

DP 21-0285 550 Doyle Ave

Development Permit for an Academic Institution with
Multiple-Dwelling Housing

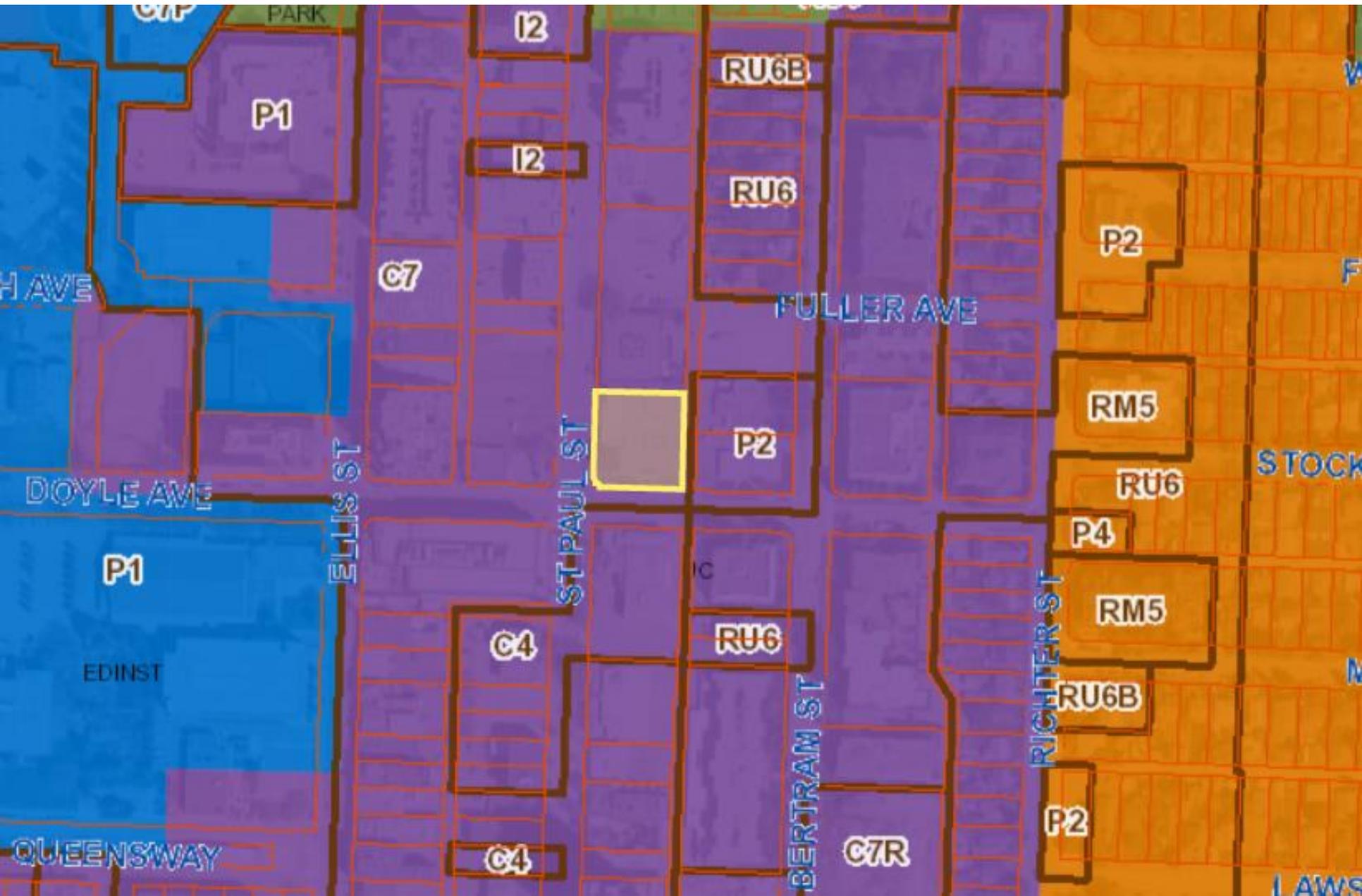
Purpose

- ▶ To issue a Development Permit for the form and character of an Academic Institution (University of British Columbia) with Multiple-Dwelling Housing.

Development Process



OCP Future Land Use / Zoning



Subject Property Map



Background & Zone

- ▶ New CD28 – UBC Downtown Campus Zone
 - ▶ Vertical Campus
 - ▶ Academic and Educational Uses
 - ▶ Apartment Housing (Rental)
 - ▶ Increased FAR 14.0
 - ▶ Increased Floor Plate
 - ▶ Increased Height 160.0 m
 - ▶ Decreased Parking
 - ▶ Required minimum active frontages on St Paul St and Doyle Ave

Technical Details

- ▶ L1-L8: (8,500 m²) of academic space
- ▶ L9-L10: academic expansion
- ▶ L11: Amenity Level
- ▶ L12- L43: 473 Units Residential

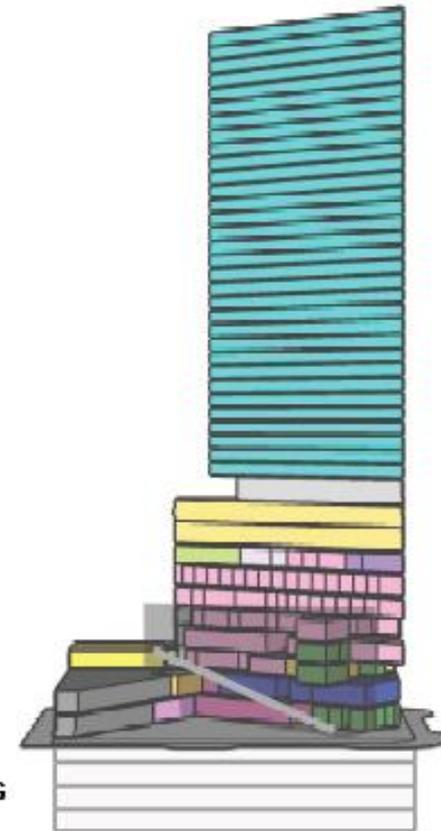
- ▶ 269 Parking Stalls
- ▶ 567 Bicycle Stalls

RESIDENTIAL TOWER

ACADEMIC PODIUM

GROUND FLOOR

UNDERGROUND PARKING



Density

- ▶ 473 units of rental housing
 - ▶ Studio
 - ▶ 1-bed
 - ▶ 2-bed
- ▶ Demand for student housing
 - ▶ 1300 students on waiting list
 - ▶ Faculty of Nursing
 - ▶ Faculty of Social Work
 - ▶ Public Engagement Suite

Vehicle Parking Requirements

Criteria	Zone	Proposed
Min. Commercial	1.0 space / 100 m ²	10
Min. Education Services	1.8 spaces / 100 m ²	129
Min. Office	0.5 space / 100 m ²	10
Min. Residential	0.2 spaces / Studio unit 0.3 spaces / 1-bed unit 0.5 spaces / 2-bed unit	105
Min. Visitor	0.14 spaces / unit	15
Min. Regular Spaces	50%	66%
Max. Small Spaces	50%	34%
Min. Loading Spaces	3	9

Bicycle Parking Requirements

	Long Term	Short Term	Long Term	Short Term
Min. Commercial	n/a	2	n/a	2
Min. Education Services	n/a	46	n/a	46
Min. Office	n/a	2	n/a	2
Min. Residential	1 per bedroom	29	603	20

Site Layout

St Paul St

Plaza



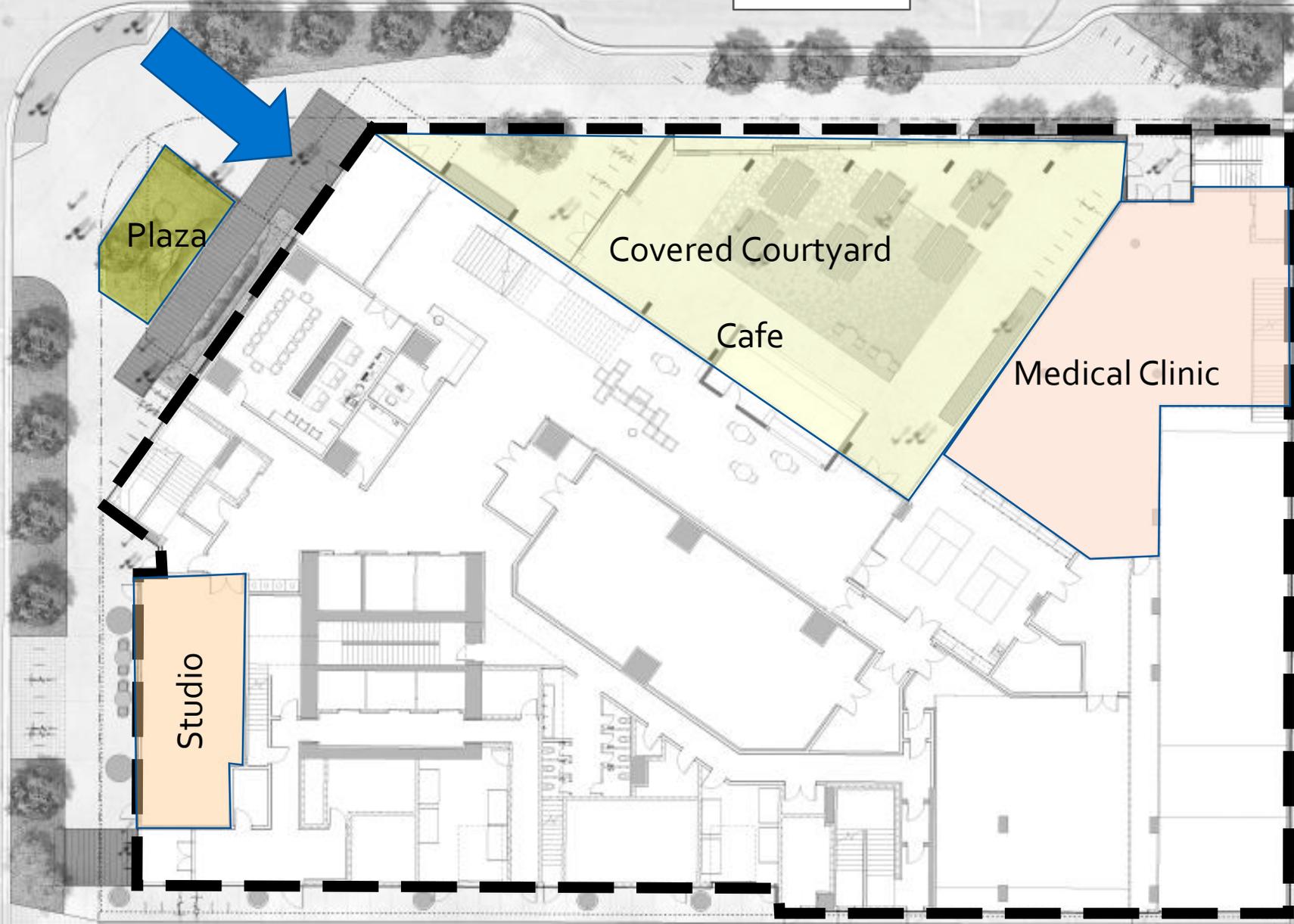
Covered Courtyard

Cafe

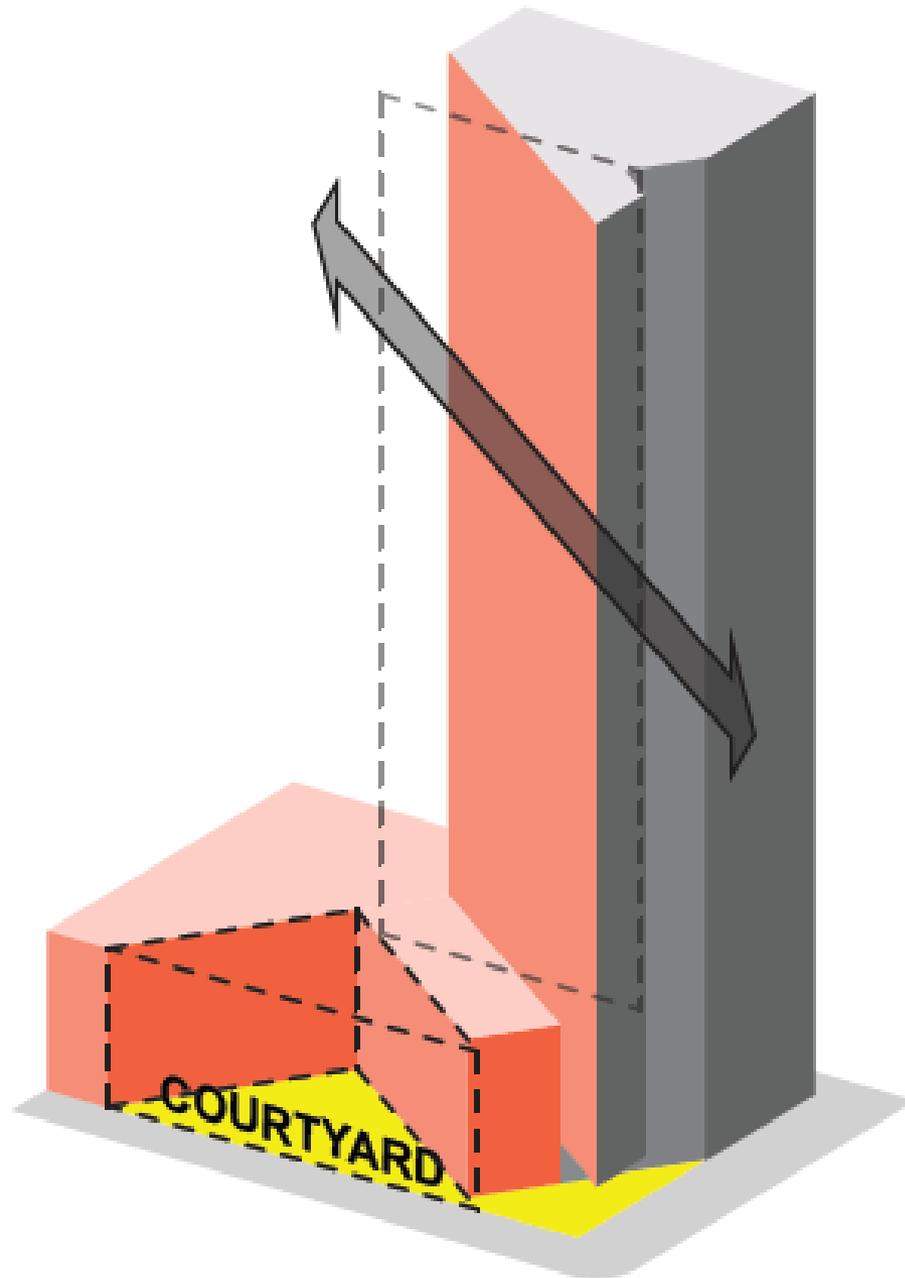
Medical Clinic

Doyle Ave

Studio



Massing



Massing



Doyle Ave

Height & OCP Policy 4.4.3

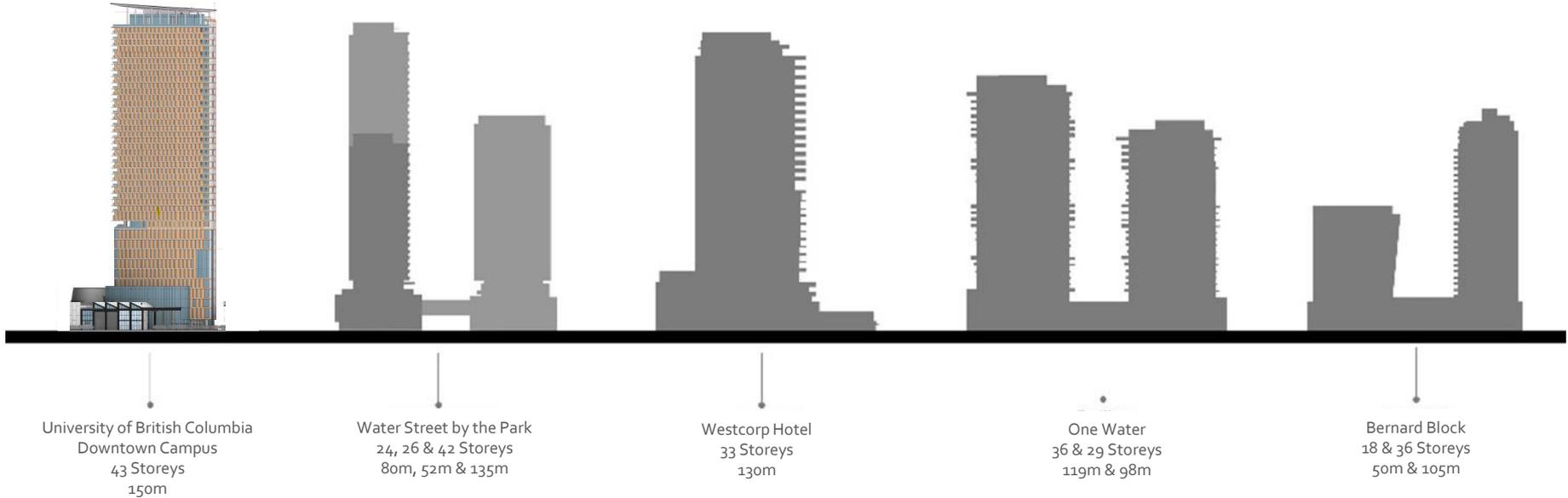
▶ Taller Downtown Buildings:

- ☑ An affordable, supportive and/or rental housing component;
- ☑ A significant public amenity that supports the fostering of more inclusive and socially connected Urban Centres, such as public spaces, schools, post-secondary institutions or childcare facilities;
- ☑ Offsite considerations, including enhanced streetscapes, provision of Active Transportation Corridors;
- ☑ Smaller tower floorplates to mitigate the impact on views and shadowing; and/or
- ☑ Outstanding and extraordinary architectural design.

Skyline Principles

- ▶ Varying heights and floor plates
- ▶ Proposed building is a stand-out building in terms of height due to the stand-out use
- ▶ Tallest building in centre of downtown
- ▶ Tapering heights toward
 - ▶ Bernard Heritage Block
 - ▶ Civic Precinct
- ▶ Staff are confident this is the appropriate location for this project

Tall Building Comparison



Street Level Activation

Min. Frontage at Street Level	Provide minimum 80% of the principal frontage as an active commercial, cultural, educational, or civic space and minimum 75% on secondary street frontage.
Urban Plaza	Provide an Urban Plaza at grade along one street frontage Min. 42.0 m²
Corner Treatment	Provide a predominant entrance lobby at the corner of the street intersection.

- ▶ Grand entrance with urban plaza
- ▶ Public/Private gathering space along St Paul St

Street Level



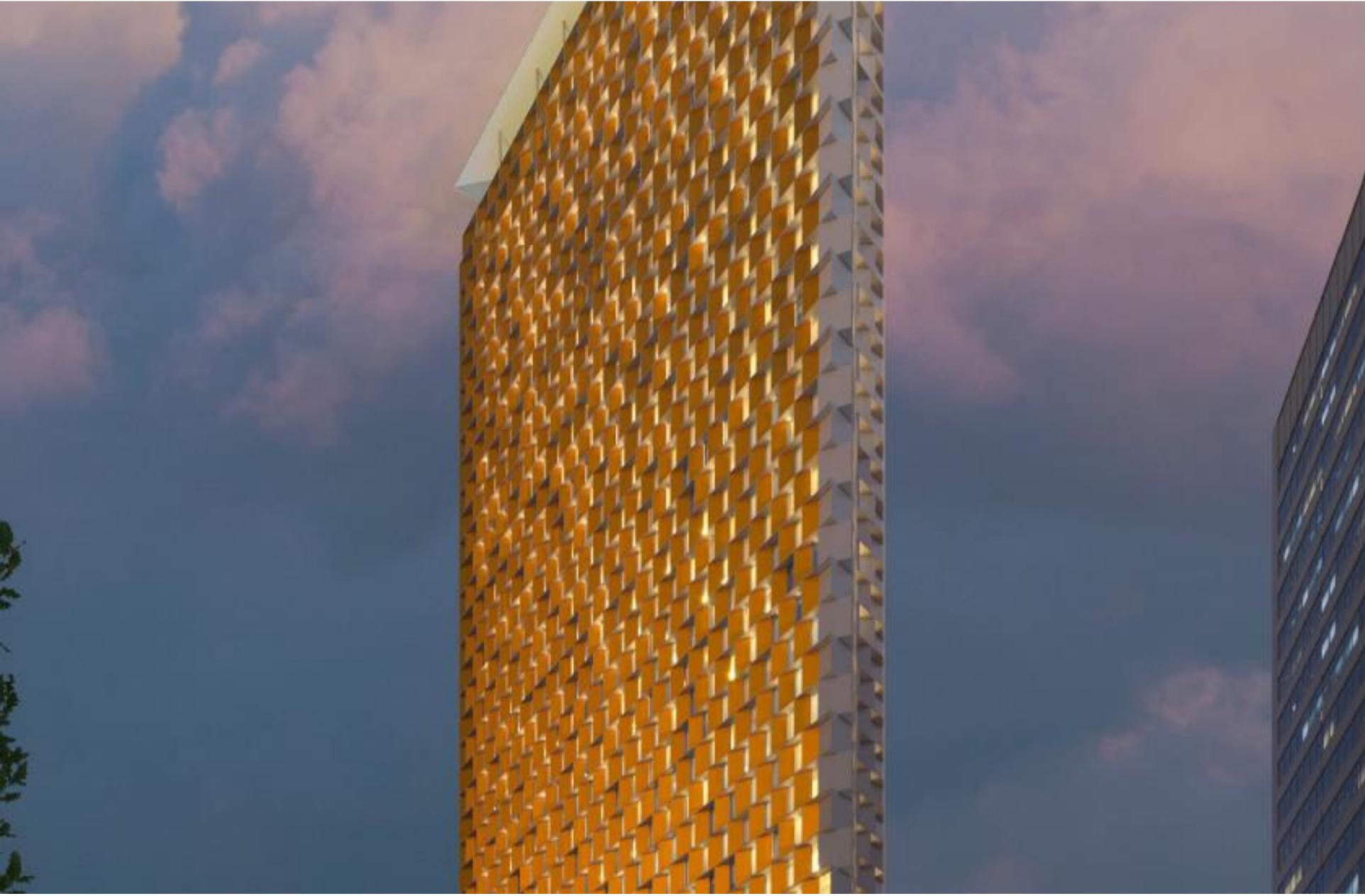
St Paul St

Lower Tower

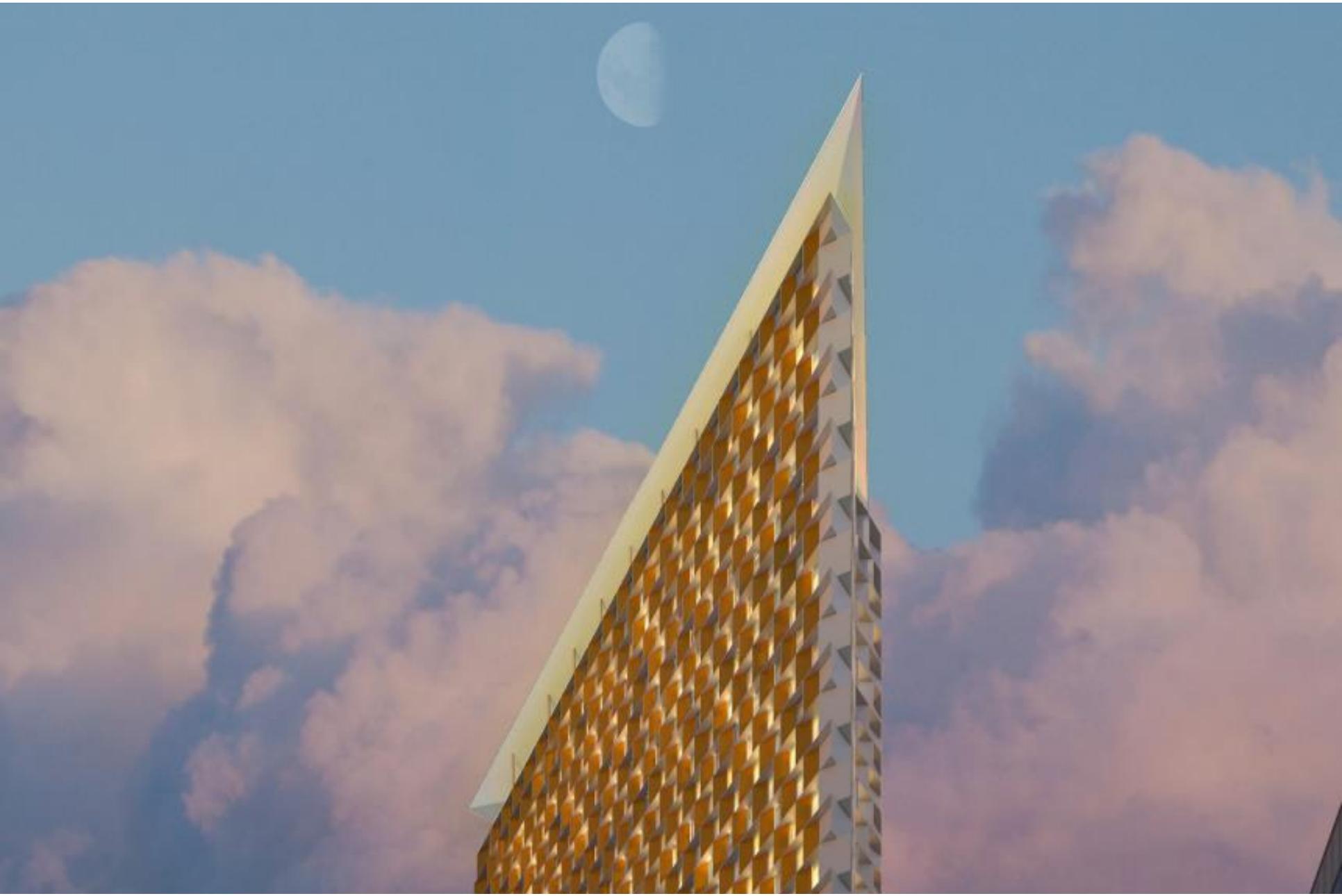


City of Kelowna

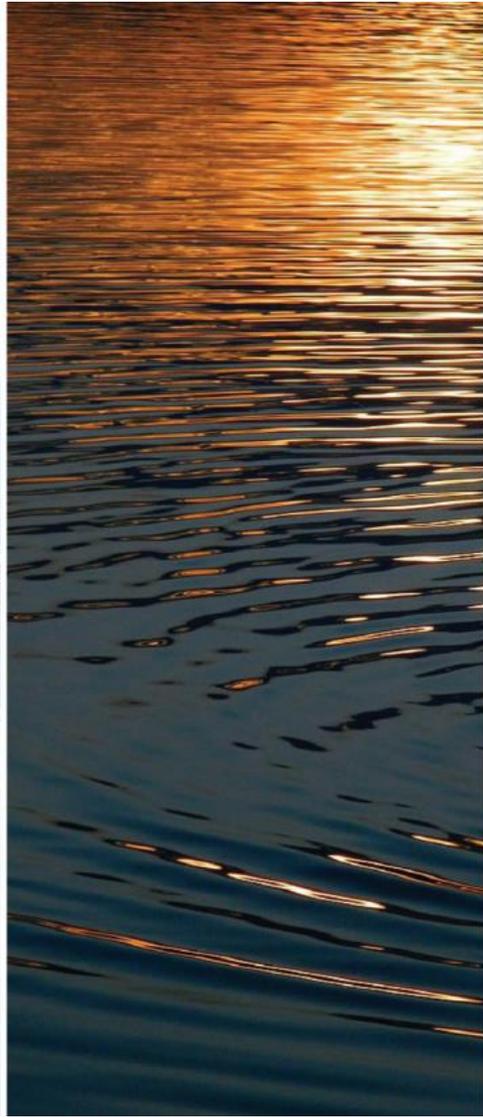
Upper Tower



Tower Top

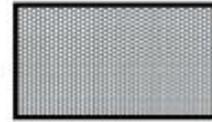


Design Inspiration

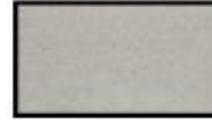


City of Kelowna

Materials



ROOF: SAIL
METAL DECKING + METAL MESH SOFFIT
(WHITE)



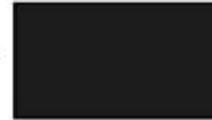
FACADE: CLADDING
CEMENTITIOUS PANELS
(GRAY-WHITE)



FACADE: CLADDING
METALLIC PANELS
(AMBER)



FACADE: SOLAR WALL
PERFORATED ALUMINUM
(DARK GRAY)



FACADE: GLAZING
ALUMINUM PROFILES
(BRONZE DARK)



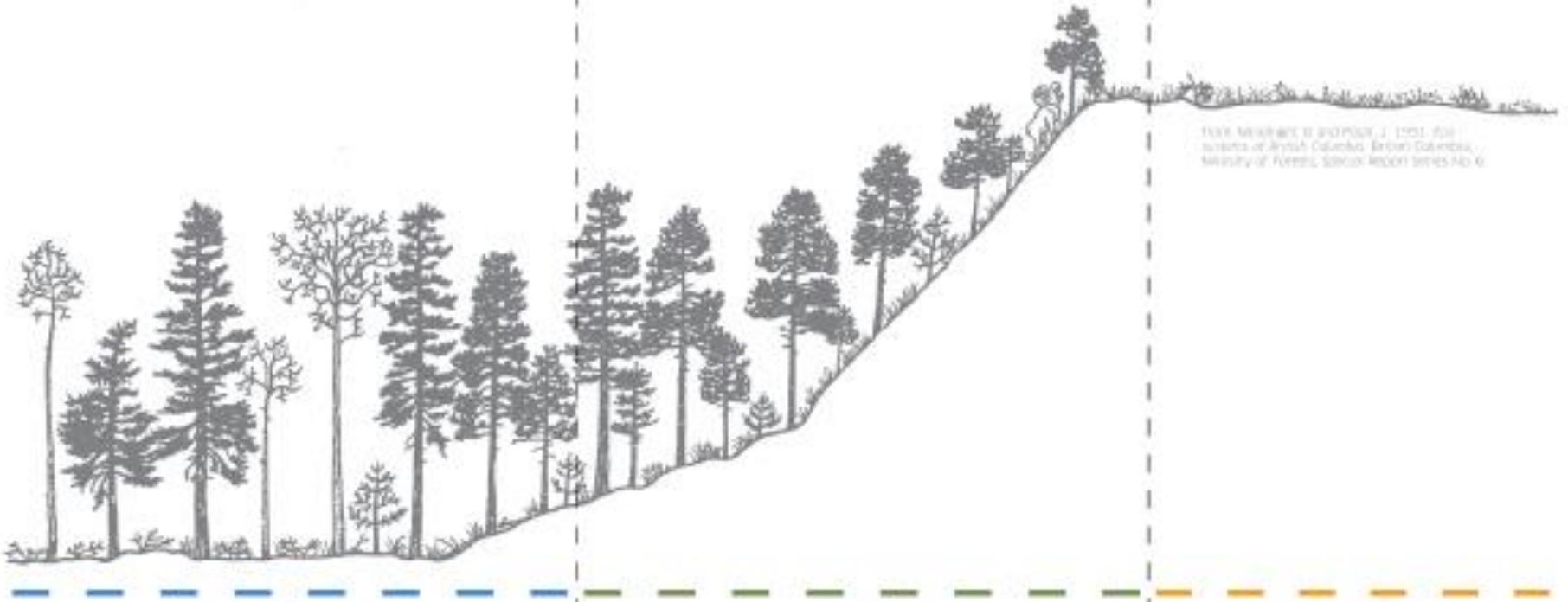
FACADE: GROUND LEVEL
PRECAST CONCRETE
(GRAY LIGHT)

Planting Strategy

**NUTRIENT RICH
LOWLANDS**

**PINE FOREST
MIDLANDS**

**UPPER STEPPE
GRASSLANDS**



TRUCK MOUNTAIN TO SHIPPORE, J. 1991. 20th
century of British Columbia. British Columbia,
Ministry of Forests, Special Report Series 40-6.



City of Kelowna

Landscape Plan



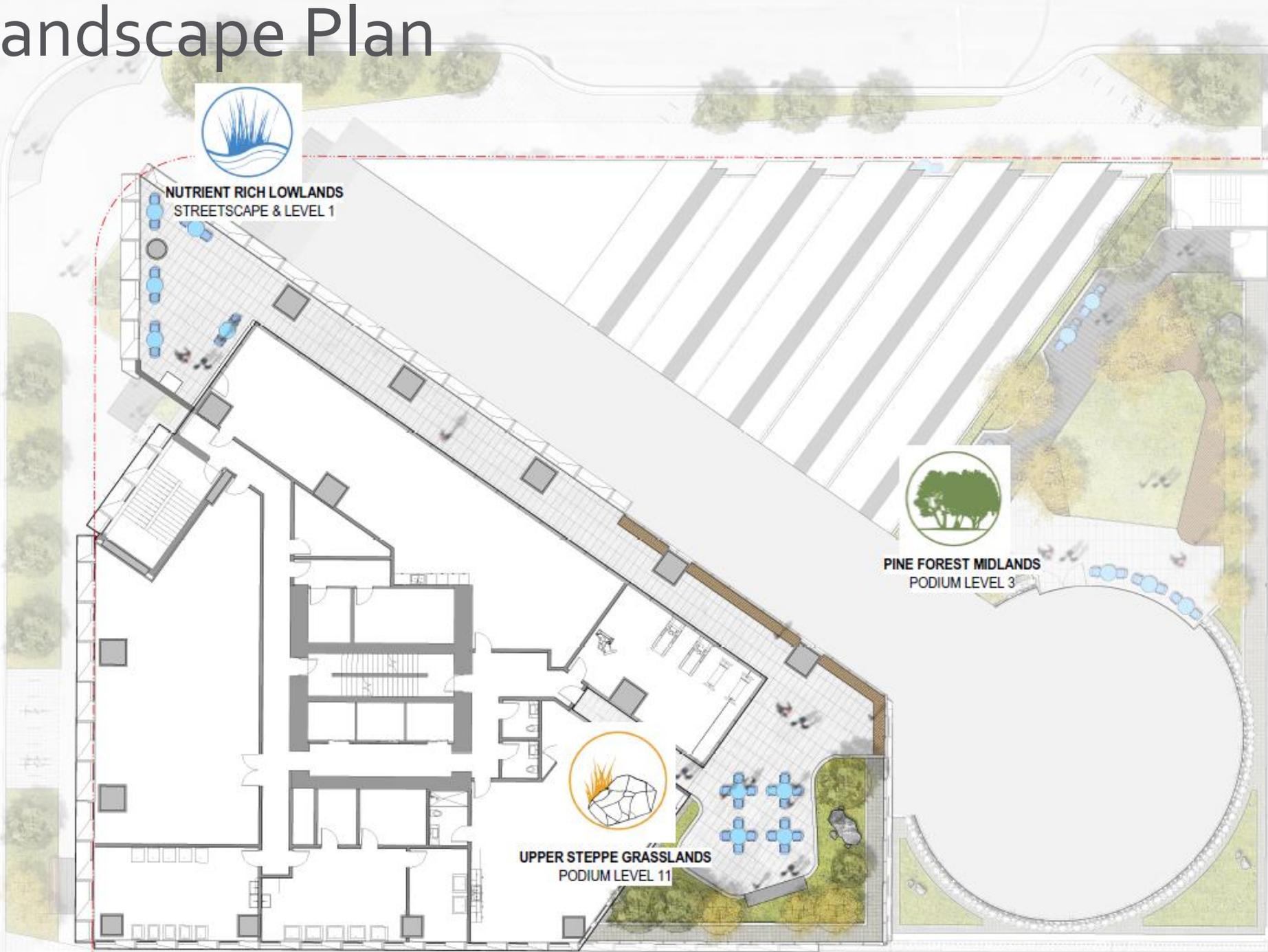
NUTRIENT RICH LOWLANDS
STREETSCAPE & LEVEL 1



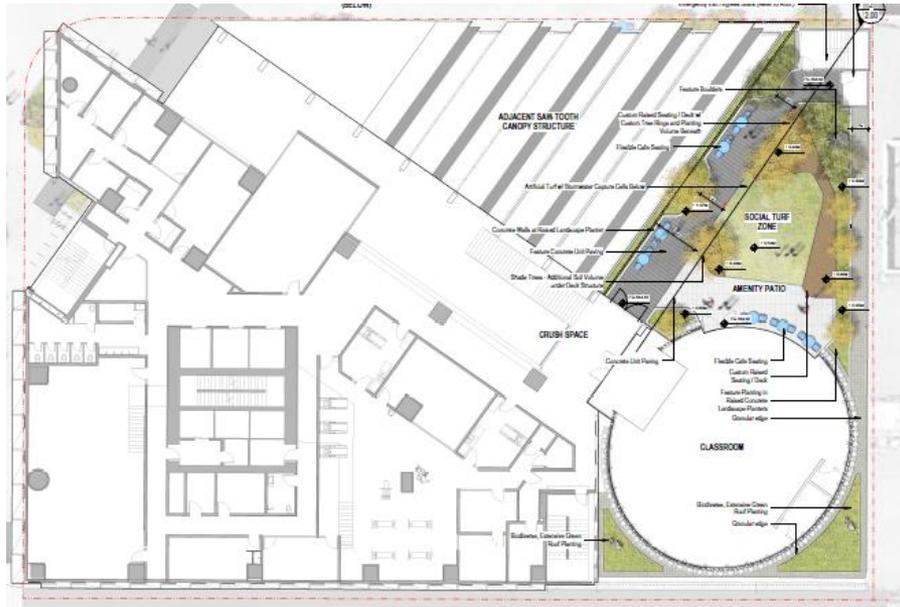
PINE FOREST MIDLANDS
PODIUM LEVEL 3



UPPER STEPPE GRASSLANDS
PODIUM LEVEL 11



Amenity Level 3 & Level 11



Water Conservation Strategies



Sustainability

1. Low carbon concrete
2. Step Code 3
3. Regenerative resource centre L11
4. Solar wall
5. Shower drain heat recovery
6. Greywater Reuse
7. Ground source heat exchange
8. LEED Gold Certification





01 Low carbon concrete

A combination of supplementary cementitious materials (SCMs), recycled sand/aggregates and sequestering CO2 into concrete during mixing – provide enhanced concrete strength whilst significantly lowering the carbon footprint associated with traditional cement.



02 Step Code 3 (TEDl)

An efficient envelope supports efficient active systems. The BC Energy Step Code demands a very efficient envelope system with good air tightness to minimize heat loss and optimize ventilation. The project is optimizing the window to wall ratio and managing solar heat gain with shading, balanced with consideration for good daylight and ventilation. High R-value and minimized thermal bridging will build the foundation for lowered energy demand associated with heating, cooling, and ventilation.

Design compliance with Step Code 3 requirements for Thermal Energy Use Intensity (TEUI) and Thermal Energy Demand Intensity (TEDl).



03 Regenerative Resource Centre (L11)

The mechanical room on Level 11 is strategically located in between the residential tower and the academic podium so thermal energy and water can be exchanged between the two spaces and deliver preheated air from the solar wall to the corridors.

1. Heat generated by academic cooling will be recovered for the residential heating system
2. Heat generated from residential showers drains will be recovered for the academic heating system
3. Water generated from residential showers can be recovered, treated, and reused in the academic areas for irrigation or toilet flushing.
4. A simple connection between the ventilation system and the solar wall is enabled to deliver preheat to residential corridors.



04 Solar wall on the South facade

A Solar Wall system is incorporated on the south facade to preheat ventilation air passively during winter months. It is especially effective in cold and sunny climates. The Solar Wall will preheat outdoor air before it is delivered to corridors in the residential tower.



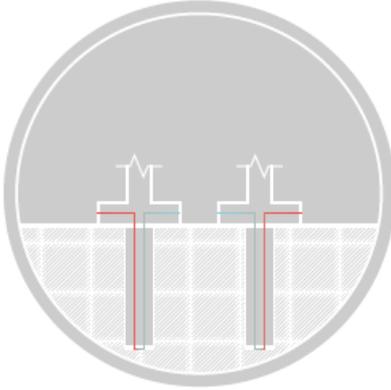
05 Shower Drain Water Heat Recovery

The residential tower will use large quantities of hot water which increases both energy demand and carbon emissions. Gravity will drain warm water from showers to the regenerative resource centre on the 11th floor. The Piranha wastewater heat recovery system from Sharc Energy Systems is proposed as a suitable unit for heat recovery. The system consists of a self-contained heat pump, holding tank and heat exchanger that extracts thermal energy from the warm shower drain water to preheat incoming cold water.



06 Greywater Reuse

Shower drain water is the least contaminated and the simplest water to treat and reuse. Water is being collected for heat recovery via the Piranha system which will be available for treatment and reuse after the heat is recovered. The greywater recycling system is located adjacent to the Piranha unit and uses biological treatment and chemical dosing to purify the water to a safe standard where it can be reused. An estimated potable water savings of 6,000m3 per year is expected along with a savings for both potable water use costs and sanitary water costs.



07 Ground Source Heat Exchange

The project is considering hydronic heating and cooling by integrating a ground-source heat exchange system into the structural piles being drilled as part of the building foundation. This geople solution is great given the wet soil conditions in downtown Kelowna and can take advantage of the piling already required for structure below the parkade. The geople can provide 20-30% of thermal energy needs for the academic podium, with further opportunities to exchange surplus energy with the residential tower.



08 Green Building Certification

The team is using the LEED v4 Building Design and Construction rating system strategically to evaluate performance as design progresses where applicable and verify performance upon completion via third party certification. The preliminary scorecard shows a minimum of 60 points, to earn Gold certification.

OCP Policies & Objectives

- ▶ **Policy 4.1.5 Partnerships with Post-Secondary Institutions**
 - ▶ Consider creative partnerships to attract post-secondary institutions to [Urban Centres](#) and to promote economic and cultural growth in those neighbourhoods.

OCP Policies & Objectives

- ▶ **Objective 4.1 Strengthen the Urban Centres as Kelowna's primary hubs of activity**
- ▶ **Policy 4.1.2 Urban Centre Hierarchy**
 - ▶ Downtown highest concentration of uses
- ▶ **Policy 12.4.2 Energy Efficient Design**
 - ▶ Sustainable design methods
 - ▶ LEED Gold Certification

Staff Recommendation

- ▶ Staff recommend support of the proposed Development Permit as presented:
 - ▶ Outstanding architectural design
 - ▶ Active street frontages
 - ▶ No parkade podium
 - ▶ Post-Secondary Institution in Downtown Core
 - ▶ Meets consideration for Taller Downtown Buildings
 - ▶ Density and Uses are appropriate for the site context



Conclusion of Staff Remarks