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K2: Explorations in Vertical Urbanism



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Abstract

The city of Kirkland, Washington, outside of Seattle, is a highly sought-after place to live and work in the Pacific Northwest, renowned for its quality of life and scenic geography, adorned with a publicly accessible waterfront. To its detriment, its historically rigorous retention of a low-rise identity is a questionable strategy in present times, especially given post-pandemic challenges and opportunities for evolving typologies of urban living, working, and leisure, as well as low carbon emissions initiatives. K2 is an exploratory case study undertaken to suggest alternative strategies of how responsibly orchestrated, denser, and taller developments, combined with transit connectivity, walkability, and low-carbon methodologies of construction, can set new benchmarks for urban vitality in the North American contexts, without compromising a city's inherent charm, iconography, or ambiance.

Keywords: Biophilia, Mass Timber, Mixed-Use, Vertical Urbanism

Introduction

Since the advent of the pandemic, the tall building industry has conducted research on topical issues to manage the repercussions of a global crisis. Three research objectives identified below are pursued, and constitute the primary content of this paper:

- Explore the next generation of tall buildings' need to transform, to be viable, and relevant post-pandemic.
- Demonstrate the applicability of low-carbon construction methodologies to combating carbon emissions, making the built environment more biophilic and supportive of human well-being.
- Investigate initiatives for implementing tenets of vertical urbanism beyond city CBDs, especially in the American context.

Many cities, communities, and built environment professionals across the globe are contributing much-needed thought leadership to implementing these changing and evolving priorities. This is the story of one such city on the cusp of establishing new dimensions of vertical urbanism.

K2: A New Chapter for Kirkland

Kirkland, WA, a city suburb of the Pacific Northwest, is situated 12 miles (19 kilometers) east of Seattle, across Lake Washington. A historic town (see Figure 1) envisioned 135 years ago by Peter Kirk (Historic Kirkland 2022), a British immigrant who aspired to build a steel industry-



Figure 1. Aerial view of Kirkland, Washington, near Seattle, taken in 1949. In the foreground is the dock, which hosted ferries traveling across Lake Washington from 1891 to 2000. The city dock is part of Marina Park, adjacent to the site of the proposed K2 project. © Kirkland Heritage Society

dominated “Pittsburgh of the West,” this city of 100,000 today enjoys 7 miles (11 kilometers) of publicly accessible waterfront in the form of parks, beaches, trails, and wetlands. It prides itself on quality of life, a burgeoning tech industry presence, multicultural demographics, superior educational institutions, and transit connectivity, and is consistently ranked highly as a desirable place to live and work in the United States (Bahler et al. 2022).

As the second-tallest peak in the Himalayas, considered more challenging to climb than Mount Everest, K2 as a name for a mixed-use development could be an apt metaphor for defining Chapter 2 of Kirkland’s history. Specifically, K2 also explores how vertical urbanism could enhance mid-sized or second-tier American cities by positively channeling the benefits of height and density in concert with transit connectivity, expanded public amenities, and implementation of low-carbon construction methodologies. It is positioned as an alternative and somewhat provocative case study to respond to current and urgent needs, and is not meant to cast undue aspersions on the city’s meticulous focus on preserving its unique identity and low-rise ambiance. It is hoped that this initiative is reviewed or critiqued within the parameters of a topical, analytical and exploratory approach, as opposed to a quintessential “developer proposal.”

Restrictive Mandates

Kirkland currently has a “not in my backyard” (NIMBY) proclivity. Its relatively nondescript mission statement—“We are committed to the enhancement of Kirkland as a community for living, working, and leisure with an excellent quality of life which preserves the City’s existing charm and natural amenities” (City of Kirkland 2019)—seems anodyne enough. But it is unable to confront the post-pandemic needs and demands of a growing multicultural population and an expanding influx of tech companies and workers. The city’s historical emphasis on low-rise, low-density



Figure 2. . Aerial view of the Kirkland central business district as it appears in 2022. The dock remains, though it is no longer used for ferry service. © Google Earth

development, manifested by restrictive zoning ordinances, seems puzzlingly out-of-step in responding to contemporary housing, workplace, and leisure paradigms, which demand higher densities within taller structures.

Retention of a low-rise ambiance, especially in the city’s downtown core (see Figure 2), seems primarily instituted to respond to its idyllic geography and its existing low-rise urban fabric. Current mandates within the CBD zoning restrict building heights to between 28 and 41 feet (8.5 and 12.5 meters) (City of Kirkland 2022a). Ostensibly, such ordinances are meant to maintain the city’s resort-like sensibility, protect waterfront views from existing residential blocks, and serve as an antidote to the fears of uncontrolled growth, developer greed, and traffic congestion.

While these attributes may be admirable and historically supported by its citizenry, it begs the question of whether such restrictions, based on an arbitrary aversion to taller and denser developments, underserve an expanding citizenry saddled with skyrocketing property values and diminishing supply.

Although the city is on the verge of reconsidering some of these ordinances further to its east within the Comprehensive Plan 2044 (City of Kirkland 2022b), its downtown core remains severely underdeveloped today, chock-full of one-

and two-story, nondescript structures, built more than 30 years ago, many interspersed by surface parking lots. These underutilized parcels, despite being of great strategic and economic value due to their proximity to the waterfront, remain stagnant for the foreseeable future, giving credence to Gertrude Stein’s quote, “there’s no there, there.” A taller, denser Kirkland could be a panacea, if the City of Kirkland redefines an updated development strategy that encourages density and height within its core to create a center of gravity and a vibrant urban ambiance. The 2044 Comprehensive Plan, currently under deliberation, is an admirable, albeit excruciatingly slow and long-term proposition, straddling more than 20 years, and generally unable to combat current market demands or pivot to changing economic conditions.

Absent such directives, 3MIX assembled and led a grassroots group of entrepreneurial professionals, embracing urban planning and the built-environment industry, to undertake an initiative of defining a Strategic Vision Plan for part of its downtown core, expandable to a larger context by 2030. Such a tangible iteration of a denser and taller city core can be used to demonstrate how vertical urbanism could inform and articulate public opinion, build political support, infuse city coffers with additional revenue, and incentivize progressive leadership to consider and eventually phase in such strategies within

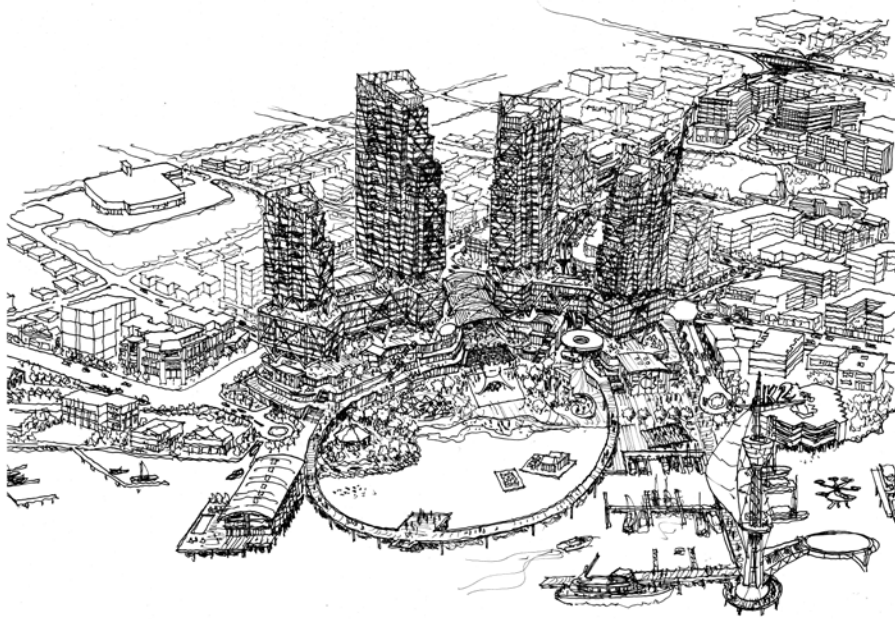


Figure 3. Early explorations of the K2 project concept, constituting a “what-if” vision of a taller and denser district of 16-to-32-story steel-timber hybrid towers, terraced office blocks, outdoor dining and a waterfront park.

shorter timeframes, without compromising the city’s iconic identity.

Programmatic Variables

A few assumptions were established to define a quantifiable model of potential development during several “visioning” workshops in early 2022 (see Figure 3). A comprehensive review of similar waterfront developments in North America and around the globe was undertaken, to define an achievable roadmap for appropriate density and aspirational heights. Micro- and macro-scale programmatic briefs were evaluated, leading to market-driven typologies and numbers. Existing ordinances of restrictive height restrictions were temporarily set aside in place of more progressive mandates. In addition, reinforcement of mixed-use typologies, preservation of view corridors from adjacent contexts, infusion of green belts and permeability, reduction of parking requirements, carbon-neutral construction methodologies, and enhanced transit connectivity were adopted as key considerations. In essence, this was a suggested precursor for a potentially updated zoning ordinance for 2030.

For the exploratory process, a smaller tract of the CBD was initially targeted to catalyze similar growth patterns. Three contiguous parcels were identified as antecedents for the first phase of development, spanning from the existing Marina Park on the west to the Peter Kirk Ball Park and Transit Center on the east. Overt and cumbersome legal issues of assimilating such parcels or designations of eminent domains were acknowledged, but temporarily tabled.

A programmatic brief was developed for the 8-acre (3.25-hectare) parcels and included the following distributions:

- A provision of over 1,000 multi-family residential units, (15 percent of which would be designated affordable), representing a density of 125 dwelling units per acre (51 units per hectare);



- KEY**
1. Steel/mass timber mixed-use towers ranging in height from 81 m to 120 m
 2. Four-Level Workplace
 3. Three-Level Leisure and F&B Podium
 4. Cable car turn around and station
 5. Steel/mass timber residential towers ranging in height from 36 m to 72 m
 6. Marina Park, Concert Square, Amphitheater & Beach
 7. Blue Lagoon
 8. Crescent Boardwalk
 9. Farmer’s Market Shed
 10. Peter Kirk Museum
 11. Lighthouse
 12. Air Taxi Take-Off Pad
 13. Argosy Landing
 14. Wharf Residential
 15. Park Lane Garden and Plaza
 16. Cable Car Transit Stop
 17. Kirkland Library
 18. Peter Kirk Ball Park
 19. Heritage Hall
 20. City Hall
 21. Existing Band Stand

Figure 4. Site plan for the K2 redevelopment in Kirkland. © Sharkmix

- Approximately 100,000 square feet (10,000 square meters) of a new generation of workplaces that would incorporate principles of exterior connectivity and wellness;
- A plethora of boutiques, shops, restaurants, and expanded waterfront leisure amenities;
- An infusion of green belts, walkability, improved transit connectivity, and reduced parking requirements.

Collectively, these disparate components would encompass over 1.5 million square feet (150,000 square meters) and define a floor-area ratio (FAR) of up to 4.5. An aspirational maximum height of 400 feet (120 meters) was determined as achievable, commensurate with similar developments elsewhere within the region and globally.

Master Plan and Tower Concept

The conceptual master plan (see Figure 4) evolved through a study of massing options, view corridor analyses, and traffic pattern evaluations, resulting in a comprehensive assemblage of reasonably taller and predominantly residential structures, strategically sited to enhance waterfront and territorial views, allowing for permeability and pedestrian flow, and culminating in an expanded public space along the prime waterfront (see Figure 5).

The west parcel would include four triangular-shaped “point” towers accommodating 600 market-rate units, in heights ranging from 250 to 400 feet (81 to 120 meters), accommodated within 18 to 27 floors in a spiraling crescent-shaped configuration. Implementing current research and experimentations in the United States and Europe, the towers would be built predominantly with mass timber within a steel exoskeletal frame, minimizing the use of concrete to two subterranean levels, and designating a low-carbon mandate for the development. The triangular footprints would facilitate waterfront views from all units, which would be appointed with expansive cantilevered decks, allowing for



Figure 5. A view of the project from the west, over Lake Washington, depicting the urban context. © Sharkmix



Figure 6. A view taken from Marina Park demonstrates the project's leisure amenities, permeability and materials. © Sharkmix

much-desired exterior connectivity and an indoor-outdoor lifestyle. Nestled below the West Towers' residential floors would be a sliver of recreational and fitness facilities, appointed with open-air and enclosed pools. A lush roof garden with urban farming opportunities would adorn the crown of these towers, reinforcing Kirkland's nautical vocabulary and identity (see Figure 6).

The two contiguous blocks to the east would be configured with several “slab” steel and mass timber towers in a pinwheel

configuration, accommodating an additional 400 units, and ranging in height from 120 to 240 feet (36 to 72 meters), accommodated within eight to 16 floors, gradually blending into the existing urban fabric (see Figure 7). The towers would encapsulate a linear green belt connecting the Peter Kirk Ball Park and Kirkland Urban, the new mixed-use development further east. The existing Park Lane, currently the city's “restaurant row,” would be reconfigured as a car-free pedestrian zone of two levels of restaurants, and bistros, within a lush, vibrant, partially

“Tighter spans of 20 feet (6 meters) could easily be built with cross-laminated timber (CLT) floors and glued laminated timber (GLT) interior columns and beams, comprising 90 percent of the towers’ constitution.”



Figure 7. The K2 project seen from the east, with Lake Washington and the towers of downtown Seattle in the background. © Sharkmix

covered park, upholstered with al-fresco dining terraces and play zones. Second-level bridges would seamlessly connect all three parcels, facilitating upper-tier pedestrian movement, while an elevated air-tram path would traverse through the green belt, creating an additional urban experience while reinforcing transit connectivity.

Below the residential floors, a four-level “ribbon” of workplace facilities would be incorporated within the complex. Designed

as post-pandemic “living-breathing” spaces, moving away from hermetically-sealed boxes, these workplaces would be resplendent with sky courts, protruding decks, waterfalls, and “flying” bridges, allowing for exterior connectivity, compact floor plates, detached cores, and varying indoor-outdoor “ideating” zones, a much sought-after attribute by employers facing continual back-to-work challenges (Shroff 2020). The quintessential DNA of sterile and sealed office spaces is thus negated,

while siting of these facilities adjacent to a variety of leisure and restaurant amenities reflects the values expressed by the region’s largest employers.

Amenities

The three-level podium base would take advantage of a 20-foot (6-meter) level difference within the site and incorporate a mix of cascading tiers full of bistros, cafes, boutiques, and other venues with al-fresco dining terraces, oriented toward a reinvigorated Marina Park. The existing park would be redefined as an expansive recreational hub, integrating its mature landscaping and signature bandstand. Spiraling escalators and “Spanish Steps” would facilitate pedestrian movement, and several two-story pavilions incorporating cafes and boutiques, as well as the city’s favorite retailers, would surround the concourses, while the air-tram station would be integrated into the mix, facilitating transit connectivity to the Stride I-405 Bus Rapid Transit (BRT) Line, currently under design.

Additional amenities would include a Concert Square, an amphitheater, wading pools, climbing walls, zip lines, and rope bridges. A blue lagoon, enclosing an expanded beach and an elliptical boardwalk protruding into the water, would afford leisurely walks or brisk jogs. A 100-foot (30-meter) crystalline, digital lighthouse would serve as the city’s nautical icon, while a futuristic electric vertical take-off and landing (EVTOL) air-taxi landing pad and the historic Argosy cruise landing would be integrated into the reconfigured marina. In addition, an open-air farmers’ market shed, an enclosed two-level Peter Kirk Museum exhibiting the city’s historical development, and a three-level, wharf-like residential block floating on water would exude and recall Peter Kirk’s nautical and industrial aspirations for this waterfront town (see Figure 8).

Low-Carbon Materiality

A pursuit like K2 presents an opportunity to contribute to more responsible approaches to



Figure 8. A view from a residential balcony, showing the integration of urban living and amenities that the K2 project could bring to downtown Kirkland. © Sharkmix



Figure 9. The steel exoskeleton and timber balconies are evident in this view. © Sharkmix

construction, by reducing concrete to its bare minimum and encouraging the use of carbon-sequestering mass timber for the majority of structures.

The progress and popularity of building taller structures in mass timber has increased in recent years in North America, Europe, and Australia. New initiatives and research exploring the advantages of combining steel and mass timber cite scenarios in which, for instance, a steel framework would allow for greater height, while mass timber elements within offer carbon sequestration, wellness attributes, and biophilic ambiance (CTBUH 2022).

An endeavor like K2 could advantageously implement such strategies within a larger urban context. All above-grade components of the development are suggested to be built of mass timber and encased within a steel exoskeletal frame, allowing for additional height and seismic resistance, while also clearly expressing the towers' structural DNA and nautical iconography. Tighter spans of 20 feet (6 meters) could easily be built with cross-laminated timber (CLT) floors and glued laminated timber

(GLT) interior columns and beams, comprising 90 percent of the towers' constitution. Concrete would be used only for the subterranean levels and elevator cores, substantially reducing the project's carbon footprint. The exterior design of the entire development would be composed primarily of unitized panels of different species of wood and insulated glass, augmented by steel-framed decks, defining a layered, eclectic, biophilic, and warm-hued ambiance, interspersed by protruding planters, terraces, and lush landscaping (see Figure 9).

Porosity

The siting, positioning, and articulating of all vertical structures would ensure visual porosity and permeability from the surrounding context, avoiding any semblance of wall-like barriers. The serrated façades, setbacks, and ascending profiles of the towers would be carefully modulated and orchestrated to a crescendo, creating a playful dance between the towers, preserving negative space in between, and reducing the perception of overwhelming

scale or visual encumbrance. The positioning of towers also ensures that visual corridors and waterfront views from adjacent contexts are not unduly compromised. Tighter concourses, green belts, and internal parks connecting to the existing urban fabric, and crisscrossing "paseos" would recall European sensibilities, defining a relaxed urban ambiance, while eclectic pavilions, zip lines, and rope bridges within Marina Park would bring in much-needed levity that is often missing in sterile leisure environments (see Figure 10).

Connectivity

In addition to traffic-mitigation and transit enhancement strategies currently under consideration, the implementation of a much sought-after connectivity to the new 405 BRT terminal (see Figure 11) via an elevated air-tram gondola system is suggested as highly desirable, facilitating a non-vehicular flow of up to 1,000 people per hour to the city center (City of Kirkland 2022c). This initiative by the city has been evaluated over the last few years for its environmental impact and cost implications



Figure 10. The context, scale, and range of the project, including the aerial gondola system, are shown in this image. © Sharkmix

and is currently shelved. A development like K2 could be a unique opportunity and catalyst to allow for this mode of people flow without infusing additional vehicular traffic. Besides contributing as a tourist attraction to the city's resort-like iconography, the air tram would traverse through the development with an intermediate stop at the ballpark, and a turnaround seamlessly integrated into the west parcel's retail podium. The existing bus transit stations and public parking near the ballpark would continue to facilitate pedestrian access to the waterfront. Additionally, an EVTOL sky-taxi landing pad, expanded facilities for the city's historic Argosy cruise, and a reconfigured marina would enhance the ease of accessibility and boat traffic from Lake Washington.

The Future is Today

The above iteration of a new and reinvigorated Kirkland represents a potential "blueprint," and a tangible and verifiable

strategy to convince private and public leaders of the benefits of vertical urbanism. Initiatives like the 2044 Comprehensive Plan are at best, long-term determinants, confronting a plethora of political, aspirational, and budgetary roadblocks. Developments like K2, on the other hand, could remain relatively fluid models that could be modified, adjusted, and implemented in response to changing market dynamics.

Although a singular exploratory vision, K2 reinforces the notion that density and height are helpful prerequisites for sustainable growth, especially in the North American context, but also globally. Its constituency of denser residential and workplace facilities within its core, combined with new construction methodologies like mass timber with steel, improved transit connectivity, enhanced accessibility, and permeability, can successfully demonstrate how moribund city and suburban cores could be reinvigorated through vertical

urbanism. Besides, there are added benefits of much-needed revenues into city coffers, allowing for an expanded property and sales tax base and economic wherewithal that could be reinvested in further infrastructure improvements.

Instead of being a singular development, variations of K2 could also be strategically inserted into Kirkland's urban fabric at key nodes like Carillon Point, Juanita Beach, Totem Lake, and the 405 Corridor, (see Figure 12), thereby defining a well-considered, polycentric strategy of growth at specific junctures, taking advantage of transit connectivity, geographic contexts, or commercial significance.

Epilogue

Suburban America has often propagated the glories and benefits of living away from cities and their perceived ills. Cities, however, will continue to remain the lifeblood of commerce, culture, and leisure, and such sharp differentiations are becoming less distinct in an increasingly multicultural nation. A "bookend" approach to both benefits can even out such opposing viewpoints.

Comprehensive development projects of this type, generally within the domain of developers and financiers, go through arduous regulatory roadblocks, community resistance, and a voting process that may take years to become agenda items, while also responding to the ups and downs of the national and global economies. Escalating construction costs, currently hovering around US\$600 per square foot (US\$6,458 per square meter) in the Pacific Northwest, public and private funding challenges, and fluctuating determinations of market-driven and affordability statutes, need careful evaluation. Many roadblocks, complications, and incremental steps within the legal, budgetary, or regulatory realms must be circumvented or resolved in such pursuits.

As it stands today, this grassroots initiative is on the verge of a cautious public-relations

“Variations of K2 could be strategically inserted into Kirkland’s urban fabric at key nodes, defining a well-considered, polycentric strategy of growth at specific junctures, taking advantage of transit connectivity, geographic contexts, and commercial significance.”



Figure 11. Macro-scale site view, with K2 project at bottom, and aerial gondola extending towards the highway interchange, where it would interface with a planned bus rapid transit (BRT) line.



Figure 12. Map identifying additional development sites that, taken together, could transform existing low-rise suburban area into a group of polycentric nodes of vertical urbanism. © 3MIX

campaign, with selective pitches to local media and presentations and reviews to key benefactors to elicit support for such strategies. Ultimately, current economic turmoil notwithstanding, it is a work in progress, perhaps a cudgel to encourage more vigorous discourse and debate, clearly identifying the opportunities and benefits of vertical urbanism for mid-sized American cities.

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References

Bahler, K., Hardy, H., Yale, A., Agostini, A., Jackson, J., Mulhere, K., Cook, J., Glum, J., Mitra, M., Cagnassola, M. & Hansen, S. (2022). "The 50 Best Places to Live in the US | 2022–2023." *Money Magazine*. Accessed 29 September 2022. <https://money.com/best-places-to-live/>.

City of Kirkland (2019). "Planning Commission Orientation Manual." <https://www.kirklandwa.gov/Government/Departments/Planning-and-Building/Planning-Commission/Planning-Commission-Orientation-Manual>.

City of Kirkland (2022a). "Kirkland Municipal Code." www.codepublishing.com/WA/Kirkland/.

City of Kirkland (2022b). "Kirkland 2044 Kirkland Comprehensive Plan Update 2044." <https://www.kirklandwa.gov/Government/Departments/Planning-and-Building/Code-and-Plan-Amendment-Projects/Kirkland-2044-Comprehensive-Plan-Update>.

City of Kirkland (2022c). "Memo to Planning Commission NE 85th St Station Area Plan Project Update March 10, 2022." <https://www.kirklandwa.gov/files/sharedassets/public/planning-amp-building/planning-commission/ne-85th-st-station-area-plan-project-update-cam20-00153.pdf>.

Council on Tall Buildings and Urban Habitat (CTBUH). (2022). "The Future Potential of Steel-Timber Hybrid Buildings." <https://www.ctbuh.org/research/projects/the-future-potential-of-steel-timber-hybrid-buildings>.

Kirkland Heritage Society. (2022). "Peter Kirk's Pittsburgh of the West." <https://kirklandheritage.org/peter-kirks-pittsburgh-of-the-west/>.

Shroff, R. (2020). "The Tall Building Strategically Reconsidered – Seattle 2030: The Post-Crisis Tower." *CTBUH Journal* 2020 Issue IV.