12%	367	15%
Houghton	1,383	6%	1,514	6%	131	5%
Bridle Trails	858	4%	937	4%	79	3%
Everest	635	3%	668	3%	33	1%
South Rose Hill	1,106	5%	1,372	6%	266	11%
North Rose Hill	3,154	14%	3,672	15%	518	21%
Market	935	4%	967	4%	32	1%
Norkirk	1,512	7%	1,605	7%	93	4%
Highlands	974	4%	1,052	4%	78	3%
South Juanita	3,777	17%	4,177	17%	400	16%
North Juanita	1,812	8%	1,873	8%	61	2%
Totem Lake	1,888	9%	2,305	9%	417	17%
Sum	22,120	100%	24,645	100%	2,525	100%

Source: City of Kirkland 2003; Jones & Stokes, this analysis. ¹Appendix D provides a description of the method to develop 2012 target estimates.

South Juanita, North Rose Hill, and the Moss Bay neighborhoods have the greater shares of housing in 2012. The greatest net increases are in the North Rose Hill, Totem Lake, and South Juanita neighborhoods.

While multifamily units were projected to make up 60% of new units between 2003-2012 based on target levels of growth, the added dwellings would moderately change the overall City split between multifamily and single family dwellings: about 55% of new dwellings Citywide would be multifamily compared to 54% multifamily in 2003. Multifamily dwellings and single-family dwellings would be allowed in accordance with the Comprehensive Plan and zoning districts described in Chapter 2. Multifamily dwellings would help meet fair share housing targets established in the Countywide Planning Policies as multifamily tends to be a unit type that is more affordable. While the capacity for multifamily exists, if the previous trend in providing affordable housing are maintained the affordable housing goals of the Countywide Planning Policies may not be met. See Section 3.5.1.3.

General Discussion of No Action Growth Target

The No Action would not meet the requirement to plan for a succeeding 20-year period, and at 2012 would not result in achievement of the year 2022 housing target assigned through the Countywide Planning Policies for King County. In addition, the No Action would not result in meeting the City's affordable housing targets.

3.5.2.3 Impacts of Proposed Action

Citywide

The Proposed Action Alternative accommodates growth to the year 2022. A comparison of growth targets to growth capacity is presented in Table 3-17.

Table 3 - 17 Proposed Action Growth Targets and Capacity

	2000	2003	Capacity of Proposed Plan ²	2022 Target
Housing Units ¹	21,831	22,120	27,974	27,311
Employment ¹	32,384 ³	34,843	53,128	41,184

¹2000--2022 net household target equals 5,480 households. Year 2000--2022 net employment target equals 8,800 jobs. ² Capacity analysis prepared by the City in June 2003. Capacity may extend beyond 2022. ³Year 2000 employment based on City estimates. State Employment Security Department/PSRC estimates of employment were later found to have significant discrepancies.

In 2022, population, household, and employment levels would increase over current households. There is sufficient capacity to accommodate growth targets. Household and employment distribution is further described below.

Employment

In the year 2022, total employment targets (existing plus future) would be allocated to neighborhoods as shown in Table 3-18:

Table 3 - 18 Proposed Action: Employment by Neighborhood

Neighborhood	2003 Employees ¹	2003 Percent Share	2022 Target Employees ²	2022 Percent of Total	2003 - 2022 Net Target Employees ²	2022 Net Percent of Total
Lakeview	8,152	23%	8,358	20%	206	3%
Moss Bay	5,243	15%	6,706	16%	1,463	23%
Houghton	494	1%	539	1%	45	1%
Bridle Trails	604	2%	604	1%	0	0%
Everest	2,132	6%	2,685	7%	553	9%
South Rose Hill	259	1%	586	1%	326	5%
North Rose Hill	1,947	6%	2,701	7%	754	12%
Market	838	2%	1,024	2%	185	3%
Norkirk	933	3%	1,098	3%	165	3%
Highlands	0	0%	0	0%	0	0%
South Juanita	1,047	3%	1,149	3%	102	2%
North Juanita	9	0%	120	0%	110	2%
Totem Lake	13,227	38%	15,569	38%	2,342	37%
Sum	34,885	100%	41,138	100%	6,253	100%

Source: City of Kirkland 2003; Jones & Stokes, this analysis. ¹The total employment in 2003 includes special generators and institutions. Because the neighborhood breakdown of special generators (e.g. hospital) and institutions (e.g. retirement homes, day care centers, etc.) was available by TAZ and neighborhood for the year 2002 and the general employment estimates are based on 2003 data, the results are slightly different than the 2003 gross employment estimate of 34,843. ²Appendix D provides a description of the method to develop 2022 target estimates. The 2022 target employees in this table equal 41,138 rather than the calculated target of 41,184 because some future institutional employees (approximately 46) were not located at the neighborhood/TAZ level.

Generally, the top locations for employment are similar to 2012 levels. The Totem Lake neighborhood would have the most total employment in the City under 2012 or 2022 horizons, followed by the Lakeview Neighborhood. The greatest net increases are in the Totem Lake and Moss Bay neighborhoods.

Households

Total households targets in 2022 (existing plus future) would be allocated to neighborhoods as shown in Table 3-19:

Table 3 - 19 Proposed Action: Housing by Neighborhood

Neighborhood	2003 Dwellings	2003 Percent Share	2022 Target Dwellings ¹	2022 Percent Share	2003-2022 Net Target Dwellings ¹	2022 Net Percent Share
Lakeview	1,617	7%	1,725	6%	108	2%
Moss Bay	2,469	11%	3,324	12%	855	16%
Houghton	1,383	6%	1,655	6%	272	5%

Neighborhood	2003 Dwellings	2003 Percent Share	2022 Target Dwellings ¹	2022 Percent Share	2003-2022 Net Target Dwellings ¹	2022 Net Percent Share
Bridle Trails	858	4%	1,024	4%	166	3%
Everest	635	3%	730	3%	95	2%
South Rose Hill	1,106	5%	1,657	6%	551	10%
North Rose Hill	3,154	14%	4,226	15%	1,072	20%
Market	935	4%	1002	4%	67	1%
Norkirk	1,512	7%	1,708	6%	196	4%
Highlands	974	4%	1,137	4%	163	3%
South Juanita	3,777	17%	4,597	17%	820	15%
North Juanita	1,812	8%	1,941	7%	129	2%
Totem Lake	1,888	9%	2,730	10%	842	16%
Sum	22,120	100%	27,456 ²	100%	5,336	100%

Source: City of Kirkland 2003; Jones & Stokes, this analysis. ¹Appendix D provides a description of the method to develop 2022 target estimates. ²The target number in this chart is a little higher than the more precise Citywide target of 27,311 due to the method to proportionally reduce capacity to the target level.

The distribution of total households in 2022 into the South Juanita, North Rose Hill, and Moss Bay neighborhoods is similar to the year 2012, although the order of the neighborhoods by net households differs somewhat with the North Rose Hill, Moss Bay, and Totem Lake neighborhoods estimated to have the greater increases between 2003 and 2022.

Net dwellings added would be comprised of 60% multifamily units based on 2022 targets, but added to the existing housing stock, would minimally change the split between single family and multifamily units: about 55% of total dwellings Citywide would be multifamily in 2022, compared to 54% in 2003. Multifamily dwellings and single family dwellings would be allowed in accordance with the Comprehensive Plan and zoning districts described in Chapter 2. Multifamily dwellings would help meet fair share housing targets established in the Countywide Planning Policies as multifamily tends to be a unit type that is more affordable. While the capacity for multifamily exists, if the previous trend in providing affordable housing are maintained the affordable housing goals of the Countywide Planning Policies may not be met. See Section 3.5.1.3. As part of the Proposed Action, the City intends to integrate a Housing Strategy Plan.

General Discussion of Proposed Action Growth Target

The Proposed Action would meet GMA requirements to plan for the next 20 year horizon to the year 2022. It would provide enough capacity to meet target levels of growth, and the level of growth assumed in land use and capital planning would be consistent with the target level of growth established in the Countywide Planning Policies for King County. In addition, the Proposed Action includes additional policies and regulatory incentives to encourage affordable housing. However, the City may still not meet its affordable housing targets.

Totem Center Study Area

Totem Center Study Area would provide a significant amount of employment and residential capacity for the City. An area-specific comparison of 2012 and 2022 growth in the Totem Center Study Area is provided in the Land Use Patterns section. See Section 3.3.2.3, Capability of Land to Absorb Densities.

Private Amendment Study Areas

Private Amendment Area A, PLA 6B, would add capacity for residential development in the study area. For PLA6B, the City assumes that 60% of the study area will redevelop in the future and that 40% will see no change. This amendment would further provide residential capacity beyond target growth levels, although the City Proposed Comprehensive Plan Update will continue to plan for 2022 assigned target levels. Please refer to Section 3.3.2.3.

Private Amendment Area B, LIT zone, would decrease capacity for industrial and office development, and increase capacity for residential development. The City assumes with this analysis that only the Sedorco Partnership site is likely to redevelop in the study area. The Land Use Patterns Section indicated that under Amendment B, The amendment has the potential to provide additional residential capacity beyond target growth levels, although the City Proposed Comprehensive Plan Update will continue to plan for 2022 assigned target levels. Please refer to Section 3.3.2.3.

3.5.3 Mitigation Measures

3.5.3.1 Incorporated Plan Features

- Framework Goal-11 (adopted FG-14 with proposed amendments): Plan for a fair share of regional growth, consistent with state and regional goals to minimize low-density sprawl and direct growth to urban areas.
- The Proposed Action provides updated capacity estimates to the year 2022, meeting the next GMA 20-year planning horizon. It would update and refine Land Use Element, Housing Element and Economic Development Element data and policies. The more current data and the policy refinements would better reflect current conditions and community desires for housing and economic development.
- The Housing Element update includes in part an integration of a Housing Strategy Plan originally adopted by Resolution R-4348 including low and moderate income housing strategies.

3.5.3.2 Applicable Regulations and Commitments

- Zoning regulations implement the Comprehensive Plan to further Comprehensive Plan policies for business development and housing density and character.

3.5.3.3 Other Recommended Mitigation Measures

- Since the City's growth capacity exceeds the 2022 housing and employment target levels, the City could monitor growth levels and determine if adjustments to the Comprehensive Plan, capital facility and service plans, or other supporting plans or regulations are

warranted to ensure that all Comprehensive Plan Elements and implementing plans and regulations are consistent and in balance. GMA and City regulations allow for annual review and amendment of City plans as appropriate.

- The City could take further action to meet its affordable housing targets by providing additional affordable housing incentives beyond what the City adopted in May 2004 and by supporting affordable housing programs through ARCH and/or other local and regional housing agencies.

3.5.4 Significant Unavoidable Adverse Impacts

Population, employment and housing will increase under any of the Alternatives reviewed, to different degrees. Additional population growth will increase the demand for housing. The need for affordable housing will increase as well. Additional population, housing, and employment growth will result in secondary impacts to the natural and built environment and to the demand for public services, and is addressed in the appropriate sections of this Draft EIS or SEPA Checklist in Appendix A.

3.6 Aesthetics

3.6.1 Affected Environment

3.6.1.1 Physical Setting

Kirkland's physical setting is defined by its natural landforms, topography, and location along Lake Washington. The City is situated on a hillside that generally slopes downward from east to west toward Lake Washington. This elevation change provides excellent scenic view opportunities of Lake Washington, Seattle's skyline, and the Olympic Mountain range from many of the neighborhoods, public rights of way, and public spaces in the City. Kirkland's location along Lake Washington and the City's scenic views are major contributors to Kirkland's community character. Hillsides and natural areas help to define individual neighborhoods.

3.6.1.2 Built Form

The majority of the older residential neighborhoods in Kirkland (west of I-405 and south of Forbes Creek Road) are built in a traditional grid pattern, with a compact urban form and small-scaled development pattern. These older neighborhoods such as Moss Bay, Norkirk, and Market, tend to have a variety of housing ages, types, and styles. Newer residential development, such as those located east of I-405 and north of Forbes Creek Road, tend to be more suburban in nature with a larger proportion of curvilinear streets and cul-de-sacs. Residential development in these areas tends to be less compact and more auto-oriented in scale. Over the past 10 years, infill and densification has occurred throughout the City, such as within the downtown and waterfront areas.

Kirkland is a City of neighborhoods, each containing a mix of population, housing, commercial, and physical features that define the neighborhood character. Kirkland's residential character largely defines its community identity, with its diverse housing stock, and the various neighborhood commercial districts that support Kirkland's residents and businesses. Kirkland's Downtown has a compact urban form, with a human-scaled, pedestrian friendly and fine-grained scale and development pattern. Two to five story buildings characterize the downtown with the highest intensity of development associated with the mixed-use/residential development built over the past 10 years. A mix of uses and activities including housing, restaurants, shops and public spaces characterize the Downtown. In contrast, commercial development along NE 85th Street corridor is more auto-oriented in nature and as a major arterial, carries heavy traffic through the City with connections to I-405. Development along the NE 85th Street corridor tends to be more auto-oriented with strip commercial development, auto dealerships, restaurants, and low-rise (single story) buildings.

Tree cover and impervious surfaces also influence the urban character of the City. Kirkland has an approximate tree cover of 32% (Natural Resources Management Plan, 2004). The City's overall goal is 40%. The highest concentration of tree cover occurs within parks, open space, and other natural areas. Other contributions to the tree cover ratio include street trees and private property owner landscaping. Areas with less than average tree cover are in more highly urbanized areas such as downtown, NE 85th Street commercial corridor, at interchanges with I-405, and in the Totem Lake neighborhood. Accordingly, these areas with lower tree cover also have the highest amount of impervious surfaces in the City. Figures 3-4 and 3-10 depict the existing tree cover and impervious surfaces in the City.

Totem Center Study Area

I-405 and the Totem Lake Mall are the dominant built features within the Totem Center Study Area. Currently, the area is characterized by development of low to moderate intensity. The area can be generally characterized as having low-rise buildings—one-story strip commercial/office development and expansive parking lots. The existing development pattern is predominantly auto-oriented in nature. The Totem Lake Mall and the Evergreen Healthcare Medical Center (just east of the study area) are major focal points in the neighborhood. The Totem Lake Neighborhood has a larger than average amount of impervious surfaces within the City. This is largely attributable to the expansive parking areas within the study area. The majority of tree cover in the Totem Lake Neighborhood occurs at the periphery of the study area, at Totem Lake and open space east of Evergreen Healthcare Center.

Private Amendment Request Study Areas

The Amendment A study area can be characterized by development of moderate intensity with a mix of professional offices, institutional uses, and single family residential development. In the immediate vicinity of the study area, multifamily high density residential exists to the west and east. Medium and low density housing to the south. Downtown commercial, office, and multifamily residential uses are located to the North. The study area is within easy walking distance to Downtown shops and restaurants. The urban form within the area is characterized by a small-scaled grid pattern with interconnected streets and minor changes in topography. Buildings in a variety of ages, styles, and scales also characterize the area. Allowable height in the study area is 30 feet above average building elevation, except for the portions of those parcels within 100 feet of the low density

zones of PLA 6C or PLA6E in which height is limited to 25 feet above average building elevation.

The Amendment B study area is currently characterized by low-rise industrial development with a large block pattern and few interconnected streets. Allowable height in the study area is 35 feet above average building elevation with a maximum of two stories, exclusive of parking. There are currently no east-west roadway connections through the study area due to the presence of the BNSF railroad right of way and parcel configuration. The study area is within walking distance to the Houghton Commercial District. Development immediately east of the study area on 6th Street South consists of a mix of professional office and multifamily development.

3.6.2 Impacts

This section analyzes the impacts on visual character as a result of land use changes; height, bulk, and scale compatibility; and streetscape changes.

3.6.2.1 Impacts Common to All Alternatives

Citywide

Impacts associated with increased intensity of development include:

- Height, bulk, and scale compatibility
- Shade and shadows
- Increased lighting levels and glare
- Reduced open space
- Loss of vegetation.

Most of the aesthetic impacts associated with either the No Action or Action alternatives will be concentrated in Activity Areas and commercial districts in the City, in areas where increased intensity and density of development is anticipated to occur. Neighborhoods such as the Totem Lake, North Rose Hill, and South Juanita neighborhoods will likely experience greater than City average visual impacts due to the fact that these neighborhoods currently have the highest percentage of vacant lands, likely to redevelop over time to accommodate growth and development.

Height, Bulk, and Scale Compatibility

With increased densification and intensification of land uses, new development with larger buildings, greater lot coverage, and increased parking areas could result in localized compatibility impacts if adjacent properties are of a lower scale or less urban in character. The degree of change in the visual appearance of neighborhoods would correspond to the amount of development and changes to the existing development pattern. Impacts could include increased visual contrast in building scale and potential for increased shadowing and incremental change in local character. Impacts associated with increased height, bulk, and scale, can be softened can through the application of development standards and design guidelines to address building design, site design, pedestrian orientation, landscaping, and streetscape improvements.

Shade and Shadow

With increased density and intensity of development, the potential for increased shade and shadows on adjacent land uses at within the pedestrian realm increases. Factors that

influence the extent or range of shading include: season; time of day; weather (i.e. sunny vs. cloudy day); building height, bulk, and scale; spacing between buildings; and tree cover.

Increased Lighting Levels and Glare

Cumulative impacts associated increased lighting levels and glare would come from both mobile (vehicular headlights) and stationary sources such as street and pedestrian lights, interior building illumination, parking lot lighting, illuminated signage, etc. Construction related lighting could include job site illumination and construction related vehicular lighting.

Vegetation and View Potential

Vacant and underutilized lands will be developed as infill and redevelopment occurs. The City's overall building mass will increase. Cumulative impacts include a loss of vegetation and tree cover and increased impervious surfaces. The City's development standards and design guidelines for streetscape improvements, and landscaping requirements will help to soften the visual impact associated with redevelopment of vacant lands. The City's Natural Resources Management Plan has a goal of 40% tree cover averaged throughout the City. In addition, the City's extensive parks and open space system (which currently accounts for 8% of the City's existing land use) and park level of service standards will help to relieve the continued intensification of development patterns and the absorption and development of vacant lands. In some areas, potential sight lines to the Olympic and Cascade Mountains may result due to increased densities and building heights. In other areas, views may be reduced. The City does not protect private views, only views from public rights-of-way and public spaces.

3.6.2.2 Impacts of No Action Alternative

The impacts associated with the No Action alternative would be the same as described in Section 3.6.2.1, Impacts Common to All Alternatives.

3.6.2.3 Impacts of Proposed Action

At a Citywide level, the impacts associated with the Proposed Action are described in Section 3.6.2.1, Impacts Common to All Alternatives. The section below describes in greater detail the visual impacts of the Proposed Action on the Totem Center, Moss Bay, and Everest Neighborhoods associated with the Totem Center and Private Amendment request study areas.

Totem Center Study Area

Over time, the Totem Center Study Area will experience an increase in high-density housing and office and commercial development. Increased number of multi-story office buildings and residential units would cause changes in height, bulk, and scale. With increased development through infill and redevelopment there would be associated changes in visual and aesthetic character and scale. Impacts associated with height, bulk, and scale are the primary areas of analysis.

Height, Bulk and Scale Compatibility

The analysis of height, bulk, and scale compatibility impacts focus on transitions between land uses along the edges of the study area, where more intensive development directly abuts less intensive, smaller scaled development. The single-family residential area immediately

north of NE 132nd Street (outside of City limits but within the City’s Potential Annexation Area) is an area that would experience the greatest impact with regard to height, bulk, and scale compatibility.

Shade and Shadow Analysis

The newly adopted zoning regulations for the Totem Center allows for increased building heights, the tallest building heights allowable in the City. As described in Chapter 2, the zoning amendments for the Totem Center were analyzed through an EIS Addendum dated February 2004. This DEIS review of planned land uses for the Totem Center Study Area is specifically designed to provide adequate analysis to apply the categorical exemption for new residential and mixed-use development per RCW 43.21C.229.

Increased building heights have the potential to create shadows for areas immediately adjacent to the study area. Under the proposed zoning regulations under consideration through a separate process, the maximum development envelope allowable under the TL1A/TL1B zone may exceed 75 ft. and may be increased to 160 ft. above the average building elevation. There would be a maximum floor area ratio (FAR) of 3.5. Floor plates may not exceed 10,000 sq. ft. per floor for the portions above 75 ft. The maximum building envelope for the existing and proposed zoning is depicted in Table 3-20.

Table 3 - 20 Maximum Building Envelope under Proposed Zoning Regulations for the Totem Center Study Area

Development Standards	Proposed Zoning		
	TL1A	TL1B	TL2
Setbacks	Front: 10'	Front 10', 20' where abutting 132 nd St.	As established through a Conceptual Master Plan
¹Maximum Lot Coverage	85%	85%	80%
Maximum Building Height	160 ft. above average building elevation	160 ft. above average building elevation; within 100' of the centerline of NE132 nd St., building height may not exceed 30' above the elevation of the centerline of NE 132 nd St.	75' above average building elevation (to 135' for 5% of a parcel over 1.5 acres in size)
¹Floor Area Ratio (FAR)	2.5 (office)/3.5 FAR (residential); floor plates not to exceed 10,000 sq ft. per floor above 75 ft.	3.5 FAR (residential); floor plates not to exceed 10,000 sq ft. per floor above 75 ft.	Consistent with a Conceptual Master Plan

Source: Proposed zoning Code amendments, City of Kirkland 2004 ¹May be increased through Design Review.

The City has conducted a massing study to analyze the potential shade and shadow implications from a building height and bulk scenario allowable under the maximum height

under the zoning regulations. The analysis assumed a building height of 180 ft, 10 ft. building setbacks, and potential building floor plates of 20,000 sq. ft. below 80' building height, and 12,000 sq. ft. above 80' building height. The study area for the shade and shadow analysis is depicted in Figure 3-11. The shade and shadow analysis was conducted for the typical solstice and equinox days: March 21, June 21, September 21 and December 21 and was modeled based on Kirkland's longitude and latitude. During the month of December, the weather tends to be cloudy or partly cloudy with an average of 21 rainy days and 2-3 sunny days during the month (National Weather Service, Seattle). Shade and shadow impacts were modeled for a morning (9 a.m.), mid day (noon), and afternoon (3 p.m.) setting, and are included as Appendix E. Shadows cast by buildings on each of these days depicts the range of shade and shadow that can be anticipated under a worst case building height and bulk scenario. The duration of shadow related impacts will be temporal due to the rotation of the sun and seasonal patterns and time of day.

The worst-case scenario is modeled on December 21, the winter solstice, when the sun is the lowest on the horizon, as shown in Figure 3-12. Most of the shadow impacts are internal to the study area and can be mitigated through application of development standards and design guidelines proposed for the area. Impacts to adjacent land uses are the focus of this discussion. Residential areas north of NE 132nd St. will likely experience temporary shading impacts. The location and duration of the shadow on the single family residential area will change throughout the day. In the morning, more shadows will be cast to in a northwesterly direction, in the evening shadows will be cast to the northeast.

It is anticipated that shade and shadow impacts to the residential area north of NE 132nd Street will be less than depicted in Figure 3-12. This is due to the fact that the massing study was conducted before a final draft of the proposed zoning regulations for Totem Center was completed. The modeling depicts a building that is 20 ft. taller than the proposed zoning allows. In addition, the newly adopted zoning regulations and design guidelines for the Totem Center Study Area has specific provisions to mitigate for shade and shadow impacts to the abutting residential use. The proposed code provisions require increased setbacks to 20 ft. from NE 132nd Street, floor plates reduced to 10,000 sq. ft. at building heights greater than 75 ft., and more restrictive building height restrictions within 100' of the centerline of NE 132nd than was modeled in the shade and shadow analysis. In addition, the proposed zoning requires separation between building masses. For portions of buildings over 75' in height, buildings must be separated by 60 ft. to allow for adequate open space, light, and air.

It is anticipated that the shade and shadow implications of the proposed zoning on adjacent properties would be different than what is allowed under existing zoning. Under current zoning, the allowable building heights would be less, but the lot coverage and bulk provisions could result in a development pattern that is more massive than under proposed zoning. Under the current zoning, it is likely that the worst-case shade impacts would create a continuous shadow along the NE 132nd St. streetscape frontage for longer periods of time during the day. Section 3.6.3 provides more a more detailed discussion regarding mitigation to address visual impacts associated with the proposed action.

Vegetation and View Potential

See Section 3.6.2.1 Impacts Common to All Alternatives for a discussion of the potential vegetation and view potential impacts associated with the Proposed Action.

Private Amendment Requests

Amendment A

The impacts associated with the private amendment requests are similar to those described in Section 3.6.2.1 Impacts Common to All Alternatives. Cumulative visual impacts for the Lakeshore Clinic (PLA6B) private amendment request, Amendment A, are associated with increased residential density and loss of vegetation. Increased residential density in the neighborhood is consistent with the neighborhood plan and will not significantly affect neighborhood character. Development trends over the past 10 years in the Moss Bay neighborhood have included increased residential density and intensity of development. Areas surrounding the study area include a mix of residential uses. The proposed land use and zoning changes for the study area reinforce this development pattern. Under both the No Action and Proposed Action Alternatives, the maximum allowable building height is the same at 30 feet above average building elevation. Additional density under the Proposed Action would not increase the allowable height. However, building height and scale incompatibilities could occur under both alternatives where new multi-family residential development is adjacent to single-family residential housing. As infill and redevelopment occurs, some areas of established vegetation would be replaced by new construction and required landscaping. The City's existing development standards mitigate for impacts associated with new development as discussed in Section 3.6.3 below.

Amendment B

The impacts associated with Sedorco Partnership private amendment request, Amendment B, would be similar to those described in Section 3.6.2.1. Impacts Common to All Alternatives. Infill and redevelopment of industrial lands will result in change in building design and scale, which is compatible with adjacent land uses across 6th Street South.

Both office and residential developments would have lower building height and bulk since the maximum allowable height for an office/multifamily zone (PR) is 30 feet above average building elevation whereas under the No Action Alternative, the maximum allowable height is 35 feet above average building elevation.

Residential development would be slightly less dense than existing development along 6th St. South if 12 units per acre is assumed. At 18 or 24 units per acre, development could range between 65 – 173 units, a higher density than the surrounding area. Given the study area's proximity to the Houghton Commercial District, increased residential densities is consistent with the Comprehensive Plan vision for increased density and intensity of development to occur in proximity to the City's commercial activity areas.

If a Planned Area designation and zoning approach is used for this study area, allowable building heights may be increased. If the building height is increased to greater than 35 feet under the Planned Area approach, the study area would not be compatible with adjacent building heights in the surrounding areas.

3.6.3 Mitigation

This section describes how goals and policies, applicable regulations, and other recommended mitigation measure address aesthetic impacts associated with the No Action and Action Alternatives. Comprehensive Plan goals and policies provide guidance regarding the character and scale of development at the Citywide and neighborhood level. Impacts due to increased density and intensity of development can be mitigated by development standards

and design guidelines which address the quality of architectural features, site design, landscaping, and other urban design elements incorporated into the development; and how well the image presented by the overall scale and form of the development incorporates the features of the local setting

3.6.3.1 Incorporated Plan Features

Citywide

The City's goals and policies, development regulations, design guidelines, and design review process are integrated mitigation measures to address the aesthetic impacts associated with either the No Action or Action Alternatives.

Applicable existing goals and policies include:

- Policy CC-4.5: Protect scenic views and view corridors.
- Policy CC-4.6: Preserve natural landforms, vegetation, and scenic areas that contribute to the City's identity and visually define the community, its neighborhoods and districts.
- Policy CC-4.7: Enhance City and neighborhood identity through features that provide a quality image that reflects the City's unique characteristics and vision.
- Policy CC-4.10: Maintain and enhance the appearance of streets and other public spaces.

Totem Center Study Area

The Totem Lake Neighborhood Plan vision and implementing zoning code provisions and design guidelines provide a framework for the future urban design of Totem Center such as the location of massing and structures, building heights, density, and vehicular/pedestrian circulation.

Totem Lake Neighborhood Plan

The Totem Lake Neighborhood Plan, as adopted, establishes goals and policies for the future development of the Totem Center. The Totem Lake Neighborhood Plan articulates a vision for a dense, compact community with a mix of business, commercial, and residential uses and a high level of transit and pedestrian activity. The plan establishes key overall design principles, objectives, and concepts for Totem Center. Key design principles in the Totem Center focus on a mix of land uses; reinforcing character through public streetscape and community identity improvements; use of high quality building design and materials; publicly accessible open spaces as community focal points; visual and functional connections between spaces; and pedestrian orientation including building design elements that address relationship of building to the street, massing, and visual interest at the street/eye level.

Applicable policies include:

- Policy TL-6.1: Establish and actively support standards to ensure intensive redevelopment within Totem Center.
- Policy TL-6.2: Ensure that regulations support and facilitate redevelopment and reinvestment
- Policy TL-6.3 Support complementary development throughout Totem Center.
- Goal: TL-8: Ensure that public and private development contributes to a lively and inviting character in Totem Center.
- Policy TL-8.1: Implement design principles for Totem Center.
- Policy TL-8.2: Implement design principles for the mixed-use area west of Evergreen Hospital Medical Center.

- ◆ Residential development should be varied in building form, various roof forms, and include features to break up bulk and scale.
- ◆ Additional density should be allowed in buildings that include a significant amount of floor area in residential use.
- ◆ The building mass of new development adjacent to NE 132nd Street should be centered toward the middle of these sites and provide residentially scale façade adjoining the low-density residences to the north.
- Policy TL-8.3: Emphasize vitality and activity during evenings and weekends.
- Goal TL-10: Expand and strengthen the retail focus at the Totem Lake Mall.
- Policy TL-10.2: Emphasize high quality urban and architectural design in redevelopment of the Totem Lake Mall.

3.6.3.2 Applicable Regulations and Commitments

Citywide

The City's development regulations provide direction for future development with regard to building setback, impervious surface coverage, landscaping, and building height and bulk.

The City's Design Guidelines for Pedestrian-Oriented Business Districts provides direction to property owners, developers, and the City's Design Review Board. Design guidelines apply to business districts in the City. The guidelines establish guidance on site and building design for pedestrian oriented business districts. Design guidelines address location of buildings and parking on the site, height, bulk, and scale; streetscape improvements; visual screening; pedestrian amenities, and light and glare. All development proposals in zoning districts where design guidelines are applicable are subject to the Design Review process.

Totem Center Study Area

Proposed Development Standards

Proposed zoning code provisions and design guidelines for the Totem Center provide guidance on the development character for the study area including site planning, building massing, pedestrian connections, streetscape design, location of parking, architectural detailing, and visual interest.

The Totem Lake mall lies within the TL2 zone classification. Development proposals within the TL2 zone require either 1) a Conceptual Master Plan or 2) compatibility with an approved Conceptual Master Plan.

The impacts of greater heights on uses adjacent to the study area can be effectively mitigated. The proposed zoning code builds in provisions to help mitigate for impacts associated with increased intensity and density of development in the Totem Center Study Area through height and bulk, setbacks, and open space provisions. For example, the TL1B zone Section 55.15 includes the following specific zoning provisions to address the residential area north of NE 132nd St.:

- Within 100' of the centerline of NE 132nd Street, building height may not exceed 30 feet above the elevation of the centerline of NE 132nd Street along the subject property.
- An increase to 20 ft. front yard setback for properties abutting NE 132nd Street.
- Methods for mitigating any significant shadowing and lighting impacts of the increased building height on the residential areas to the north are proposed.

- Taller elements of buildings would be stepped back from the perimeter of TL1B boundaries, away from adjacent residential zones.
- Portion of structures exceeding 75' in height must be separated by at least 60', both on the subject property and from taller building elements on adjacent properties.

Design Guidelines

Special design considerations have been proposed for the Totem Center Study Area to illustrate unique characteristics of the study area. Design regulations for the Totem Center Study Area address pedestrian-oriented elements, public improvements and site features, parking lot location and design, building scale, building material, color and detail, signage, natural features, and other design elements. The focus of the discussion in this section is on those elements that address the impacts associated with increased density and intensity of development in the Totem Center Study Area. Those particularly relevant to shade and shadow impacts address height, bulk, and scale of development.

For the mixed use areas, Totem Lake TL1A and TL1B zones, specific design considerations address breaking up mass through design techniques such as slimmer but taller towers rather than shorter wider buildings, distinctive roof forms, and applying appropriate transitions to lower density uses north of Totem Center through residentially scaled facades and centered building masses in development along NE 132nd St. For the retail center, Totem Lake TL2 zone, guidelines promote the vision of the areas as a 'village like' community gather place, with high quality urban and architectural design in redevelopment as planned through a Conceptual Master Plan.

Greater building heights are allowed in the Totem Lake 1A and 1B zones, thus the impacts associated with increased height are important to analyze. Special design considerations for the TL1A and TL1B zones address vertical building modulation to mitigate for the allowable building heights and impacts on adjacent land uses.

Massing is recommended in slimmer but tall towers, rather than in shorter, wider buildings. These buildings should step back from property lines and neighboring structures. This development style will allow for an opportunity to create open space between buildings. Buildings should have compact floor plates. Development in taller buildings should have compact floor plates, with a varied building footprint, and design features that reduce the perception of building mass.

Design treatments, which promote visual interest and variety along rooflines and upper portions of buildings, are encouraged. A variety in building materials, textures, patterns, color and architectural detailing are recommended.

3.6.3.3 Other Recommended Actions

If a Planned Area designation is established for Private Amendment Area B, design standards should be included to ensure that the maximum allowable building height in the new designation is compatible with allowable building heights in the surrounding area.

3.6.4 Significant Unavoidable Impacts

Growth levels will increase between existing conditions and 2022, irrevocably committing land to allowed uses and activities. The extent of visual impacts is subjective and will depend on the values and preferences of those viewing the change; the quality of architectural and

urban design features incorporated into the development; and how well the image presented by the overall scale and form of the development incorporates features of the local setting.

3.7 Transportation

This section presents an inventory of transportation facilities and services, impact assessment for the No Action and Action Alternatives, long-range transportation improvements, and programmatic improvement measures.

3.7.1 Description of Methodologies

Analysis for the Transportation Element of the Comprehensive Plan and this DEIS included development of a travel demand model to forecast future transportation conditions, and level of service (LOS) analysis to determine the overall operating conditions of the City of Kirkland roadways.

3.7.1.1 Travel Demand Forecasting Model

The Bellevue-Kirkland-Redmond (BKR) travel demand forecasting model is a traffic analysis tool used for forecasting future traffic volumes based on existing traffic patterns and forecasted land use growth. It provides future traffic volumes for development review and comprehensive planning. For short-range traffic impact analysis related to development review, it forecasts the traffic distribution of proposed future development.

The BKR model is directly tied to each jurisdiction's land use within the planning area; and land use information is carefully managed and routinely updated to support transportation planning activities. The BKR model integrates elements of the regional model developed by the PSRC.

The general process for the BKR model is shown in Figure 3-13. It employs the traditional travel demand forecast modeling process, which includes the following key components:

- **Current Land Use Assessment** – provides the basis for determining travel demand. The entire study area is divided into Transportation Analysis Zones (TAZs) that have similar land use characteristics, and land use is quantified within each TAZ.
- **Trip Generation** – computes the number of trips that travel into and out of each TAZ, based upon land use characteristics and trip generation rates.
- **Trip Distribution** – distributes trips from each TAZ to every other TAZ, based on the relative accessibility and attractiveness between each TAZ pair.
- **Mode Split** – splits the total TAZ-to-TAZ trips by mode of travel, based on the relative attractiveness of all mode alternatives.
- **Time of Day Factors** – breaks down daily trip tables into different time periods, such as AM peak hour, midday off-peak hour, and PM peak hour.
- **Multi-class Auto Traffic Assignment** – loads traffic on the roadway network, employing user equilibrium principles.
- **Multi-path Transit Assignments** – loads transit person trips on the transit routes, utilizing a least weighted multi-path travel time algorithm.

The forecasting models are built to project future travel demand for the Puget Sound region with primary focus on the metropolitan area east of Lake Washington. The base-year modeling platform is updated annually to reflect changes in land use and roadway network, and validated annually according to new observed data such as traffic counts and household travel surveys.

3.7.1.2 Level of Service Approach

The City of Kirkland measures LOS according to calculated volume to capacity ratios (V/C) of signalized system intersections. V/C for signalized intersections is calculated using the planning methods established in *Transportation Research Circular 212*. (TRB 1980)

The capacity (C) of a signalized intersection is determined by a wide variety of factors, including signal phasing, number of lanes, and the types of vehicles that make up the traffic. It is a measure of the maximum number of vehicles that can travel through the intersection in a set period of time. The volume (V) is the sum of “critical” volumes that indicate maximum demand at the intersection. The V/C is the volume divided by the capacity. For the Kirkland Transportation Plan, V/C is calculated for the PM peak hour, which is the most congested hour of the day.

A V/C of less than 1.0 indicates that the traffic volume that moves the intersection is less than the capacity of the intersection. If the V/C is equal to 1.0, the intersection’s volume and capacity are approximately equal. V/C that is greater than 1.0 indicates that the volume has exceeded capacity. Increasing V/C indicates that congestion is increasing and LOS is becoming worse at the intersection.

Underlying the City’s LOS definition is the concept that the system is not considered failing if the peak-hour is congested. Use of the peak-hour for measuring LOS is typical throughout the region. This “worst case” measure implies that traffic will flow better during the rest of the day. Under some circumstances a V/C greater than 1.0 for the peak hour is considered acceptable under City standards, because financial and physical constraints place limitations upon the amount of roadway improvement that is feasible within the City.

3.7.2 Affected Environment

A comprehensive inventory of all transportation facilities provides a sound basis for effective planning. Consistent with the requirements of the GMA, the City maintains inventories of transportation facilities, which include:

- Roadways
- Parking
- Traffic control
- Public transportation
- Bikeways and walkways
- Freight transportation
- Transportation Demand Management

These elements of the City’s transportation system are described in the following sections.

3.7.2.1 Roadways

Functional Classifications

The City of Kirkland has established a system of street classifications based on intended street function. The purpose of these classifications is to allow appropriate design and maintenance standards to be applied; and they are also used for state and federal funding purposes. The City applies one of four functional classifications to each of its roadways: principal arterial, minor arterial, collector, and neighborhood access. Principal arterials connect Kirkland with other regional locations such as Bellevue and Redmond. Minor arterials provide connections between principal arterials and serve as key circulation routes within Kirkland. Collectors distribute traffic between arterials and local streets. Neighborhood access streets provide access to individual properties and connect to collectors.

Figure 3-14 displays the existing street system that is classified principal arterial, minor arterial, and collector. The remaining roadways in the City are considered neighborhood access streets. There are 146 miles of streets in Kirkland, the majority of which (74 percent) are classified as neighborhood access.

Traffic Volumes

The City of Kirkland regularly conducts traffic counts at key locations throughout the City, to determine the Average Daily Traffic (ADT) on the City's roadways. Table 3-21 summarizes the ADT at key locations.

Table 3 - 21 Existing Average Daily Traffic

Street	Location	2002 ADT
Central Way	West of Lake Street	20,880
Central Way	East of 6 TH Street	29,476
Kirkland Avenue	East of Lake Street	5,679
Lake Street	South of Central Way	13,717
Lake Washington Boulevard	South of Lakeview Drive	22,934
Lake Washington Boulevard	North of NE 38 Place	24,188
Main Street	South of Central Way	2,188
Market Street	South of Forbes Creek Drive	19,804
State Street	South of Kirkland Avenue	9,052
State Street	North of NE 68TH Street	8,422
Totem Lake Boulevard	West of 120TH Avenue NE	10,675
Totem Lake Boulevard	North of NE 124TH Street	22,451
Totem Lake Boulevard	South of NE 132ND Street	10,014
3RD Street	South of Central Way	10,470
6TH Street	North of Central Way	7,468
6TH Street	South of Central Way	12,538

Table 3 - 21 Existing Average Daily Traffic

Street	Location	2002 ADT
7TH Avenue	East of Market Street	2,458
NE 38TH Place	East of Lake Washington Boulevard	3,310
NE 52ND Street	East of Lake Washington Boulevard	734
NE 60TH Street	East of 116TH Avenue NE	3,268
NE 68TH Street	East of 108TH Avenue NE	18,715
NE 68TH Street	West of 108TH Avenue NE	12,185
NE 70TH Street	East of 116TH Avenue NE	16,281
NE 70TH Street	West of 116TH Avenue NE	21,194
NE 85TH Street	West of 120TH Avenue NE	48,447
NE 85TH Street	East of 124TH Avenue NE	38,523
NE 85TH Street	West of 124TH Avenue NE	41,068
NE 85TH Street	East of 132ND Avenue NE	36,233
100TH Avenue NE	NE of NE 124TH Street	25,012
108TH Avenue NE	North of City Limits	8,915
108TH Avenue NE	South of NE 68TH Street	12,842
NE 112TH Street	East of 116TH Avenue NE	4,838
116TH Avenue NE	South of NE 60TH Street	5,169
116TH Avenue NE	North of NE 70TH Place	7,410
116TH Avenue NE	North of NE 124TH Street	14,572
NE 116TH Street	East of 120TH Avenue NE	30,083
NE 116TH Street	West of 120TH Avenue NE	16,742
NE 116TH Street	West of 124TH Avenue NE	22,627
120TH Avenue NE	North of Totem Lake Boulevard	18,054
124TH Avenue NE	North of NE 85TH Street	12,852
124TH Avenue NE	South of NE 116TH Street	17,857
124TH Avenue NE	South of NE 124TH Street	19,949
NE 124TH Street	East of 100TH Avenue NE	20,436
NE 124TH Street	East of 116TH Avenue NE	38,937
NE 124TH Street	West of Slater Avenue NE	27,691
132ND Avenue NE	North of NE 60TH Street	6,346
132ND Avenue NE	North of NE 100TH Street	7,958
132ND Avenue NE	South of NE 113TH Street	7,020
NE 132ND Street	East of Totem Lake Boulevard	15,460

Table 3 - 21 Existing Average Daily Traffic

Street	Location	2002 ADT
NE 132ND Street	West of Totem Lake Boulevard	22,314
NE 132ND Street	West of 116TH Way NE	18,145
NE 132ND Street	West of 124TH Avenue NE	16,960

Source: <http://www.ci.kirkland.wa.us/depart/pw/transportation/flscrswk.htm>

Level of Service

LOS Standard

Transportation policy establishes a peak-hour LOS standard for vehicular traffic based on forecasted land use and existing and planned future road networks. A two-tiered LOS standard is applied to signalized intersections within the City of Kirkland. Traffic conditions meet LOS standards when both of the following conditions are met:

1. Maximum Allowed Subarea Average V/C is established by City policy for each of the areas shown in Figure 3-15. The average V/C of signalized system intersections within each subarea may not exceed the established threshold values for that subarea.
2. No signalized system intersection may have a V/C greater than the established value by policy.

Table 3-22 summarizes the current LOS standard, which was adopted by the City in 2002. The table shows maximum average V/C for each of the four subareas for different forecast years, and also indicates that no single system intersection within each subarea may have a V/C greater than 1.40.

Table 3 - 22 No Action Alternative - Existing (2002) LOS Standard - Maximum Allowable Subarea Average V/C for System Intersections and Individual Intersection LOS

Use as Maximum Allowed Average V/C after January 1	2002	2003	2004	2005	2006
Forecast for Year	2007	2008	2009	2010	2011
Subarea	Average V/C Ratio				
Southwest	0.99	1.00	1.01	1.02	1.03
Northwest	1.16	1.18	1.20	1.23	1.25
Northeast	0.98	1.01	1.04	1.07	1.10
East	1.08	1.09	1.10	1.11	1.13
Maximum allowed individual system intersection V/C ratio	1.40	1.40	1.40	1.40	1.40

Source: City of Kirkland Comprehensive Plan, 2002.

The adopted LOS standards provide guidelines for the maximum allowed subarea average V/C ratio for the next few years. To pass the roadway concurrency test, new development may not exceed the maximum allowable subarea average V/C ratio for system intersections, six years into the future, starting from the date of making a concurrency application. The first row of Table 3-22 indicates the year that a proposed development is submitted for a roadway concurrency test. The second row indicates the six-year horizon under which a new development's traffic impacts are assessed. Each set of standards in the column below the application year and the horizon year are based on a LOS forecasts for six years in the future. Forecasts are derived by linear interpolation between forecasts for existing and planning horizon (2012) years, and include forecasted impacts of development that have been approved but not yet built.

The LOS methodology requires both standards shown in Table 3-22 to be satisfied. First, traffic from a new development may not cause the average V/C of system-signalized intersections in a subarea to operate at an LOS lower than the defined average threshold. Second, traffic from a new development may not cause any individual system-signalized intersection to exceed a V/C ratio of 1.40.

City policy identifies some intersections that are excluded from LOS calculations. The following ten signalized intersections are not included as system intersections under current policy.

- Lake Street and Kirkland Avenue
- 6th Street and 4th Avenue
- NE 124th Street and 120th Place NE
- NE 118th Street and 120th Avenue NE
- NE 128th Street and 116th Way NE
- 120th Avenue and NE 80th Street
- NE 132nd Street and 108th Avenue NE
- NE 132nd Street at Juanita High School
- NE 132nd Street at Juanita Elementary School
- 120th Avenue pedestrian signal at Totem Lake Mall

All other signalized intersections, installed prior to August 2001, are defined as system intersections.

Table 3-23 describes currently adopted subarea average V/C thresholds for current conditions and forecasted 2012 volumes.

Table 3 - 23 2003 and Forecasted Subarea Average LOS for System Intersections

Subarea	Subarea Average V/C		
	Existing 2003	2003 Traffic Plus Projects approved but not yet built (2004)	2012
Southwest	0.86	0.95	1.05
Northwest	0.90	1.09	1.27
Northeast	0.82	0.90	1.13
East	0.99	1.04	1.14

Source: City of Kirkland Comprehensive Plan, 2002; Existing 2003 data provided by Thang Nugent, City of Kirkland, April 2004.

Existing LOS

Table 3-24 summarizes the average V/C values for subareas, and individual V/C values for system intersections, under existing conditions. The table shows that all calculated V/C values meet the current adopted LOS standards.

Table 3 - 24 Existing (2003) LOS for System Intersections

Intersection			Existing LOS
North-South Street	East-West Street		
Southwest Subarea			
1	Lake Washington Boulevard	NE 38th Place	1.07
2	Lake Washington Boulevard	Lake View Drive	0.83
3	State Avenue	NE 68th Street	0.61
4	108th Avenue NE	NE 68th Street	1.19
5	6th Street	Central Way	0.85
6	3rd Street	Central Way	0.63
7	Lake Street	Central Way	0.83
8	Lake Street	Kirkland Avenue	0.57
9	Kirkland Way	NE 85th Street	1.14
Average for Southwest Subarea			0.86
Northwest Subarea			
13	98th Avenue NE	Juanita Drive	0.77
14	100th Avenue NE	NE 124th Street	0.95
15	100th Avenue NE	NE 132nd Street	0.94
16	116th Way NE	NE 132nd Street	0.96
17	Market Street	Forbes Creek Drive	0.86
Average for Northwest Subarea			0.90
Northeast Subarea			
21	120th Avenue NE	NE 132nd Street	0.83
22	120th Avenue NE	NE 130th Street	0.68
23	120th Avenue NE	NE 128th Street	0.75
24	124th Avenue NE	NE 132nd Street	0.89
25	Slater Avenue NE	NE 124th Street	0.90

Table 3 - 24 Existing (2003) LOS for System Intersections

Intersection			Existing LOS
North-South Street	East-West Street		
26	120th Avenue NE	Totem Lake Boulevard	0.83
29	120th Avenue NE	NE 116th Street	1.07
30	124th Avenue NE	NE 116th Street	1.17
31	116th Avenue NE	NE 124th Street	0.90
32	113th Place NE	NE 124th Street	0.77
33	Slater Avenue NE	NE 120th Street	0.60
34	Totem Lake Boulevard	NE 124th Street	0.94
35	Totem Lake Boulevard	NE 132nd Street	1.00
36	I-405 southbound off-ramp	NE 124th Street	0.66
37	I-405 northbound off-ramp	NE 124th Street	0.60
38	I-405 northbound off-ramp	NE 116th Street	0.72
40	128th Place NE	NE 124th Street	0.63
Average for Northeast Subarea			0.82
East Subarea			
41	132nd Avenue NE	NE 85th Street	1.10
42	124th Avenue NE	NE 85th Street	1.05
43	120th Avenue NE	NE 85th Street	0.97
44	124th Avenue NE	NE 100th Street	0.84
46	132nd Avenue NE	NE 70th Street	1.07
47	116th Avenue NE	NE 70th Street	1.11
48	124th Avenue NE	NE 90th Street	0.83
49	122nd Avenue NE	NE 85th Street	0.85
50	116th Avenue NE	I-405 northbound on/off ramps	1.22
51	I-405 SB southbound on/off ramps	NE 70th Street	0.91
Average for East Subarea			0.99

Source: Data provided by Thang Nguyen, City of Kirkland, April 2004

Accident Trends

The City has compiled accident trends, based on data collected from 1996 to 2000. Figures 3-16 and 3-17 show the locations of signalized and unsignalized intersections, respectively, that experienced the highest number of accidents during the study period. The figures show that the highest number of accidents have tended to occur within and near the City's commercial areas.

The City applies statistical analysis to the historical accident data to identify locations where patterns exist. If an accident pattern is identified, possible causes are identified so that effective improvement may be made at the location.

3.7.2.2 Parking

Table 3-25 summarizes the public parking facilities that currently exist in downtown Kirkland.

Table 3 - 25 Public Parking in Downtown Kirkland

Parking Type	Location
Free Two-Hour Parking	<ul style="list-style-type: none"> - On street parking in the Downtown Core - Marina Park Lot - Lake Street Lot - Main Street Lot
Free Four-Hour Parking	<ul style="list-style-type: none"> - The Municipal Parking Garage located under the Kirkland Library at the intersection of Third Street and Kirkland Avenue
Fee Parking	<ul style="list-style-type: none"> - All day parking available in the Municipal Parking Garage for \$5 - Metered Parking: 6 spaces in the Lake Street Lot and 4 spaces in the Marina Park Lot for \$1 per hour - Private parking lots are available for customer parking in the Downtown Core

Source: http://www.ci.kirkland.wa.us/downtown_parking.htm

3.7.2.3 Traffic Control

Figure 3-18 shows the locations, types, and jurisdictions of signalized intersections in and adjacent to the City of Kirkland.

3.7.2.4 Public Transportation

King County Metro and Sound Transit provide transit service in the City of Kirkland. Figure 3-19 shows the routes serving Kirkland (routes numbered in the 500s are provided by Sound Transit, all other routes are provided by King County Metro). Local routes have increased in

number and in frequency of service over the past five years. During the peak hours, headways between buses typically range between 15 and 30 minutes. Non-peak hour headways generally range between 30 and 60 minutes between buses.

The Kirkland Transit Center is located in downtown on 3rd Street. Eight Park & Ride lots of varying sizes are located within the city limits. Of the three largest, the Houghton facility has the most remaining capacity.

3.7.2.5 Bikeways and Walkways

Bikeways

Kirkland has a total of 41 miles of bicycle facilities within the street network. The former vehicle bridge in Juanita Bay Park is the only shared use path facility (route for the exclusive use of non-motorized transportation) in Kirkland. Approximately 24.2 miles of bike lane facilities, demarcated by striped lanes located along vehicle lanes on a street, are located within the City. 16.4 miles of bicycle facilities are shared roadway facilities, which are designated bicycle routes without signs or striping on residential streets. Non-motorized paths for bicycles, pedestrians and other users make up 0.4 miles. All new major roadway construction within the City includes bicycle lanes. The adopted bikeway system map is shown in Figure 3-20.

Pedestrian Walkways

The City of Kirkland recognizes pedestrian safety and walkability as key components in the livability of the City. Sidewalks exist in many areas of Kirkland. The City has an inventory of the condition of sidewalks and a comprehensive sidewalk repair program. As described above, Kirkland also has 0.4 miles of non-motorized shared use paths for bicycles, pedestrians and other users. All major new roadway construction includes sidewalks and planter strips to support a pedestrian-friendly environment. In addition, new development must provide pedestrian connections to certain adjacent uses and to the adjacent right-of-way.

The In-Pavement Flashing Lights Crosswalk Warning System (Flashing Crosswalk) is a series of flashing light units installed just below the pavement surface along the crosswalk lines and facing traffic. Its purpose is to warn drivers of the presence of a pedestrian about to cross or already in the crosswalk at uncontrolled intersections. In an effort to increase pedestrian safety, the first two flashing crosswalks located outside of California were installed at mid-block locations in Kirkland, in the autumn of 1997. (Godfrey and Mazzella 1998)

The adopted pedestrian system map is shown in Figure 3-21.

3.7.2.6 Freight Movement

Movement of goods and services is an important goal to the City and the region. Kirkland's roadways are utilized by freight traffic to serve local commercial and industrial areas. The Burlington Northern Santa Fe (BNSF) Railroad runs north-south through Kirkland. Currently, only a dinner train utilizes the tracks on a regular basis.

3.7.2.7 Transportation Demand Management

Vehicles, and single-occupant vehicles (SOV) in particular, currently dominate travel within Kirkland. SOVs currently carry 76% of work trips within the City. Of the 24% of work trips involving modes other than SOV, transit carries 5.5% and the remainder of trips are taken via carpools or vanpools. (2000 Census) This existing pattern of travel reflects a dependence on individual vehicles for most mobility needs.

The City of Kirkland's current mode split target is 70% SOV and 30% transit/other modes. This represents a long-term goal for the City to achieve through providing improved transit accessibility, Transportation Demand Management (TDM) programs, efficient non-motorized systems, locating shops and services close to home, and implementing other strategies to encourage citizens to travel by modes other than SOV.

TDM programs seek to modify travel behavior and encourage economical alternatives to the SOV. TDM may include incentives, programs, or regulations to reduce the number of single-occupant vehicle trips. TDM strategies try to influence behavior in a way that keeps expansion of the transportation system at a minimum. The higher the success of TDM strategies, the more successful the City will be at achieving the mode split goals described above.

TDM strategies may include: (1) working cooperatively with employers to implement programs that encourage employees not to drive alone; (2) requiring certain new developments to implement programs to reduce single-occupant vehicle use; (3) adjusting parking standards to meet existing demand and reducing them further when transportation options increase; and (4) supporting paid parking or other parking policy measures.

3.7.3 Impacts

Table 3-26 summarizes the calculated V/C ratios for the signalized system intersections under the following scenarios:

- **Existing** – This scenario models current land use on the current roadway network, and is based upon traffic counts completed in 2003.
- **2012 No Action Alternative** – This scenario models the land use projected for the adopted Comprehensive Plan, and the adopted transportation system plan for the year 2012 (see Figure 3-22).
- **2022 Baseline** – This scenario models the projected 2022 land use (without densification of the Totem Center Study area or the two private amendments) with the adopted transportation system plan for the year 2012 (see Figure 3-22). The City target of 70% SOV and 30% alternative modes is reflected in this scenario. The purpose of including the baseline scenario is to provide an indication of the conditions that would result by 2022 if the recommended transportation improvements and higher alternative mode target (as defined in the 2022 Action Alternative) were not adopted.
- **2022 Action Alternative** – This scenario models the 2022 projected land use, which includes densification of the Totem Center Study Area by 2022, and the private amendments by 2022. This scenario assumes the 2022 recommended roadway network (see Figure 3-23), and also reflects the proposed revised City policy which sets a more aggressive 65% as the target for percentage of commute trips made by SOV. The remaining 35% would be made by alternative modes.

Table 3 - 26 V/C Ratio for No Action and Action Alternatives

Intersection		Existing 2003	No Action Adopted 2012	2022		
				Baseline	Action Alternative	
North-South Street	East-West Street					
Southwest Subarea						
1	Lake Washington Boulevard	NE 38th Place	1.07	1.44	1.31	0.88
2	Lake Washington Boulevard	Lake View Drive	0.83	1.04	1.07	1.11
3	State Avenue	NE 68th Street	0.61	0.80	0.70	0.72
4	108th Avenue NE	NE 68th Street	1.19	1.30	1.22	1.16
5	6th Street	Central Way	0.85	0.91	1.00	1.06
6	3rd Street	Central Way	0.63	0.67	0.75	0.77
7	Lake Street	Central Way	0.83	1.17	0.94	0.95
8	Lake Street	Kirkland Avenue	0.57	0.70	0.62	0.64
9	Kirkland Way	NE 85th Street	1.14	1.39	1.19	1.15
Average for Southwest Subarea			0.86	1.05	0.98	0.94
Northwest Subarea						
13	98th Ave NE	Juanita Drive	0.77	1.14	0.83	0.84
14	100th Ave NE	NE 124th Street	0.95	1.40	1.08	1.05
15	100th Ave NE	NE 132nd Street	0.94	1.37	1.55	1.27
16	116th Way NE	NE 132nd Street	0.96	1.29	1.44	1.12
17	Market Street	Forbes Creek Drive	0.86	1.17	1.39	1.03
Average for Northwest Subarea			0.90	1.27	1.26	1.06
Northeast Subarea						
21	120th Avenue NE	NE 132nd Street	0.83	1.57		0.97
22	120th Avenue NE	NE 130th Street	0.68	0.73	0.84	1.13
23	120th Avenue NE	NE 128th Street	0.75	1.15	1.07	1.21
24	124th Avenue NE	NE 132nd Street	0.89	1.39	0.91	0.94
25	Slater Avenue NE	NE 124th Street	0.90	1.25	1.12	1.15
26	120th Avenue NE	Totem Lake Boulevard	0.83	0.92		0.89
29	120th Avenue NE	NE 116th Street	1.07	1.13	1.19	1.06
30	124th Avenue NE	NE 116th Street	1.17	1.59		1.26
31	116th Avenue NE	NE 124th Street	0.90	1.12	1.20	1.29
32	113th Place NE	NE 124th Street	0.77	1.01	0.82	0.77
33	Slater Avenue NE	NE 120th Street	0.60	1.34	1.23	1.17
34	Totem Lake Blvd	NE 124th Street	0.94	1.35		1.29

Table 3 - 26 V/C Ratio for No Action and Action Alternatives

Intersection		Existing 2003	No Action Adopted 2012	2022		
North-South Street	East-West Street			Baseline	Action Alternative	
35	Totem Lake Blvd	NE 132nd Street	1.00	1.33		0.96
36	I-405 southbound off ramp	NE 124th Street	0.66	0.97	0.81	0.81
37	I-405 northbound off ramp	NE 124th Street	0.60	0.70	0.93	0.98
38	I-405 northbound off ramp	NE 116th Street	0.72	1.08	0.90	0.69
40	128th Place NE	NE 124th Street	0.63	0.61	0.71	0.70
Average for Northeast Subarea			0.82	1.13	0.98	1.02
East Subarea						
41	132nd Avenue NE	NE 85th Street	1.10	1.40		1.25
42	124th Avenue NE.	NE 85th Street	1.05	1.15		0.97
43	120th Avenue NE	NE 85th Street	0.97	1.28		1.23
44	124th Avenue NE	NE 100th Street	0.84	1.14	1.05	1.03
46	132nd Avenue NE	NE 70th Street	1.07	1.42		1.19
47	116th Avenue NE	NE 70th Street	1.11	0.96	1.21	1.11
48	124th Avenue NE	NE 90th Street	0.83	1.08	1.05	0.97
49	122nd Avenue NE	NE 85th Street	0.85	0.83		0.84
50	116th Avenue NE	I-405 northbound on/off ramps	1.22	0.93	1.11	1.20
51	I-405 southbound on/off ramps	NE 70th Street	0.91	1.19	1.13	1.20
Average for East Subarea			0.99	1.14	1.11	1.10

Source: Data provided by Thang Nguyen, City of Kirkland, April 2004.

3.7.3.1 Impacts of No Action Alternative

Under the 2012 No Action Alternative (2012 network and 2012 land use assumptions used in the traffic model), the average V/C for system intersections in each of the four subareas is at the limit established under adopted LOS standards (summarized in Table 3-22). In the Southwest Subarea, the intersection of Lake Washington Boulevard and NE 38th Place is expected to exceed the maximum allowable LOS of 1.40, and the intersection of Kirkland Way and NE 85th Street is expected to approach it. In the Northwest Subarea, the intersections of 100th Avenue NE with NE 124th Street and NE 132nd Street approach the standard, but no intersections are expected to exceed it. In the Northeast Subarea, two intersections are expected to exceed the LOS standard: 120th Avenue NE with NE 132nd Street, and 124th Avenue NE with NE 116th Street. One additional intersection, 124th Avenue NE with NE 132nd Street is expected to approach the LOS standard. In the East Subarea, the intersection of 132nd Avenue NE and NE 70th Street is expected to slightly exceed LOS standard and the intersection of 132nd Avenue NE with NE 85th Street is expected to approach the standard.

If the 2012 No Action Alternative were to be adopted for the Comprehensive Plan update, additional transportation improvements would need to be adopted, or the LOS standard would need to be lowered, or the land use growth levels reduced.

The 2012 LOS results are relatively higher than the 2022 Proposed Action, potentially for two reasons:

- The 2012 land use projections, particularly office and commercial square footage, are higher in 2012 than in 2022. This is because the 2012 forecast was based on a trend line method, projecting past growth trends forward to 2012. In contrast, the 2022 growth forecasts developed for the Transportation Model are based on a more detailed land capacity analysis that is likely more accurate because it considers land condition, market factors, critical areas, etc., and applies observed density factors to the land supply.
- The 2012 No Action transportation network is different than the proposed 2022 Proposed Action transportation network, as shown in Figures 3-22 and 3-23.

3.7.3.2 Impacts of Action Alternative

Table 3-26 shows that the intersection V/Cs in the Southwest Subarea are more favorable under the Action Alternative scenario than under the Baseline scenario. Three intersections in this Subarea are projected to exceed standards under the Baseline scenario, but are improved to meet standards under the Action Alternative. The intersection V/Cs for intersections in the other three Subareas are generally similar between the two scenarios, or slightly improved under the Action Alternative.

The impacts of the three development scenarios within the Action Alternative are discussed in the following sections.

Citywide

Analysis indicates that projected future land use Citywide can be accommodated with the recommended 2022 transportation improvements in place. Average V/Cs for intersections within each of the four subareas are well below the adopted standards, and no single intersection is expected to exceed the standard of 1.40. Although projections show that LOS standards will be met, some individual intersections are still expected to experience congested conditions (V/C greater than 1.0) during the PM peak hour. Note, as part of the Proposed Action, the City's LOS standard is proposed to be 1.30 instead of 1.40. LOS results projected for 2022 would meet this improved LOS standard. The 2022 LOS results are dependent on the land use assumptions and the implementation of the proposed network in Figure 3-23. If some of the recommended roadway improvements were not implemented, the ability to meet the revised LOS would be reduced. City options would be to change to the LOS, find other improvements that would achieve the adopted LOS, alter development or a combination of options. Please see section 3.7.4.2 for additional discussion.

Totem Center Study Area

The Totem Center Study Area is located in the Northeast Subarea. V/C analysis indicates that with the recommended 2022 transportation improvements in place, densification of the Totem Center Study Area by 2022 will not cause LOS in the subarea to exceed LOS standards. However, while LOS standards are not expected to be violated, the table shows that seven system intersections located near Totem Center (in the Northeast Subarea) are

expected to experience congested conditions (V/C greater than 1.0) during the PM peak hour. Five additional intersections are expected to approach congested conditions (V/C between 0.9 and 1.0). In order to ensure adequate traffic flow in the area under future conditions, these potential choke points should be carefully considered when designing to accommodate the new development.

The traffic analysis in this EIS is based on 2003 data and assumptions about future development levels. Because a range of development scenarios is possible in the Totem Center Study Area, the traffic analysis is based on the most likely development scenario in the Totem Center Study Area. If the City believes that future development may exceed the development assumptions, additional transportation modeling and analysis is needed to determine the impact of traffic on the surrounding area. If analysis indicates that the proposed development would cause the adopted LOS standards to be exceeded, the City would need to consider one or a combination of the following actions: review and revision of LOS standards, provision of additional capacity improvements to improve LOS back to standards, or revision of development to a level that would generate the number of trips that could be accommodated by the existing system.

Private Amendment Study Areas

The two private amendments are located in the Southwest Subarea. V/C analysis indicates that with the recommended 2022 transportation improvements in place, potential development in the Private Amendment Study Areas will not cause LOS in the Southwest Subarea to exceed LOS standards. Table 3-26 shows three system intersections located near the Private Amendment Study Area (in the Southwest Subarea) are expected to experience congested conditions (V/C greater than 1.0) during the PM peak hour, and one additional intersection is expected to approach congested conditions (V/C of 0.95).

Potential exists for the land use and zoning designation for this Study Area to differ from that assumed in the V/C analysis. In Amendment Area B, the land use in the Sedorco Partnership site is projected to develop as 50% office, and 50% multifamily residential (at a density of 12 dwelling units per acre). The following alternative development scenarios could potentially occur:

- Site develops as 100% office
- Site develops as 100% multifamily residential, with density of 12 dwelling units per acre
- Site develops as 100% multifamily residential, with a higher density of 18 to 24 dwelling units per acre

Table 3-27 summarizes the land use projections and resulting daily trip generation projections for each of these scenarios.

Table 3 - 27 Trip Generation Projections for Development Scenarios in
Amendment Area B

Scenario	MF ¹	Office	Trip Rate ²		PM PEAK HOUR Trips		
	DU ³	1000 sf ²	MF	Office	MF	Office	Total
50% office / 50% MF, 12 DU/acre	43	118	0.62	1.49	27	176	203
100% office	--	236			0	352	352
100% MF, 12 DU/acre	86	--			53	0	53
100% MF, 18 DU/acre	130	--			80	0	80
100% MF, 24 DU/acre	173	--			107	0	107

¹MF = Multifamily residential

²Source of trip rate: ITE *Trip Generation Manual*, Land Use Categories 220 (Apartment) and 710 (General Office)

³DU = dwelling unit; SF = square feet;

If any of the 100% multifamily residential scenarios were to be proposed, Table 3-27 shows that the resulting daily trip generation would be expected to be lower than the projections considered in the V/C analysis. The analysis in this EIS assumes a residential density of 12 units/acre, and the table shows that the number of trips would be expected to increase as density increases. However, even under the maximum residential scenario of 100 percent multifamily residential with density of 24 dwelling units per acre, the projected number of generated trips is far below the number projected in the mixed office/residential scenario that was assumed for analysis. Thus, under any development scenario in which potential office development is replaced by increased multifamily development, the resulting LOS should not be worse than the LOS calculated in the original analysis.

The table shows that the 100% office scenario would be expected to generate a higher number of daily trips than the trips that were projected for the analysis reflected in Table 3-26, so the resulting LOS would be expected to be worse. If the proposed level of office development were to be higher than the level assumed in LOS analysis, additional transportation modeling and analysis would be needed to determine the impact of the increased density on traffic in the surrounding area. If additional analysis indicated that the proposed development would cause the adopted LOS standards to be exceeded, the City would need to consider one or a combination of the following actions: review and revision of LOS standards, provision of additional capacity improvements to improve LOS back to standards, or revision of the development to a level that would generate the number of trips that could be accommodated by the existing system.

After the land use and zoning designations for this area are adopted, future site-specific development scenarios could include different mixes of office and residential development. If development is proposed that would generate a number of trips that exceed the analysis assumptions, additional traffic analysis would need to be completed, supplemental to this DEIS. Supplemental analysis would need to consider the distribution of additional trips on the roadway system, and the impact of those trips on V/C and LOS of the system intersections. Under any development scenario, the intersections that are projected to approach or exceed V/C of 1.0 can be considered as potential choke points. In order to ensure

adequate traffic flow in the area under future conditions, these intersections should be carefully considered when designing to accommodate the new development.

3.7.4 Mitigation Measures

3.7.4.1 Incorporated Plan Features

Recommended Transportation Improvements

The recommended transportation improvements for the 2012 No Action and 2022 Action Alternatives are shown in Figures 3-22 and 3-23, respectively. These improvements are reflected in the V/C values that are presented in Table 3-26.

Non-motorized Strategies

The City Kirkland maintains a detailed Non-Motorized Transportation Plan (NMTP). The NMTP is a functional plan that provides a detailed examination of the existing pedestrian, bicycle, and equestrian systems, criteria for prioritizing improvement, and suggested improvements. The NMTP designates specific City rights-of-way and corridors for improved pedestrian, bicycle, and equestrian circulation, and sets design standards for non-motorized facilities. The NMTP will need to be updated regularly to incorporate new and revised standards for facilities and to re-prioritize non-motorized routes to be built. The amended bicycle system, as developed for the NMTP, is shown in Figure 3-24.

Kirkland policy promotes a comprehensive and interconnected network of pedestrian and bicycle routes within neighborhoods and between commercial areas, schools, transit routes, parks, and other destinations within the City and adjacent communities. To promote the non-motorized system and alternative modes to the SOV, streets should be designed with features that encourage walking, bicycling and other non-motorized modes. Safety of pedestrian and bicycle routes should be increased by removing hazards and obstructions and through proper design, construction, and maintenance.

The BNSF right-of-way provides an opportunity as a direct access through Kirkland for a non-motorized multi-use trail. In the future, if the BNR right-of-way is developed for non-motorized uses, the City should work to provide regular access points along the right-of-way.

The amended pedestrian system is shown in Figure 3-25.

Transit Centers and Park and Ride Lots

The City has been working with Sound Transit to locate transit centers in the Totem Lake Urban Center and in downtown Kirkland. These facilities would enhance the non-motorized transportation system and work to improve the City's proposed goal of 65% SOV and 35% HOV. In addition, the park and ride lots in and near the City support the City's planned non-motorized transportation system. As these facilities reach capacity, the City can work with Sound Transit and King County Metro Transit to increase capacity of the facilities.

3.7.4.2 Applicable Regulations and Commitments

Adopted Regulations

The City regulates development by applying concurrency requirements in KMC Title 25 Concurrency and requiring impact fees in KMC 27.04 Road Impact Fees. Concurrency regulations require that LOS results are met, projects are amended, or facilities are put in place to meet LOS standards, at the time of development or within six years of the development.

Impact fees provide a source of funds for needed new transportation facilities. New growth and development in the City, including but not limited to new residential, commercial, retail, office, industrial and institutional development, will create additional demand and need for public facilities (public streets and roads). New development would pay a proportionate share of the cost of new public facilities needed to serve the new growth and development through the implementation of impact fee regulations.

Proposed Regulations and LOS Results

In addition to requiring consistency with the land use element, GMA mandates that development cannot occur unless existing infrastructure is either already in place, or is built concurrent with development. Adopted LOS standards provide the basis for enforcing concurrency requirements (KMC Title 25 Concurrency Management) as set forth in GMA. Based upon the calculated V/C values presented in Table 3-26, and the recommended improvements shown in Figure 3-23, revision of the LOS standards as shown in Table 3-28 is recommended as part of Comprehensive Plan update. Each set of standards in the column below the application year and the horizon year are based on a LOS forecast for six years in the future. Forecasts are derived by linear interpolation between forecasts for existing and planning horizon (2022) years, and include forecasted impacts of development that had been approved but not yet built.

Note that in the recommended revised standards, the average V/C thresholds for the four subareas are generally lower than the current adopted standards. The maximum single intersection threshold has also dropped, from a maximum of 1.40 to maximum of 1.30. These revised standards reflect a lower level of congestion that will be considered to be acceptable throughout the City. The higher standards are made possible by more extensive roadway improvements recommended in the updated plan.

However, achieving the proposed LOS is contingent upon construction of the recommended 2022 transportation network. Funding, political acceptance, timing and physical constraints are some of the issues that could prevent the projects from being completed. In the event that one or more significant projects could not be constructed, the City may need to reconsider the adopted LOS.

Table 3 - 28 Proposed Action - Revised LOS Standard - Maximum Allowable Subarea Average V/C for System Intersections and Individual Intersection LOS

Use as Maximum Allowed Average V/C after January 1	2004	2005	2006	2007	2008
Forecast for Year	2009	2010	2011	2012	2013
Subarea	Average V/C Ratio				
Southwest	0.86	0.87	0.87	0.88	0.88
Northwest	0.91	0.92	0.93	0.93	0.94
Northeast	0.83	0.84	0.85	0.86	0.87
East	1.00	1.01	1.01	1.01	1.02
Maximum allowed individual system intersection V/C ratio	1.30	1.30	1.30	1.30	1.30

Source: City of Kirkland Proposed Comprehensive Plan, 2004.

Under the new standards, the following signalized intersections are not designated as system intersections.

- 6th Street and 4th Avenue
- 3rd Street and Kirkland Avenue
- 6th Street and Kirkland Way
- 98th Avenue NE and NE 120th Place
- 93rd Avenue NE and Juanita Drive
- 97th Avenue NE and Juanita Drive
- NE 124th Street and 120th Place NE
- NE 118th Street and 120th Avenue NE
- NE 128th Street and 116th Way NE
- 120th Avenue NE and NE 80th Street
- NE 132nd Street and 108th Avenue NE
- NE 132nd Street and Juanita High School
- NE 132nd Street and Juanita Elementary School
- 120th Avenue Pedestrian Signal at Totem Lake Mall

All other signalized intersections installed prior to August 2001 are system intersections.

Table 3-29 summarizes the calculated subarea average V/C ratios for 2003 and projected future 2022 traffic volumes. The subarea average V/C assumes achieving a ratio of 65% SOV to 35% HOV and the Proposed Action at 2022.

Table 3 - 29 Proposed Action - 2003 and Forecasted Subarea Average LOS for System Intersections

Subarea	Subarea Average V/C		
	2003 Traffic Count	2003 Traffic Plus Projects approved but not yet built (2009)	2022
Southwest	0.77	0.86	.94
Northwest	0.83	0.90	1.06
Northeast	0.76	0.82	1.02
East	0.94	0.99	1.10

Source: Proposed Comprehensive Plan Transportation Element, 2004.

The improvements proposed for 2022 would allow the LOS standard for individual intersections to be set at 1.30. Two improvements recommended along NE 85th Street are isolated intersection improvements:

- 120th Avenue NE and NE 85th Street
- 132nd Avenue NE and NE 85th Street

However, for these improvements to provide benefit, NE 85th Street would need to be widened to three through-lanes in each direction between the two intersections.

If this improvement of NE 85th Street is not implemented as part of the recommended transportation plan, the 1.30 standard will be not met, which would require either adoption of a lower LOS standard, or adjustments to the proposed area land use.

If either of the two following conditions are not met:

- The work trip mode split goal of 65% SOV and 35% alternative mode is not met;
- The projected land use used in the modeling effort that is based on the capacity analysis (but reduced to more closely match growth targets) is exceeded significantly.

The City's achievement of the revised LOS standard and the projections that have resulted from the 2022 modeling effort could be compromised. If either of these assumptions are not met and the LOS results do not meet thresholds, then the City would need to consider one or a combination of the following actions: lowering of LOS standards, provision of additional capacity improvements, or revision of land use plans to reflect lower growth levels. The City transportation model, LOS standards, and needed transportation improvements should be reviewed annually to ensure that the City continues to meet the adopted LOS.

3.7.4.3 Other Recommended Mitigation

Programmatic Measures

The City of Kirkland will mitigate adverse impacts of transportation systems and facilities on neighborhoods such as:

- Safety problems due to speeding vehicles and increasing traffic volumes;
- Increased traffic resulting from drivers seeking alternate routes to congested arterials; and/or

- Air and noise pollution.

A combination of the following techniques should be used to avoid these impacts or mitigate them when avoidance is not possible:

- Developing and implementing neighborhood street design standards which are appropriate for the neighborhood;
- Creating an interconnected system of streets to distribute the traffic load and lessen the burden on any given street;
- Avoiding connections through residential neighborhoods when they will create new routes for commercial/industrial traffic or by-pass routes for I-405; and/or
- Continuing use of the Neighborhood Traffic Control Program to address safety, speed, and/or volume issues.

Kirkland is committed to establishing a transportation system that supports the City's land use plan. This will be accomplished by ensuring that the transportation facilities that are built serve existing and future commercial, industrial, and residential land uses. The City's transportation system will provide access by a variety of modes of travel to neighborhoods, Downtown, Totem Lake, other commercial and industrial areas, and major institutions. The City will continue to support TDM strategies and provide programs and improvements to help meet the new goal of 65% SOV and 35% HOV work trip mode split.

The City will work to establish and promote a transit and ridesharing system that provides viable alternatives to the SOV. Transit facilities (stations, centers, park and rides, shelters) will be designed to be easily accessible from other modes of transportation, accommodating those with disabilities, and appealing to pedestrians. The location of transit facilities within the overall transportation system should be carefully considered so that they will be easily accessible by all modes. New major residential, office, and/or commercial developments should be located near transit facilities. When designing transit facilities, bicycle racks, ample sidewalks, and non-motorized connections to neighborhoods should be considered. Ridesharing to transit facilities should be encouraged.

Kirkland should support regional transit planning and implementation by actively participating in regional transit discussions, encouraging land use patterns that support the transit system, and adopting goals and policies that are consistent with the needs of a successful regional transit system. Kirkland should provide input to the appropriate regional bodies to ensure that the locations of high-capacity transit routes and stations are consistent with the City's land use and transportation plans. This includes working cooperatively with King County Metro, the WSDOT, and Sound Transit to provide regional and local transit service with linkages between Kirkland neighborhoods, business districts, and other important local and regional destinations.

Additional Mitigation Consideration for Totem Center Study Area

The transportation impacts analyzed for the Comprehensive Plan update focus on the effect of projected land use, which includes potential development in the Totem Center Study Area, and recommended transportation improvements on LOS within the City of Kirkland. Analysis shows that if the recommended transportation improvements are implemented, the projected development will not cause LOS standards to be exceeded. However, when new site-specific development is proposed in the Totem Center Study Area, the following additional measures are required as part of development application.

- Land use and trip generation information should be provided to ensure that it is consistent with the ranges projected for the Comprehensive Plan analysis (see land use assumption discussion in the Land Use Patterns section of this DEIS). If it is determined that the proposed land use or trip generation will exceed levels assumed for analysis, a supplemental traffic analysis should be provided.
- Parking plan should be submitted that shows parking accommodation is consistent with City policies.
- An access and circulation plan should be submitted that shows site design meets City design standards and transportation policies.
- Site-specific TDM strategies should be developed to reduce SOV trips and increase alternative mode trips for residents and/or employees. Strategies could include:
 - ◆ Monetary Incentives (e.g. subsidize transit pass)
 - ◆ Alternative Work Schedules (e.g. flexible hours, compressed work weeks)
 - ◆ Telecommuting
 - ◆ Guaranteed Ride Home
 - ◆ Parking Management
 - ◆ Facility Amenities (e.g. bicycle racks, lockers, showers on-site)
 - ◆ Transportation Management Associations, which can provide ride matching services
- Provide dedication and right-of-way improvements for one or both of the following two new streets if the proposed development is adjacent to these future streets:
 - ◆ NE 130th Street between 120th Ave NE and Totem Lake Blvd.
 - ◆ 119th Ave NE between NE 128th Street and the future NE 130th Street.
- Impact on nearby intersections that are expected to experience congestion within the six-year planning horizon, so that further degradation of conditions may be monitored. Intersections should include the signalized system intersections that are projected to have V/Cs greater than 1.0 (see Table 3-26, Northeast Subarea), as well as non-system signalized intersections in the area, which may include the following:
 - ◆ NE 124th Street and 120th Place NE
 - ◆ NE 118th Street and 120th Avenue NE
 - ◆ NE 128th Street and 116th Way NE
 - ◆ 120th Avenue Pedestrian Signal at Totem Lake Mall

Additional Mitigation Considerations for Private Amendments Study Areas

The transportation impacts analyzed for the Comprehensive Plan update focus on the effect on LOS of projected land use, which includes potential development within the Private Amendment Study Areas, and recommended transportation improvements within the City of Kirkland. Analysis shows that if the recommended transportation improvements are implemented, potential development will not cause LOS standards to be exceeded. However, if the City were to consider adoption of land use and zoning designations that exceed the assumptions used in the traffic modeling, additional traffic modeling and analysis should be conducted to consider the distribution of additional trips on the roadway system, and the impact of those trips on V/C and LOS of the system intersections. If analysis indicates that the proposed development would cause the adopted LOS standards to be exceeded, the City would need to consider one or a combination of the following actions: review and revision of

LOS standards, provision of additional capacity improvements to improve LOS back to standards, or revision of the development to a level that would generate the number of trips that could be accommodated by the existing system.

After land use and zoning designations are adopted, site-specific development proposals should provide the following additional information prior to development approval:

- Land use and trip generation information should be provided to ensure that it is consistent with the ranges used for the Comprehensive Plan analysis (see land use assumption discussion in the Land Use Patterns section of this DEIS). If it is determined that the proposed land use or trip generation will exceed levels assumed for analysis, a supplemental traffic analysis should be provided.
- Parking plan should be submitted that shows parking accommodation is consistent with City policies.
- Site-specific TDM strategies should be developed to reduce SOV trips and increase alternative mode trips for residents and/or employees. Strategies could include:
 - ◆ Monetary Incentives (e.g. subsidize transit pass)
 - ◆ Alternative Work Schedules (e.g. flexible hours, compressed work weeks)
 - ◆ Telecommuting
 - ◆ Guaranteed Ride Home
 - ◆ Parking Management
 - ◆ Facility Amenities (e.g. bicycle racks, lockers, showers on-site)
- Transportation Management Associations, which can provide ride matching services
- An access and circulation plan should be submitted that shows site design meets City design standards and transportation policies.
- Impact on nearby intersections that are expected to experience congestion within the six-year planning horizon, so that further degradation of conditions may be monitored. Intersections should include the signalized system intersections that are projected to have V/Cs greater than 1.0 (see Table 3-26, Northwest Subarea), as well as non-system signalized intersections in the area, which may include the following:
 - ◆ 6th Street and 4th Avenue
 - ◆ 3rd Street and Kirkland Avenue
 - ◆ 6th Street and Kirkland Way

3.7.5 Significant Unavoidable Adverse Impacts

Increases in future development will result in increased traffic volumes. Although congestion can be addressed through the mitigation measures presented in this document, the increase in traffic itself is considered a significant unavoidable impact.