SUBJECT	Stadium Neighbourhood Development Scenario Analysis
SUBMITTED TO	Property Committee
MEETING DATE	September 9, 2020
SESSION CLASSIFICATION	Recommended session criteria from Board Meetings Policy: OPEN
REQUEST	For information only - No action requested
LEAD EXECUTIVE	Robin Ciceri, Vice-President External Relations
SUPPORTED BY	Michael White, AVP Campus & Community Planning (C&CP) Gerry McGeough, Director, Planning and Design, C&CP Chris Fay, Senior Manager, Strategic Policy, C&CP Joanne Proft, Associate Director, Community Planning, C&CP Tor Album, Associate Treasurer, UBC Treasury Aubrey Kelly, President & CEO, UBC Properties Trust

PRIOR SUBMISSIONS

The subject matter of this submission has been considered previously by the Board of Governors Finance and Property Committee, and the Housing Action Plan Working Group on the following occasions:

1. June 5, 2019 – Housing Action Plan Working Group (OPEN SESSION)
   Action/Follow up: Administration to return with analysis of alternative development scenarios.
2. September 27, 2018 (OPEN SESSION)
3. April 19, 2018 (OPEN SESSION)
4. December 5, 2017 (OPEN SESSION)
5. September 21, 2017 (OPEN SESSION)
6. April 13, 2017 (OPEN SESSION)

The following Executive Summary assumes familiarity with the prior submissions and provides a status update from the date of the most recent submission.

EXECUTIVE SUMMARY

In June 2019, the Administration presented the Stadium Neighbourhood Plan Concept to the Board of Governors' Housing Action Plan Working Group. That version of the Plan Concept included:

- 1.55 million sq. ft. residential development
- 120,000 sq. ft. non-residential development
- 2/3 of housing units for UBC Housing (including 1/3 for below-market faculty-staff rental)
- New community amenities including a grocery store, Thunderbird Stadium and child care
- 5 towers from 20 to 32 storeys, plus podium buildings from 6 to 8 storeys
- Expansive new green space

The HAP Working Group requested that the Administration explore alternative development scenarios with lower residential densities and building heights to better understand economic, urban design and sustainability implications, as well as the implications on the proposed number of UBC community housing units.

The attached summarizes the results of this analysis, using the following three scenarios:

1) Original Plan Concept scenario: 1.55 million sq. ft. of residential density, tower heights of 22, 26, 32, 24, and 20 storeys and maximum podium height of 8 storeys
2) Alternative scenario: 1.46 million sq. ft. of residential density, tower heights of 22, 24, 28, 24 and 18 storeys and maximum podium height of 6 storeys
3) Current Land Use Plan scenario: 1.28 million sq. ft. of residential density, tower heights of 22, 22, 22, 20 and 18 storeys and maximum podium height of 6 storeys

The analysis shows that the original Stadium Neighbourhood Plan Concept's proposed increase of UBC community housing to 2/3 of the total already represents a significant financial commitment by the University to the important issue of affordable housing.[1] Lower densities reduce the number of UBC housing units and increase financial risk to the university related to neighbourhood financial self-sufficiency and endowment revenue. At the same time, the alternative scenario provides a positive urban design and sustainability performance with a maximum tower height of 28 storeys and a podium height of 6 storeys, consistent with regional precedent for similar contexts. The final Plan must balance delivery of the highest number of UBC housing units while minimizing financial risk and maximizing urban design and sustainability performance.

In terms of next steps, the Stadium Neighbourhood Plan will be considered in the context of the Campus Vision 2050 process expected to commence in 2021 and informed by the deeper engagement that the University is undertaking with the Musqueam as part of a new Relationship Agreement between UBC and Musqueam. Staff will be reporting back to Board on the scope and process that is being proposed for Campus Vision 2050 this winter.

APPENDICES

1. Stadium Neighbourhood Development Scenario Analysis

[1] This analysis was completed in early 2020, prior to the outbreak of COVID-19. While the implications of the pandemic are still being understood, staff will continue to monitor rental demand during COVID and update the rental demand analysis as part of the Campus Vision 2050 process.

STADIUM NEIGHBOURHOOD: DEVELOPMENT SCENARIO ANALYSIS

Board of Governors Property Committee

CAMPUS + COMMUNITY PLANNING / UBC TREASURY, SEPTEMBER 2020

AGENDA

- Stadium Neighbourhood Plan process
- Plan Concept Recap and Analysis Framework
- Analysis
    - UBC Community Housing
    - Financial Self-Sufficiency
    - Urban Design, Sustainability, Livability
- Next Steps

PROCESS

JUNE 2019 HAPWG

- Requested alternative development scenarios with:
  - Revised building heights
  - Revised built area
  - Current Land Use Plan limits as a scenario
- Requested more detailed financial analysis

PLAN CONCEPT

(1.55m sq. ft. residential development)

- 1/3 faculty-staff below-market rental
- 1/3 UBC market rental
- 1/3 market leasehold

PLAN CONCEPT RECAP (MID- 2019)

- **1.55m sq. ft. residential**
  - 1/3 fac-staff, 1/3 UBC rental, 1/3 leasehold
- **120,000 ft^2 non-residential**
- **New Thunderbird Stadium**
- **Expansive new green space**
- **Technical and design analysis** supports
  - Transportation network
  - Amenities (schools, grocer, childcare)
  - High quality public realm
  - Ecological / whole systems approach

KEY FEATURES

- New neighbourhood close to academic core
- Commitment to UBC Community Housing with emphasis on families
- Neighbourhood layout/configuration
- Community services and amenities
  - Mid-sized grocer
  - Child care
  - Shared community space
- Significant new green space
- Predominantly pedestrian-oriented for safety and comfort
- Whole systems approach to buildings, open space and infrastructure

ANALYSIS FRAMEWORK

- Scenarios evaluated against key measurable principles, priorities and targets

Key Guiding Principles	Priorities	Criteria
Create a community for and of UBC **Prioritize affordable living**	2/3 UBC Community Housing	• # of units for UBC families • meet wait list demand
Prioritize affordable living **Build long-term value**	Benefit to Academic Mission	• $ to endowment • cost recovery • no external subsidy
Build long-term value **Be a great neighbor**	Urban Design	• majority 6 storey podiums • visual fit of skyline

UBC COMMUNITY HOUSING

THE VALUE OF UBC COMMUNITY HOUSING

- Housing affordability is a regional challenge
- Creates campus community close to academic core and reduces other costs, like travel and emissions
- Invaluable for faculty recruitment and retention
- Tool to manage reputational risk from losing potential or current faculty members
- Residents tend to be younger and have more children than other market housing residents
- Rental housing portfolio creates significant value for the university
- Demand for on-campus rental housing is very strong ˆ
- Staff to monitor rental demand in a post-COVID world

UBC Community Housing in 2020

- 31% of UBC's neighbourhood residents are renters
- 840 non-market fac/staff units
- 796 market fac/staff/ student units (including University Rental and Market Rental)
- 217 fac/staff ownership units (past co-development model)

UBC COMMUNITY HOUSING OVERVIEW

HOUSING ACTION PLAN
Up to 20% faculty-staff rental
Up to 10% more is market rental

STADIUM NEIGHBOURHOOD PLAN CONCEPT
Responds to changing housing needs with land use and policy changes, providing community housing options in an area close to the campus core

2012

2019

2010

LAND USE PLAN
20% rental housing
(at least half faculty-staff)

UNPRECEDENTED HOUSING MARKET PRESSURE
3,625 faculty/staff rental waitlist
Near-zero regional rental vacancy rate
Significant ownership costs

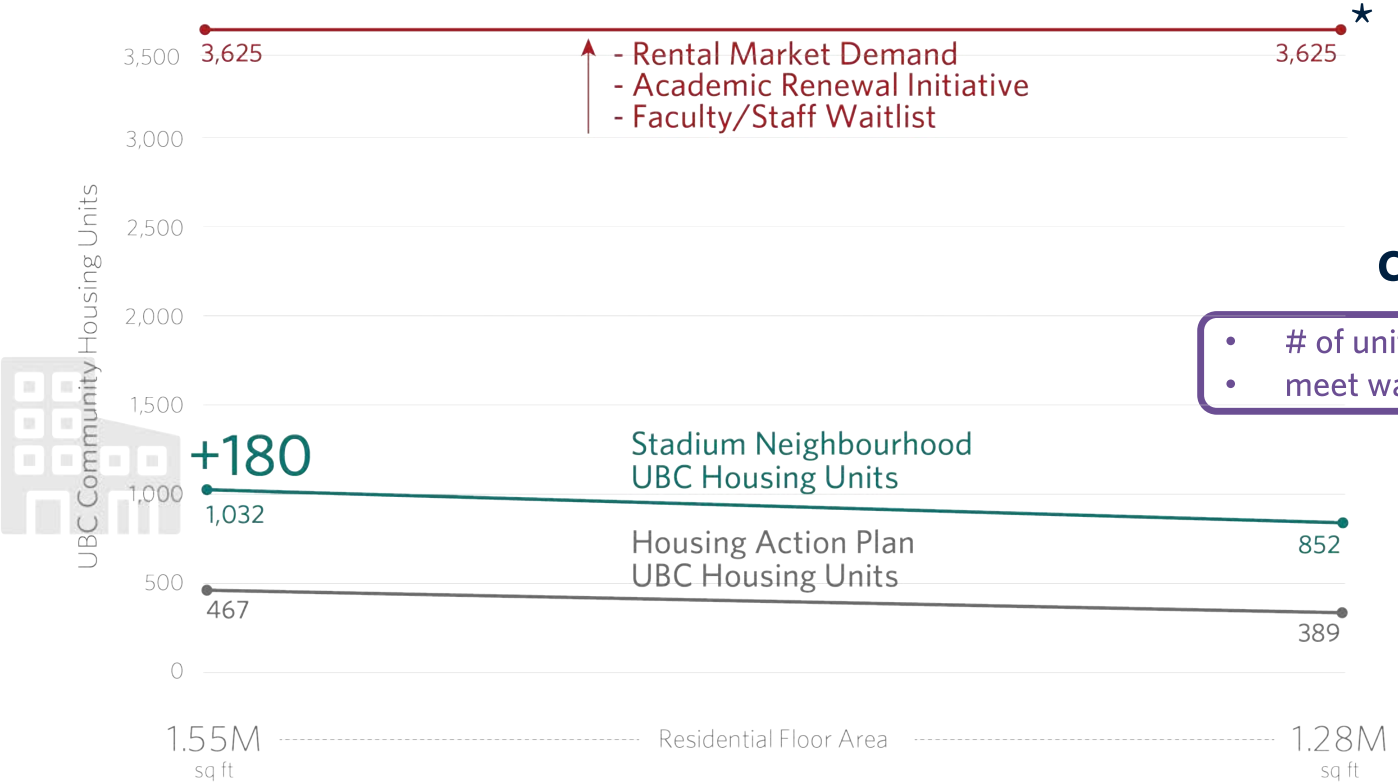
30% rental

HAP Target
20% faculty-staff + 10% market

67% rental

Stadium Neighbourhood Plan Concept
33% faculty-staff + 33% market

UBC COMMUNITY HOUSING UNITS (SCENARIO COMPARISON)



Criteria

- # of units for UBC families
- meet wait list demand

* The faculty/staff rental waitlist is one measure of demand. The most recent faculty/staff building was offered to the entire waitlist and still has some vacancy, likely due to COVID-19.

UBC COMMUNITY HOUSING: FACULTY HOME OWNERSHIP

- Stadium Neighbourhood Plan will also accommodate future faculty home ownership options
- *Real Estate Development and Marketing Act* exemption
- *Will* allow UBC to:
    - Develop and market housing for sale to faculty
    - Provide another affordability tool across campus
    - Sell units below market (depending on ownership model)
- *Will not*:
    - Replace need for faculty/staff rental
    - Eliminate taxable benefits (depending on the model)
    - Substantially reduce (if any) the amount of leasehold housing needed for neighbourhood financial self-sufficiency
- Further work required to develop a faculty ownership model, including funding

Faculty Home Ownership Programs

- Down Payment Assistance
- Prescribed Interest Rate Loans
- REDMA *exemption to allow UBC to develop faculty housing (currently pursuing)*

FINANCIAL SELF SUFFICIENCY

FINANCIAL SELF-SUFFICIENCY OVERVIEW

- Existing neighbourhoods revenues are already committed
- Stadium Neighbourhood must generate revenue to fund:
    1. Infrastructure
    2. UBC community housing targets, and
    3. New Thunderbird Stadium^
- Moving from 30% (current HAP) → 67% rental is a **significant UBC financial commitment**
- Reducing densities will further reduce the contribution to the endowment, and heighten UBC's financial risk
- Faculty home ownership options may reduce rental demand, but revenue generation still required for other needs

Criteria

- $ to endowment
- cost recovery
- no external subsidy

Proposed target of 67% rental redirects

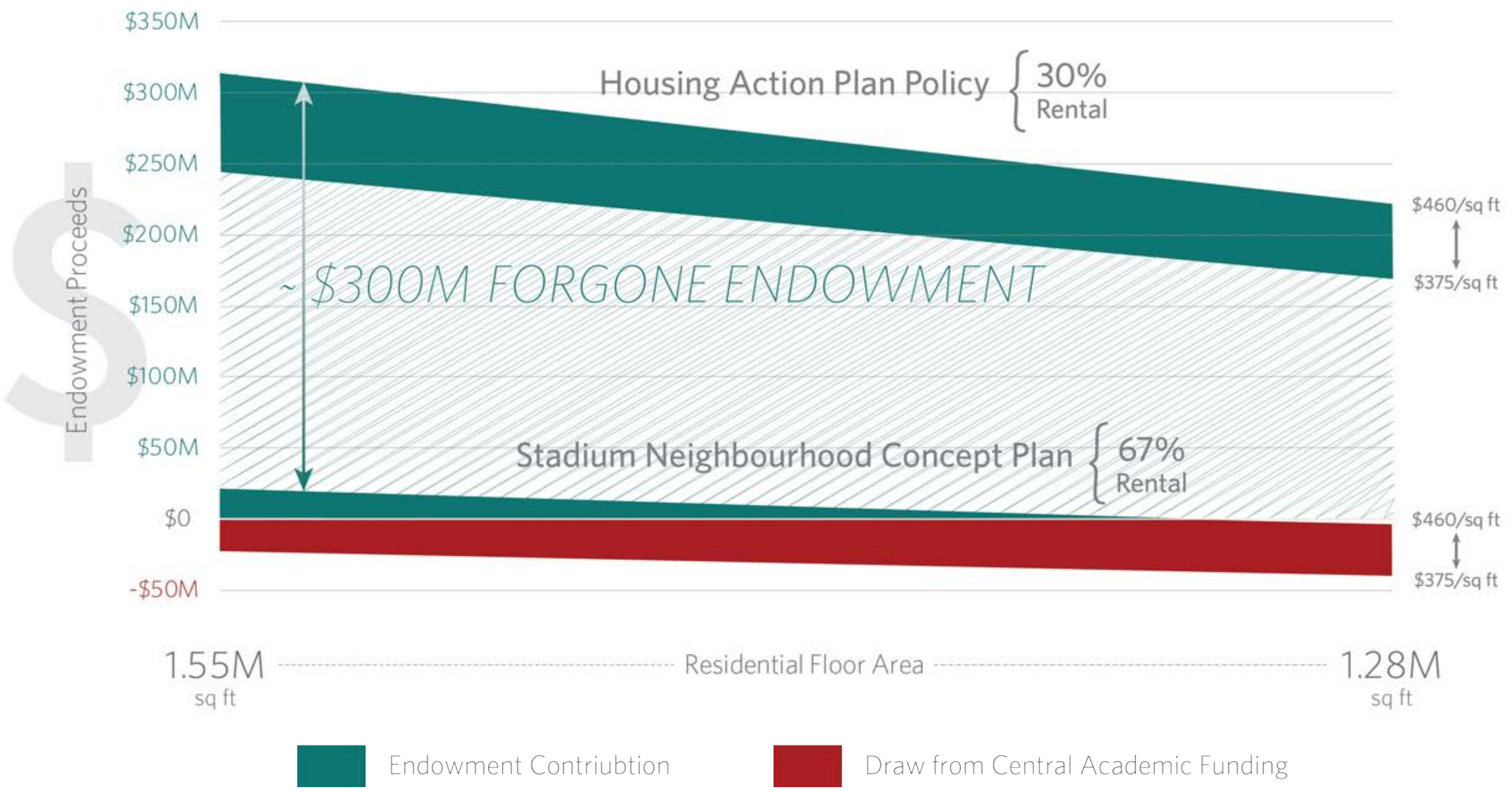
~$300 M

from the Endowment to UBC housing*

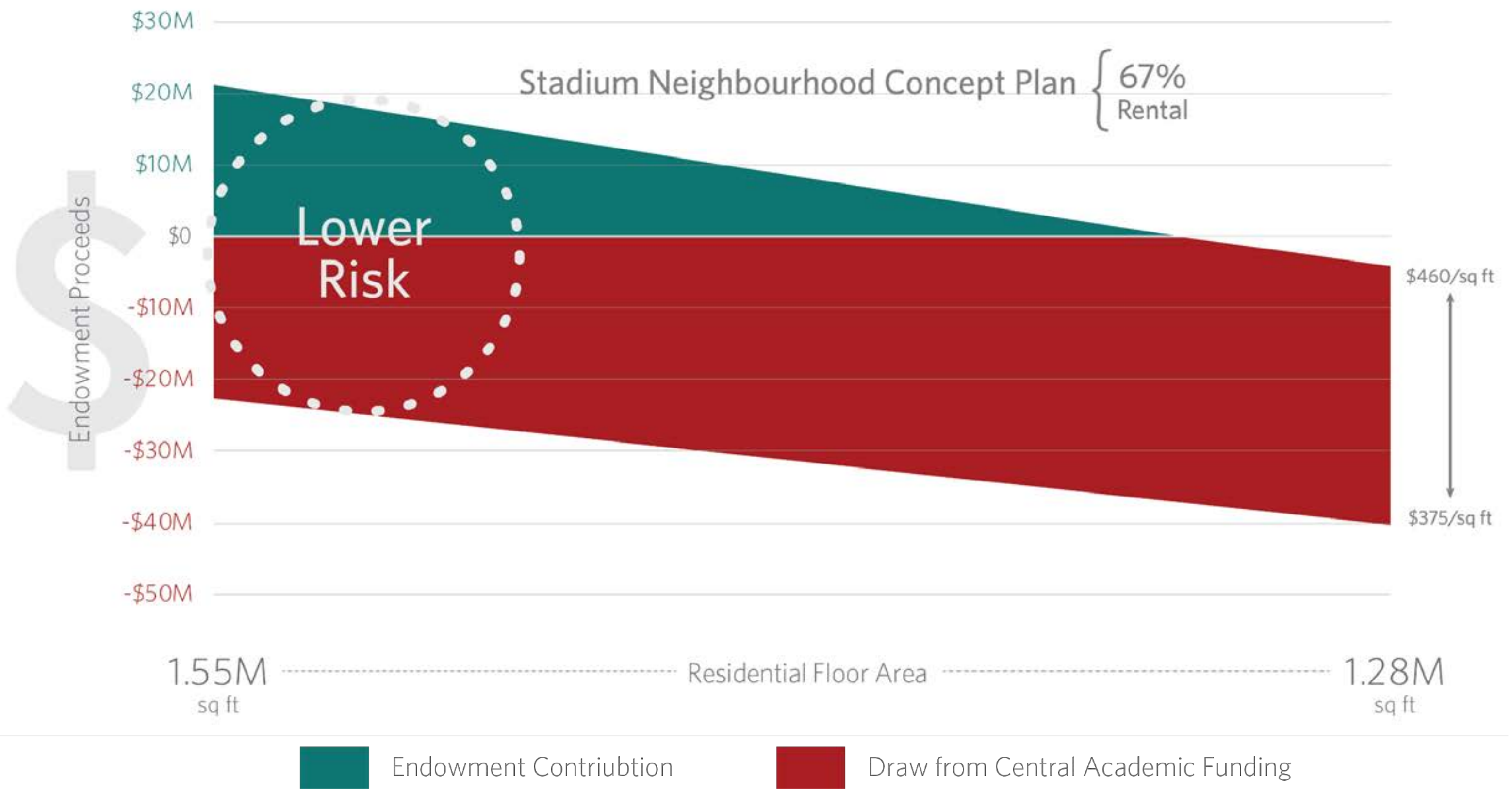
^ This cost could be offset through donor contributions

* Based on economics of Plan Concept density at $460/s.f., NPV is further reduced with alternative scenarios

FINANCIAL SELF-SUFFICIENCY ANALYSIS - IMPACT ON THE ENDOWMENT (SCENARIO COMPARISON)



POTENTIAL IMPACT ON ENDOWMENT (SCENARIO COMPARISON)



FINANCIAL SELF-SUFFICIENCY ANALYSIS @$460/SQ. FT.

	Current HAP (30%)	Proposed Target (67% rental)		
	Current Plan Concept	Scenario 1 Current Plan Concept	Scenario 2 Alternative	Scenario 3 Current LUP
Res. GBA (Sq. Ft.)	1.55 Million	1.55 Million	1.46 Million	1.28 Million
Tower heights	22, 26, 32, 24, 20	22, 26, 32, 24, 20	22, 24, 28, 24, 18	22, 22, 22, 20, 18
Gross Leasehold Revenue/SF*	$460	$460	$448	$446
Gross Leasehold Revenue	$497.2 M	$237 M	$218.7 M	$189.9 M
• Dev. Charges**	($89.2 M)	($68.8 M)	($67 M)	($64 M)
• New Stadium	($50 M)	($50 M)	($50 M)	($50 M)
• Equity for Rental	($44.5 M)	($97 M)	($92 M)	($80 M)
Net Proceeds to Endowment* **	$313.5 M	$21.2 M	$9.6 M	($4.1 M)
Net Present Value	$753.8 M	$205.8 M	$172.1 M	$127.6 M

* Slight variations in revenues are assumed given differences in tower heights and use of podium sites for Market Leasehold development in the different scenarios
** Development Charges also include charges (IIC/COS) collected/charged from rental development
*** Is assumed transferred to TREK endowment. Can also be viewed as a "buffer" in terms of having unforeseen capacity to handles additional site costs/relocation costs etc (e.g. a risk management measure)

FINANCIAL SELF-SUFFICIENCY ANALYSIS @$375/SQ. FT.

	Current HAP (30%)		Proposed Target (67% rental)	
	Current Plan Concept	Scenario 1 Current Plan Concept	Scenario 2 Alternative	Scenario 3 Current LUP
Res. GBA (Sq. Ft.)	1.55 Million	1.55 Million	1.46 Million	1.28 Million
Tower heights	22, 26, 32, 24, 20	22, 26, 32, 24, 20	22, 24, 28, 24, 18	22, 22, 22, 20, 18
Gross Leasehold Revenue/SF*	$375	$375	$363	$361
Gross Leasehold Revenue	$405.4 M	$193.2 M	$207.1 M	$153.7 M
• Dev. Charges**	($89.2 M)	($68.8 M)	($67 M)	($64 M)
• New Stadium	($50 M)	($50 M)	($50 M)	($50 M)
• Equity for Rental	($44.5 M)	($97 M)	($92 M)	($80 M)
Net Proceeds to Endowment* **	$221.7 M	($22.6 M)	($31.9 M)	($40.3M)
Net Present Value	$551.28 M	$136.5 M	$119 M	$91.4 M

* Slight variations in revenues are assumed given differences in tower heights and use of podium sites for Market Leasehold development in the different scenarios

** Development Charges also include charges (IIC/COS) collected/charged from rental development

*** Is assumed transferred to TREK endowment. Can also be viewed as a "buffer" in terms of having unforeseen capacity to handles additional site costs/relocation costs etc (e.g. a risk management measure)

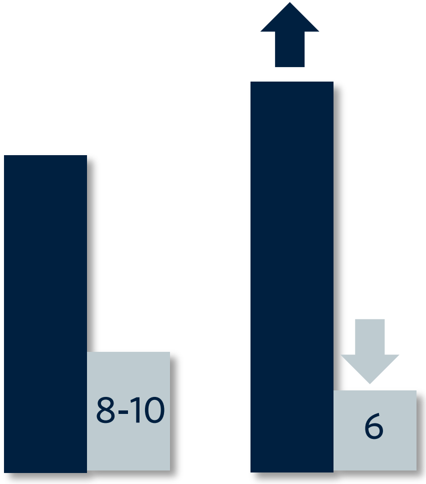
URBAN DESIGN

URBAN DESIGN OVERVIEW

- Human-scale podiums (6 storey max. ideal) achieve positive street experience and affordability (i.e., wood frame construction)
- Higher towers enable lower podiums and maximize housing delivery
- Regional trends show height and density increases to support more rental and community amenities
- Tower spacing and slender footprints minimize shadows, visual impacts
- Compact development uses land more efficiently and supports transit and other sustainability objectives

Criteria

- majority 6 storey podiums
- visual fit of skyline



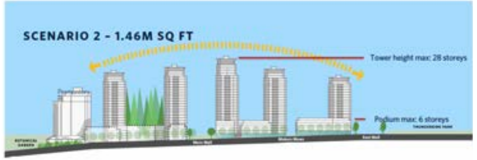
Increased tower height allows lower podiums*

* Assuming building siting and density are constants

URBAN DESIGN ANALYSIS

	Scenario 1 Current Plan Concept	Scenario 2 Alternative	Scenario 3 Current LUP
Res. GBA (Sq. Ft.)	1.55 Million	1.46 Million	1.28 Million
Gross Density (FSR)	2.2	2.1	1.9
Max Height	32 storeys	28 storeys	22 storeys

Skyline



	Scenario 1	Scenario 2	Scenario 3
Skyline	Varied, sculpted	Varied, sculpted	Slightly varied
Street level experience	Max 8 storey podiums (predominantly 6)	Max 6 storey podiums	Max 6 storey podiums (predominantly 4-5)

SCENARIO ANALYSIS SUMMARY

	Scenario 1 Current Plan Concept	Scenario 2 Alternative	Scenario 3 Current LUP
Res. GBA (Sq. Ft.)	1.55m	1.46m	1.28m
Total Units	1548	1460	1278
UBC Housing Units (2/3 total)	1032	973	852
Max Height	32 storey	4 storeys ↓ than scenario 1	10 storeys ↓ than scenario 1
Street Level Experience	Predominantly 6 storeys	Superior to Scenario 1 (2 storeys ↓ than scenario 1)	Superior to Scenario 1 (2 storeys ↓ than scenario 1)
NPV	\$136.5M to \$205.8M	\$119M to \$172.1M 17% ↓	\$91.4M to \$127.6M 55% ↓
Initial endowment contribution	(\$22.6M) to \$21.2M	(\$31.9 M) to \$9.6M	(\$40.3M) to (\$4.1M)
UBC Housing (2/3 total)	1032 units	973 units 6% ↓	852 21% ↓

SUMMARY:

UBC Community Housing and Financial Self-Sufficiency Considerations

- Higher residential densities provide more UBC community housing while managing the financial risk that results from more non-market staff/faculty rental, market rental, and potentially faculty ownership units.
- Analysis shows only Scenario 1 (1.55M sq. ft.; 1032 UBC community units) and Scenario 2 (1.46M sq. ft.; 973 units) are financially self-sufficient at a rate of $460/sq. ft. At $375/sq. ft. none of the scenarios are financially self-sufficient.
- Moving HAP targets from 30% → 67% rental is already a significant UBC financial commitment of ~$300 million.
- Lower resultant leasehold revenues are balanced by the long time horizon, recruitment and retention benefits of affordable housing, and inherent flexibility of rental development.

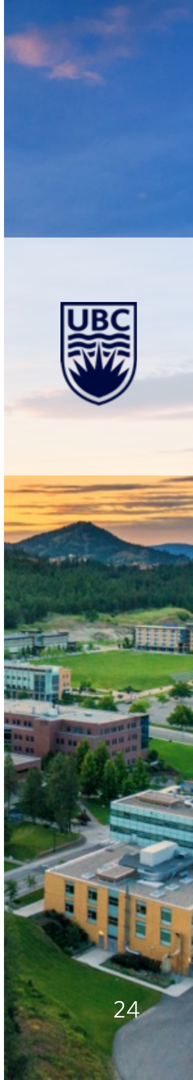
SUMMARY:

Urban Design, Sustainability and Livability Considerations

- Reducing density and building heights achieves a max. 6-storey podium experience and consistency with Vancouver's emerging taller building heights of 28 storeys in lower density neighbourhoods and urban design best practice.
- More compact development allows for a significant park space, services and amenities within walking distance, an outstanding experience of place and sustainable stewardship of the land.
- Reducing building heights and densities even further would result in:
  - fewer UBC community housing units
  - lower (or negative) contribution to the endowment
  - high financial risk
  - poor response on Climate Action through inefficient use of land

NEXT STEPS

- Relieve short term housing pressure through the delivery of up to 500 units of faculty/staff rental in Wesbrook Place, based on the Board of Governors' April 2020 direction
- Finalize Musqueam Relationship Agreement
- Further development of a faculty home ownership program
- Consideration of the Stadium Neighbourhood Plan in the context of the Campus Vision 2050 process expected to commence in 2021, including updated rental demand analysis
- Land Use Plan amendments, either Stadium Neighbourhood specific, or as part of the overall Land Use Plan update coming through the Campus Vision 2050 process, referred to an official public hearing then to the Province for approval



APPENDICES

i. GENERAL FINANCIAL IMPLICATIONS

GENERAL FINANCIAL IMPLICATIONS – OVERVIEW

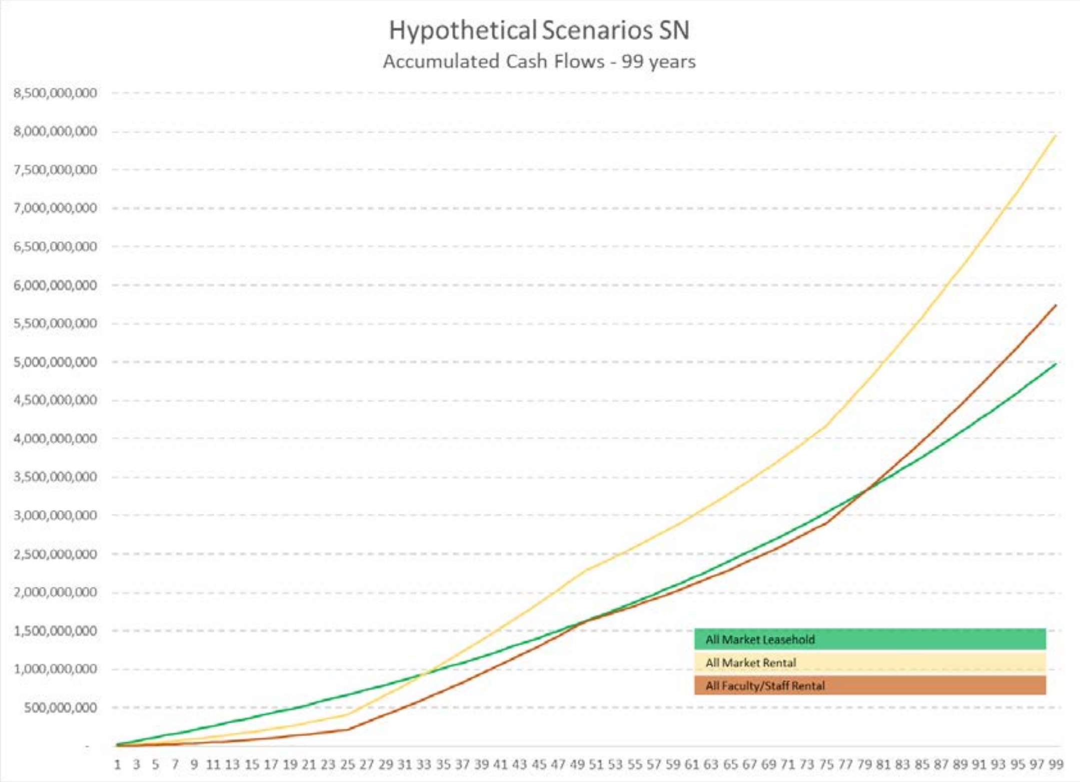
- The first section is illustrative and highlights different business models and financial characteristics of different campus development types
    - Three hypothetical scenarios : "All Market Leasehold", "All Market Rental" and "All Faculty/Staff Rental"
    - These scenarios use the same assumptions as the specific SN development scenarios which are presented later and the 1.55m sq. ft. of residential development as suggested by the current plan concept
- The objectives are to :
    1. Present different approaches/methods of analyzing/evaluating the financial implications
    2. Show high level financial implications for different types of development
    3. Help inform the evaluation of the specific development scenarios for SN

- In later sections the current Housing Action Plan ("HAP") targets scenario is introduced, which is then compared to the hypothetical scenarios, before the current plan concept and alternative development scenarios for SN are compared to the HAP targets.

DIFFERENT METHODS FOR EVALUATING FINANCIAL IMPLICATIONS

Method	Description	Advantages	Disadvantages
Accumulated cash flows	Looking at the pure cash flow generation of an asset	Is most relevant when the asset has already been written off or paid down	Does not take into account the initial investment needed to generate the cash flows or time value of money
Accumulated cash flows – including initial investment/ contribution	Initial investment/ contribution + cash flow generation	Is the most common way of modeling a capital investment	Does not take into account the time value of money aspect of an investment per se *(although model is usually ready for NPV calculation)*
Payback period (simplified)	When accumulated cash flows exceed the initial investment	Relatively easy to model. Does not require a discount rate (WACC)	Not particularly accurate when compared to NPV analysis.
Internal rate of return (IRR)	The rate of return at which a project would have zero net present value	Does take into account the time value of money Does not require a discount rate (WACC)	Does not have a risk-adjusted discount rate to compare to IRR analysis does not work for all cash flow analysis
Net Present Value	Estimates a Net Present Value of a series of cash flows using a defined discount rate (WACC)	Is the most commonly used method for assessing the financial performance of a capital project.	Assumes that the time value of money principle applies equally to everyone.

ACCUMULATED CASH FLOWS

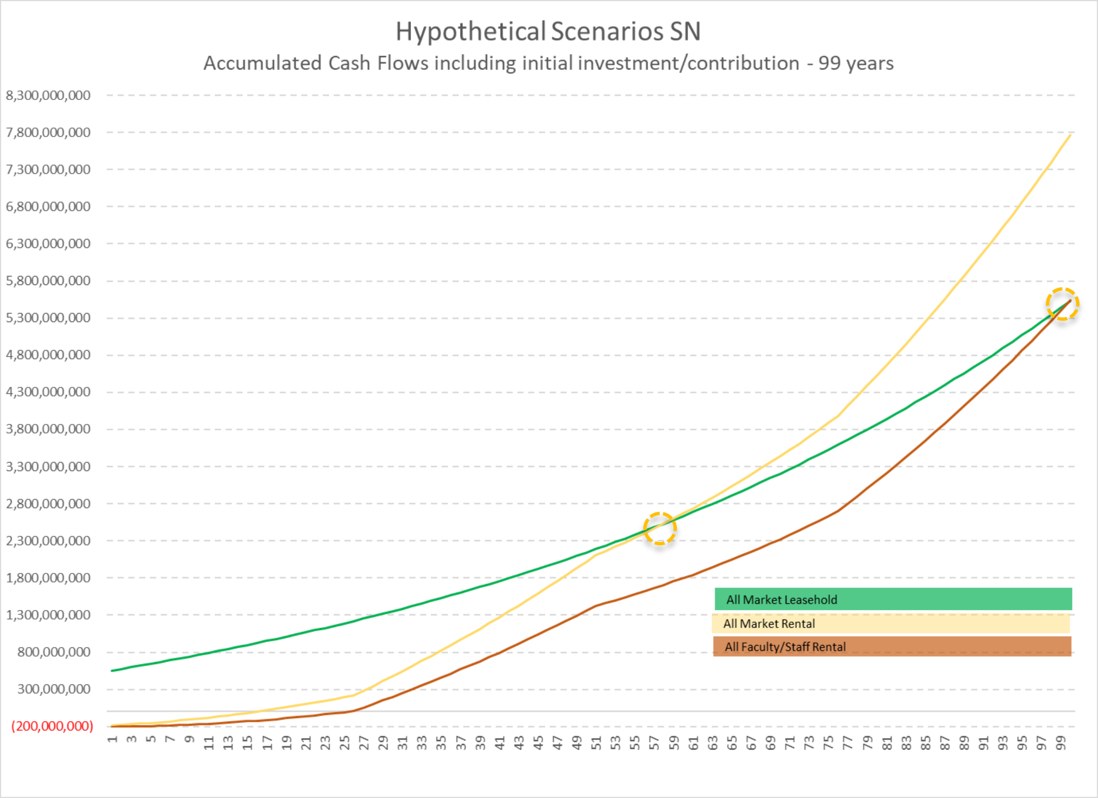


**The line for Market Leasehold shows the accumulated expendable cash flow (spend allocation – 4%) over time*

- From a pure cash flow generation point of view, “All Market Rental” appears to be the most attractive form of development, followed by “All Faculty/Staff Rental” and “All Market Leasehold”*

- However, this method **does not take into account the initial investment/ contribution required to generate these cash flows** (or where the funding of these investment would come from – if not from leasehold) and the timing of the cash flows generated

ACCUMULATED CASH FLOW W/ INITIAL INVESTMENT - 99 YEARS



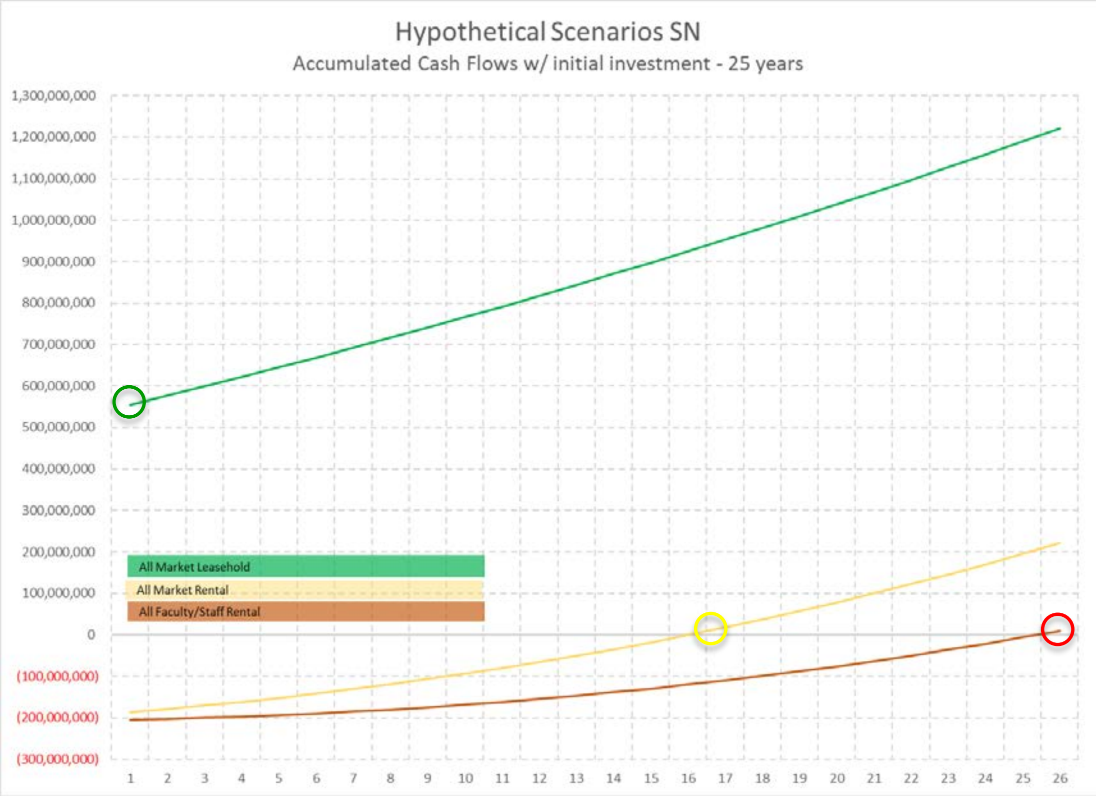
- Taking the initial investment* /contribution into account, All Market Rental is still the most attractive type of development, whereas All Market Leasehold** and All Faculty/Staff Rental appear to converge over 99 years

- However, it will take approx. **57 years** before the accumulated cash flows from All Market Rental will pass the All Market Leasehold

- A key aspect that is missing from this method is the **time value of money** aspect when evaluating the accumulated cash flows

**Initial investment also includes any shortfall in revenues/capital required to fund the relocation of Stadium for the "all rental scenarios"*
***The line for Market Leasehold shows the accumulated expendable cash flow (spend allocation – 4%) over time*

ACCUMULATED CASH FLOWS-SIMPLIFIED PAYBACK PERIOD



- When accumulated cash flows (including the initial investment**) turn positive, it is often referred to as a simplified "payback period" for an investment
- A shorter payback period is preferred over a longer payback period, because it typically suggests lower financial risk (and a higher internal rate of return)
- All Market Leasehold* will have a payback period of **zero**, because it begins with a net positive contribution to the endowment.
- All Market Rental would have a payback period of **~17 years,** whereas "All Faculty/Staff Rental" would have a payback period of **~26 years**
- This method still does not properly take into account the **time value of money** when comparing the different scenarios

**The line for Market Leasehold shows the accumulated expendable cash flow (spend allocation – 4%) over time*
***Initial investment also includes any shortfall in revenues required to fund the relocation of Stadium for the "all rental scenarios"*

NET PRESENT VALUE (NPV) (@ $460/SQ.FT.)

WACC = 6%	ALL MARKET LEASEHOLD		ALL MARKET RENTAL		ALL F/S RENTAL	
TYPE OF DEVELOPMENT	Leasehold	100%	Leasehold	0%	Leasehold	0%
	Market Rental	0%	Market Rental	100%	Market Rental	0%
	F/S Rental	0%	F/S Rental	0%	F/S Rental	100%
INITIAL INVESTMENT / CONTRIBUTION -	Leasehold	**$ 556.4 M**	Leasehold	**($ 50.0 M)**	Leasehold	**($ 50.0 M)**
	Market Rental	**$ 0**	Market Rental	**($ 135.9M)**	Market Rental	**$ 0**
	F/S Rental	**$ 0**	F/S Rental	**$ 0**	F/S Rental	**($ 154.4 M)**
NET INVESTMENT	$554.4 M		$185.9 M		$204.4 M	
NPV - TYPE OF DEVELOPMENT*	Leasehold	**$ 1,222,8 M**	Leasehold	**($ 50.0 M)**	Leasehold	**($ 50.0 M)**
	Market Rental	**$ 0**	Market Rental	**$ 331.5 M**	Market Rental	**$ 0**
	F/S Rental	**$ 0**	F/S Rental	**$ 0**	F/S Rental	**$ 145.8 M**
TOTAL NPV	**$1,222.8 M**		$281.5 M		$95.8 M	
INTERNAL RATE OF RETURN (IRR)	*N/A****		*9.9%*		*7.2%*	

- The All Market Leasehold scenario generate a **vastly higher NPV** than the all rental scenarios.
- This is because "shorter-term" cash flows are worth significantly more than "longer term" cash flows.
- The NPVs for the all rental scenarios also include a "cash shortfall" from not having generated funds to relocate the stadium

*Positive NPVs for Leasehold is the NPV of all cash flows generated by the endowment (e.g including the 2% recapitalization). This is different from the expendable cash flow (spend allocation shown in graphs earlier)
*Negative Investments / NPVs for Leasehold in the "All" rental scenarios show the shortfall in expenses to cover the relocating of the Stadium.
*** The internal rate of return is defined as the rate of discount at which a project would have zero net present value. The All Market Leasehold will always be NPV positive and will therefore not have an IRR

i. SUMMARY OF OBSERVATIONS

- **Net Present Value is the most commonly used** method for analyzing/evaluating the financial implications of a potential capital project over the life of the asset
    - However, the other methods shown can also provide useful information to help validate a business case or project and their assumptions

- With that in mind, "**All Market Leasehold" is by far** the **most optimal form of development** (from a financial point of view)

- **All Market Rental is a relatively attractive option**, and should generate the highest (nominal) cash flows over a 99 year period.
    - However, the NPV is significantly lower than All Market Leasehold due to the timing of those cash flows.

- **Faculty/Staff rental** development is **not an optimal** form of development from a financial perspective
    - The faculty/staff model is designed to perform a little above "NPV break even" (to satisfy lenders and other stakeholders) while offering more affordable housing for faculty and staff

ii. HOUSING ACTION PLAN TARGETS

HOUSING ACTION PLAN

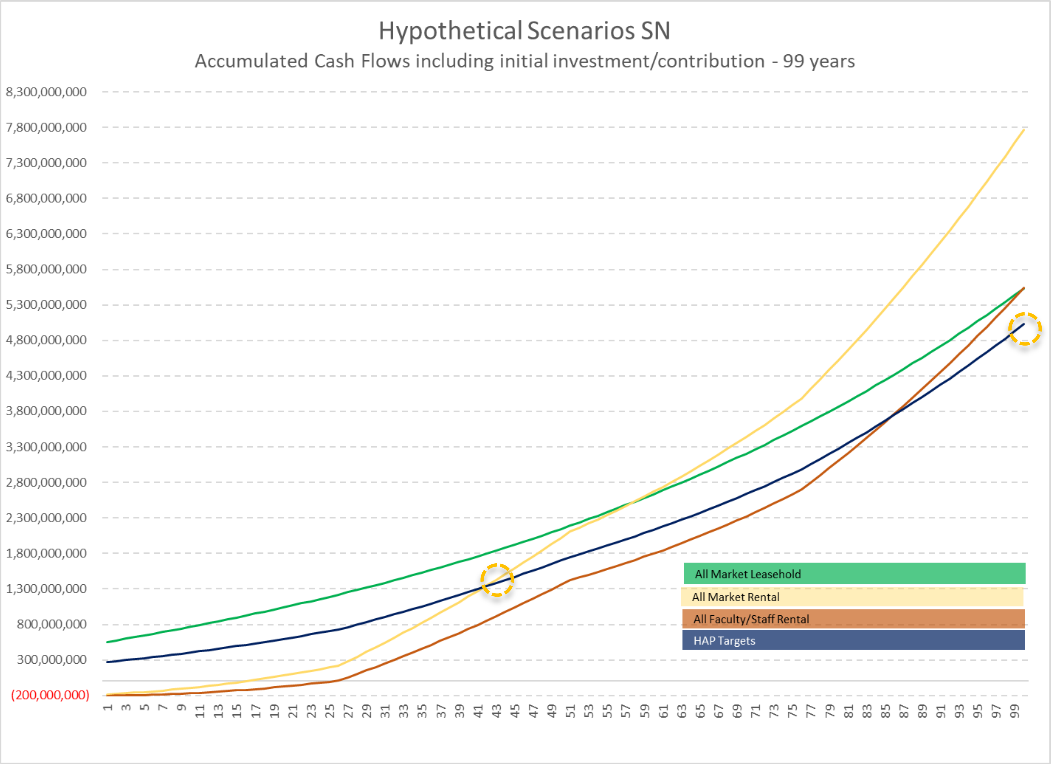
The Housing Action Plan is a long range (30 year) strategic umbrella plan, first approved in September 2012, to set out the University's long range policies and targets to ***support improved housing choice and affordability for students, faculty and staff,*** *for recruitment and retention purposes.*

The Housing Action Plan targets*:

- **70%** Market Leasehold
- **10%** Market Rental
- **20%** Faculty/Staff Rental

** Applicable to future development on campus from when HAP targets were approved (September 2012)*

ACCUMULATED CASH FLOW W/ INITIAL INVESTMENT - 99 YEARS



- The "HAP targets" generate lower accumulated cash flows (nominal) than the hypothetical scenarios over 99 years
- However, it will take approx. **42 years** before the accumulated cash flows from All Market Rental will pass the HAP Targets scenario and **85 years** before they pass the All Faculty/Staff Rental

**Initial investment also includes any shortfall in revenues/capital required to fund the relocation of Stadium for the "all rental scenarios"*
***The line for Market Leasehold shows the accumulated expendable cash flow (spend allocation – 4%) over time*

NET PRESENT VALUE (NPV) (@ $460/SQ.FT.)

WACC = 6%

	ALL MARKET LEASEHOLD		ALL MARKET RENTAL		HAP TARGETS	
TYPE OF DEVELOPMENT	Leasehold	100%	Leasehold	0%	Leasehold	70%
	Market Rental	0%	Market Rental	100%	Market Rental	10%
	F/S Rental	0%	F/S Rental	0%	F/S Rental	20%
INITIAL INVESTMENT / CONTRIBUTION -	Leasehold	**$ 556.4 M**	Leasehold	**($ 50.0 M)**	Leasehold	**$ 313.5 M**
	Market Rental	**$ 0**	Market Rental	**($ 135.9M)**	Market Rental	**($ 13.6 M)**
	F/S Rental	**$ 0**	F/S Rental	**$ 0**	F/S Rental	**($ 30.9 M)**
NET INVESTMENT	$554.4 M		$185.9 M		$269.1 M	
NPV - TYPE OF DEVELOPMENT*	Leasehold	**$ 1,222,8 M**	Leasehold	**($ 50.0 M)**	Leasehold	**$ 691.5 M**
	Market Rental	**$ 0**	Market Rental	**$ 331.5 M**	Market Rental	**$ 33.1 M**
	F/S Rental	**$ 0**	F/S Rental	**$ 0**	F/S Rental	**$ 29.2 M**
TOTAL NPV	**$1,222.8 M**		$281.5 M		**$753.8 M**	
INTERNAL RATE OF RETURN (IRR)	*N/A****		*9.9%*		*N/A****	

- **The HAP Targets will generate a significantly lower NPV than All Market Leasehold, but significantly higher than the "all rental" scenarios**
- This is because a higher allocation to the endowment generates "shorter-term" cash flows that are worth significantly more than the "longer term" rental cash flows.

*Positive NPVs for Leasehold is the NPV of all cash flows generated by the endowment (e.g including the 2% recapitalization). This is different from the expendable cash flow (spend allocation shown in graphs earlier)
*Negative Investments / NPVs for Leasehold in the "All" rental scenarios show the shortfall in expenses to cover the relocating of the Stadium.
*** The internal rate of return is defined as the rate of discount at which a project would have zero net present value. The All Market Leasehold and HAP Targets scenarios will always be NPV positive and will therefore not have an IRR

ii. SUMMARY OF OBSERVATIONS

- The decision to adopt the Housing Action Plan targets, foregoing proceeds to the endowment (when compared to an “all market leasehold” scenario), in order to provide more affordable housing on campus, comes at a cost
    - With current assumptions, the NPV for the HAP Targets is $469 million lower than the All Market Leasehold scenario if applied to SN

- The currently proposed development mix for SN differs significantly from the HAP targets (1/3 Market Leasehold, 1/3 Market/University Rental and 1/3 Faculty/Staff Rental) .

- The following section looks at the specific development scenarios for SN, including the current plan concept, and compares them to the HAP Targets.

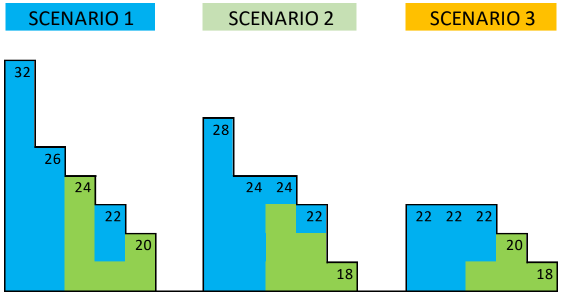
iii. SN SCENARIOS

(Baseline - $460/SQFT)

DEVELOPMENT SCENARIOS - RECAP

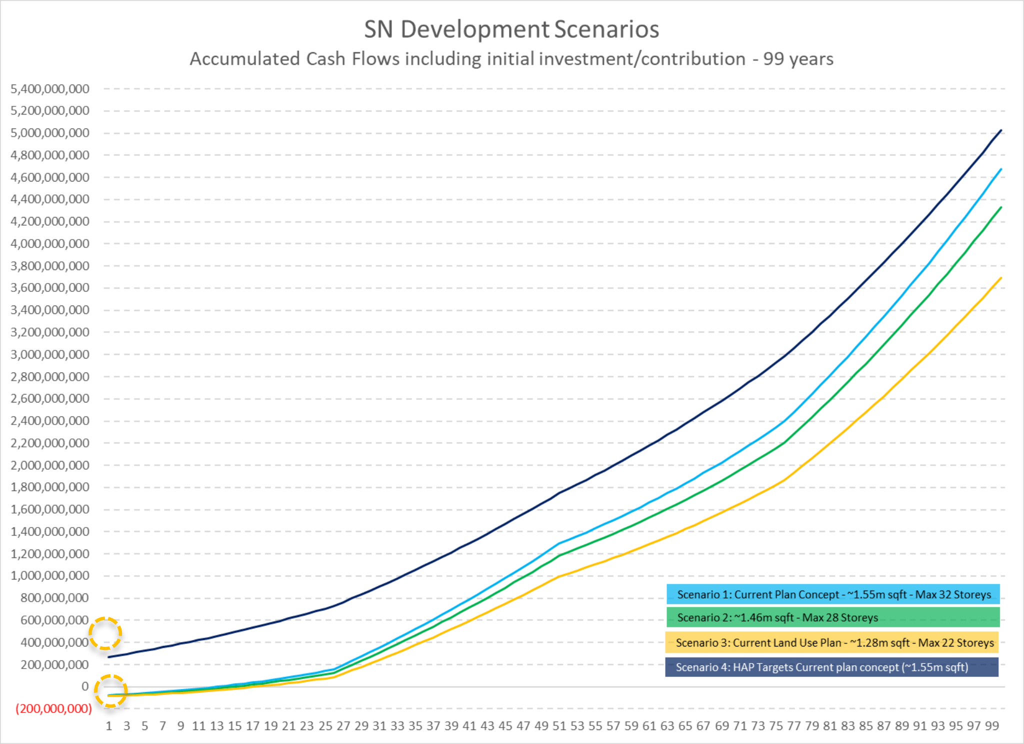
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Current Plan Concept		Current Land Use Plan	HAP Targets
Res. GBA (mSqft)	1.55	1.46	1.28	1.55
Max Tower height (Storeys)	32	28	22	
Market Leasehold	33.3%	33.3%	33.3%	70%
Market Rental	33.3%	33.3%	33.3%	10%
F/S Rental	33.3%	33.3%	33.3%	20%
Average leasehold price	**460**	**448**	**446**	**460**

Tower heights



- All scenarios assume 2/3 rental and 1/3 leasehold
- Small differences in density and tower heights
- Small differences in expected leasehold prices (“floor premiums”)
- Expected average leasehold price ($460/sq.ft.) consistent with recent leasehold transactions

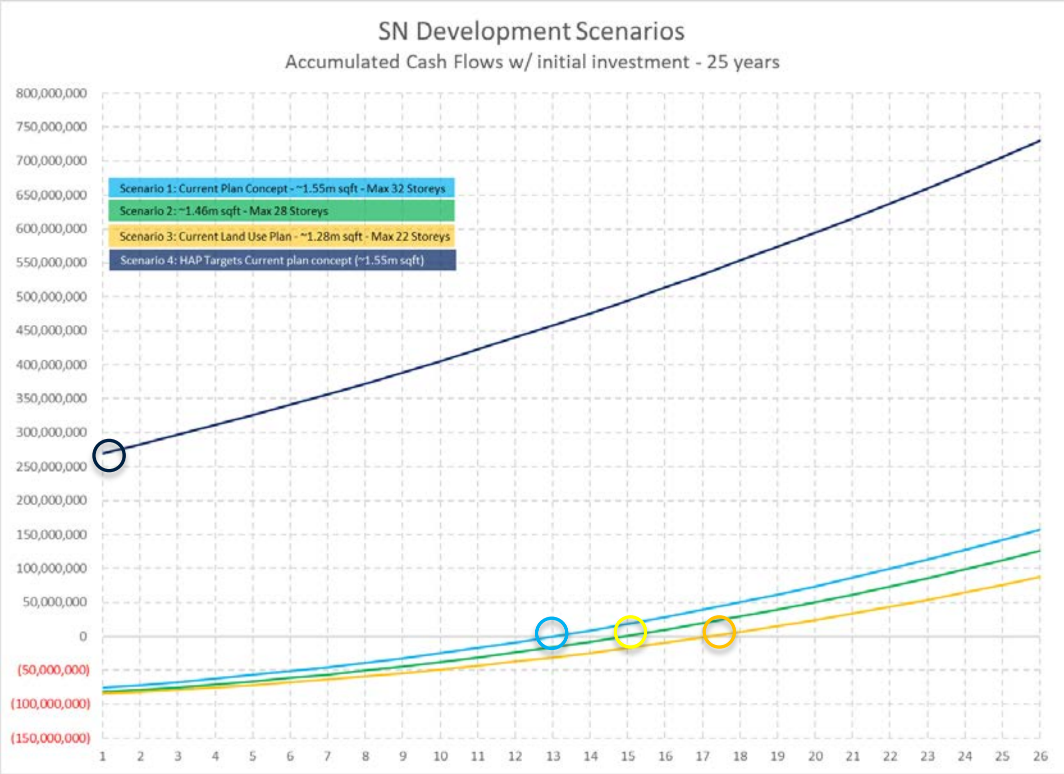
ACCUMULATED CASH FLOW W/ INITIAL INVESTMENT - 99 YEARS



- The HAP targets generate the highest accumulated cash flows compared to any of the proposed SN scenarios*
- Remember that, compared to the earlier hypothetical scenarios, the HAP targets generated the *lowest* accumulated cash flows
- Differences in cash flow generation for the SN scenarios are largely due to the differences in density
- **All proposed SN scenarios**, **will begin with a net negative investment**, compared to the initial net positive contribution from the HAP targets scenario

Initial investment is the sum of the net contribution to the endowment (including cost of relocating Stadium) less the equity required for rental development.
***The line for Market Leasehold shows the accumulated expendable cash flow (spend allocation – 4%) over time*

ACCUMULATED CASH FLOWS-SIMPLIFIED PAYBACK PERIOD



- The HAP Targets scenario will have a payback period of **zero**, because it begins with a net positive contribution to the endowment.
- The current plan concept will have the shortest payback period (~13 years), whereas the other development scenarios range from 15-17 years
- The higher density scenarios have slightly shorter payback periods than the lower density scenarios

*The line for Market Leasehold shows the accumulated expendable cash flow (spend allocation – 4%) over time
** Initial investment is the sum of the net contribution to the endowment (including cost of relocating Stadium) less the equity required for rental development.

NET PRESENT VALUE (NPV) (@ $460/SQ.FT.)

WACC = 6%

		Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Leasehold	$ 21.2M	$ 9.6 M	($ 4.1 M)	$ 313.5 M
	Market Rental	($45.3 M)	($42.9 M)	($37.5 M)	($13.6 M)
	F/S Rental	($51.5 M)	($48.8 M)	($42.6M)	($30.9M)
NET INVESTMENT		$75.6M	$82.1M	$84.1M	$269.1M
NPV - TYPE OF DEVELOPMENT*	Leasehold	**$ 46.7 M**	**$ 21.2 M**	**($ 4.1 M)**	**$ 691.5 M**
	Market Rental	**$ 110.5 M**	**$ 104.8 M**	**$ 91.4 M**	**$ 33.1 M**
	F/S Rental	**$ 48.6 M**	**$ 46.1 M**	**$ 40.2 M**	**$ 29.2 M**
TOTAL NPV*		**$205.8 M**	**$172.1 M**	**$127.6 M**	**$753.8 M**
INTERNAL RATE OF RETURN (IRR)**		*11.9%*	*10.7%*	*9.6%*	*N/A*

- **The SN scenarios generate significantly lower NPVs than the HAP Targets**
- This is due to the high proportion of rental development in each scenario, combined with moderate (or negative) net proceeds to the endowment

*Positive NPVs for Leasehold is the NPV of all cash flows generated by the endowment (e.g including the 2% recapitalization). This is different from the expendable cash flow (spend allocation shown in graphs earlier). Negative NPV for leasehold/NPV represent the cash shortfall (e.g not able to fund all the development) in a scenario

** The internal rate of return is defined as the rate of discount at which a project would have zero net present value. The HAP Targets scenarios will always be NPV positive and will therefore not have an IRR.

iii. SUMMARY OF OBSERVATIONS

- The decision to pursue 2/3 rental in Stadium, to provide significantly more affordable housing to faculty, staff and students than the current Housing Action Plan targets, comes at a price
    - With current assumptions, the NPV for the Current Plan Concept is $548 million lower than the current HAP targets, and over $1 billion lower if compared to a hypothetical "All Market Leasehold" scenario
- This is important to highlight when evaluating the relatively small differences in Net Present Value between the SN development scenarios.
    - E.g. the "most expensive" decision has already been endorsed by the BoG.
- However at $460/sqft, Scenarios 1 and 2 **do return positive NPVs** with relatively healthy internal rates of return.
    - The higher density scenarios generate higher NPVs than the lower density scenarios
    - The main differences in NPVs stem from the size of (if any) the net contribution to the endowment
    - **Scenario 3 (current LUP)** is the only scenario that **will not generate sufficient leasehold revenue** to make SN self-funded (cash shortfall of $4m)
- The last section explores the sensitivities and robustness of the scenarios should the average leasehold price fall below current expectations (@375/sq.ft.).

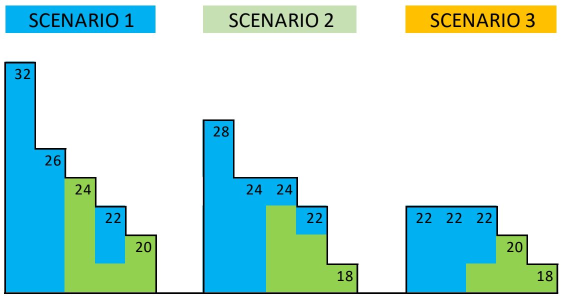
iv. SN SCENARIOS

(Market Correction - $375/SQFT)

DEVELOPMENT SCENARIOS (@$375/SQ.FT.)

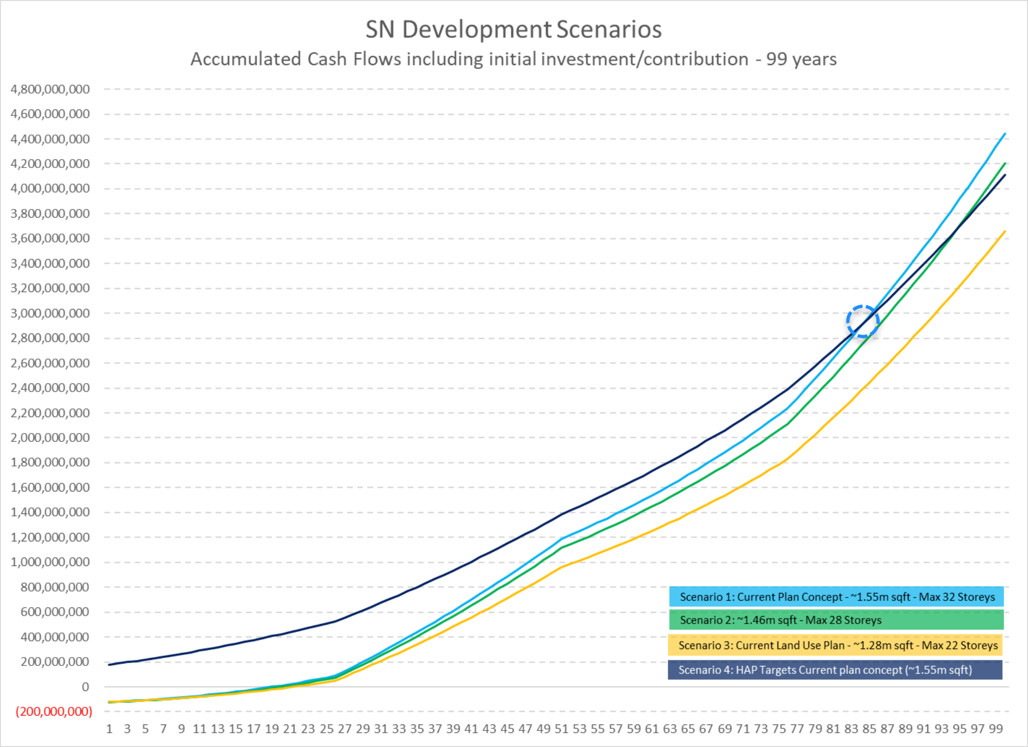
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Current Plan Concept		Current Land Use Plan	HAP Targets
Res. GBA (mSqft)	1.55	1.46	1.28	1.55
Max Tower height (Storeys)	32	28	22	
Market Leasehold	33.3%	33.3%	33.3%	70%
Market Rental	33.3%	33.3%	33.3%	10%
F/S Rental	33.3%	33.3%	33.3%	20%
Average leasehold price	**375**	**363**	**361**	**375**

Tower heights



- All scenarios assume 2/3 rental and 1/3 leasehold
- Small differences in density and tower heights
- Small differences in expected leasehold prices (“floor premiums”)
- Expected average leasehold price ($375/sq.ft.) consistent with average leasehold prices obtained in period 2011-2015

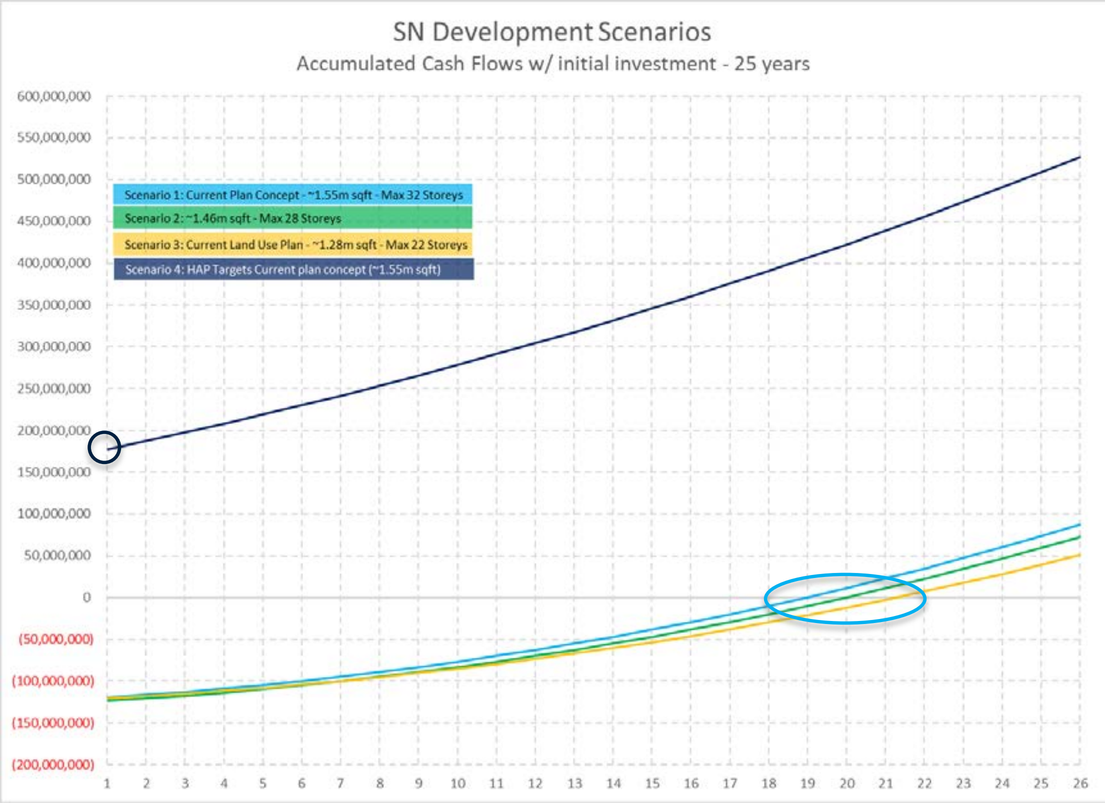
ACCUMULATED CASH FLOW W/ INITIAL INVESTMENT - 99 YEARS



- Previously shown, at $460/sq. ft., the HAP targets would generate significantly higher accumulated cash flows compared to the current plan concept
- With lower leasehold prices ($375/sq.ft.) the current plan concept would generate the highest accumulated cash flows, given the higher exposure to rental development.
- However, it will still take a long time (~**84 years)** before the accumulated cash flows from the current plan concept will pass the HAP Targets

Initial investment is the sum of the net contribution to the endowment (including cost of relocating Stadium) less the equity required for rental development.
***The line for Market Leasehold shows the accumulated expendable cash flow (spend allocation – 4%) over time*

ACCUMULATED CASH FLOWS-SIMPLIFIED PAYBACK PERIOD



- The HAP Targets scenario will still have a payback period of **zero**, because it begins with a net positive contribution to the endowment (although lower than before).
- The payback period for the current plan concept and the other development scenarios range will extend to **19-22 years**
- With the lower leasehold price assumption, **all development scenarios** (including the current plan concept) **will have a cash shortfall** (no contribution to the endowment). The payback periods will therefore converge.

**The line for Market Leasehold shows the accumulated expendable cash flow (spend allocation – 4%) over time*
*** Initial investment is the sum of the net contribution to the endowment (including cost of relocating Stadium) less the equity required for rental development.*

NET PRESENT VALUE (NPV) (@ $375/SQ.FT.)

WACC = 6%

		Scenario 1	Scenario 2	Scenario 3	Scenario 4
	Leasehold	($22.6 M)	($31.9 M)	($40.3 M)	$ 221.7M
	Market Rental	($45.3 M)	($42.9 M)	($37.5 M)	($13.6 M)
	F/S Rental	($51.5 M)	($48.8 M)	($42.6M)	($30.9M)
NET INVESTMENT		$119.3M	$123.6M	$120.4M	$177.2M
NPV - TYPE OF DEVELOPMENT*	Leasehold	**($ 22.6 M)**	**($ 31.9 M)**	**($ 40.3 M)**	**$ 488.9 M**
	Market Rental	**$ 110.5 M**	**$ 104.8 M**	**$ 91.4 M**	**$ 33.1 M**
	F/S Rental	**$ 48.6 M**	**$ 46.1 M**	**$ 40.2 M**	**$ 29.2 M**
TOTAL NPV*		**$136.5 M**	**$119.0 M**	**$91.4 M**	**$551.2 M**
INTERNAL RATE OF RETURN (IRR)**		*8.9%*	*8.5%*	*8.0%*	*N/A*

- All scenarios, including the HAP Targets, would be significantly impacted by lower leasehold prices
- Note that all SN scenarios will generate a "cash shortfall" (e.g. will require additional funding or higher proportion of leasehold to become "self-funded"
- The HAP targets are also sensitive to lower leasehold prices, but are still generating vastly higher NPVs than the proposed plan concept and the other SN scenarios

*Positive NPVs for Leasehold is the NPV of all cash flows generated by the endowment (e.g including the 2% recapitalization). This is different from the expendable cash flow (spend allocation shown in graphs earlier). Negative NPV for leasehold/NPV represent the cash shortfall (e.g not able to fund all the development) in a scenario

** The internal rate of return is defined as the rate of discount at which a project would have zero net present value. The HAP Targets scenarios will always be NPV positive and will therefore not have an IRR.

iv. SUMMARY OF OBSERVATIONS

- Current assumptions suggest that **~$200 million** of leasehold revenue **is required** to make SN a "self-funded" neighbourhood
    - At $375/sq.ft., none of the scenarios will generate the required leasehold revenue
    - At $460/sq.ft., all scenarios except scenario 3 (1.28 million sq. ft.) will generate the required leasehold revenue
- The development scenarios are therefore **sensitive to lower leasehold prices** and would require current levels of leasehold prices to retain the 2/3 rental commitment without outside funding (or a higher proportion of leasehold development)

- The **higher density** scenarios appear **slightly more robust** with regards to upholding the 2/3 rental development commitment without additional support/funding and would provide a little more "buffer" against possible adverse market conditions and/or other unforeseen factors

- The **HAP targets** are also sensitive to lower leasehold prices, but are still generating **vastly higher NPVs** than the proposed plan concept and the other SN scenarios

v. FINANCIAL ASSUMPTIONS

DEVELOPMENT SCENARIOS – ASSUMPTIONS - LEASEHOLD

Scenario 1	Scenario 2	Scenario 3	Scenario 4

Market Leasehold Revenue

- The model now includes “view premiums” by differentiating leasehold revenues per floor.
- It is assumed that the market value of a unit increases by $10/sq.ft. per floor (UBCPT), with the associated land value (leasehold revenue) increasing by $5/sq.ft. per floor.
- The assumption of $460/sq.ft. is retained as the average for Scenario 1, and is used as the baseline for calculating leasehold revenues for the other scenarios.
- The model therefore assumes slightly different gross leasehold revenues per sq.ft. for each scenario depending on the composition of leasehold development and differences in tower heights.
- For Mixed Tenure buildings it is assumed that partial Market Leasehold development is allocated to the top floors of a building whereas partial Market Rental is allocated to the bottom floors of a building.

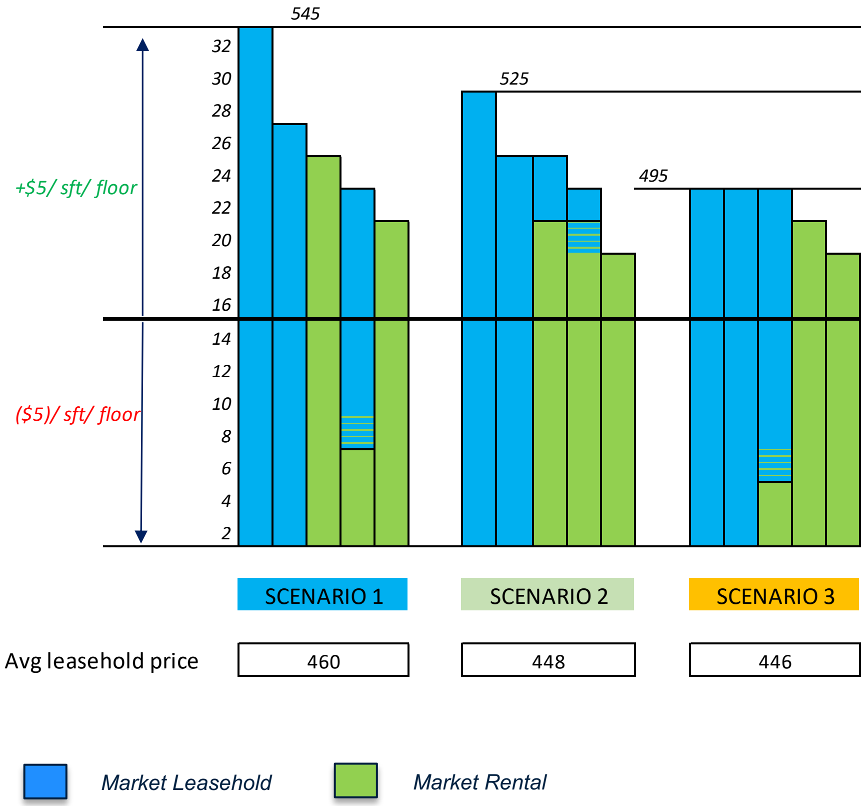
Development Charges (IIC/CAC/COS)

- It is assumed that all development charges are included in the gross leasehold revenue per sq.ft. as shown above.
- Current IIC/CAC charges are used ($39.39/$3.25 per sq.ft.).
- For Cost of Sales a slightly higher charge than current is assumed ($30/sq.ft. up from $26.5/sq.ft.)
- It is assumed that $40 million in Cost of Sales is required to service the neighbourhood (across all scenarios)

Net Leasehold Revenue

- The Net Leasehold Revenue (after development charges) are assumed used to:
    1. Fund the Relocation of the Stadium ($50 million)
    2. Provide equity for Market Rental and Faculty/Staff Rental and
    3. Remaining net leasehold revenue is assumed transferred to the TREK endowment.

"VIEW PREMIUMS" FOR HIGHER FLOORS



- $460/sq.ft. is assumed as the average for Scenario 1, and is used as the baseline for the other scenarios
  - $5 per square foot is added/reduced to floors above/below the "average" floor in Scenario 1
  - The "average floor" is then carried throughout the scenarios
- The scenarios with the higher towers generate slight premiums to the scenarios with lower towers
- Market leasehold development and/or Market Rental development is moved to/from towers to fully adhere to the 1/3-1/3-1/3 assumption
  - It is assumed that market leasehold moved into a market rental tower would be on the top floors
  - It is assumed that market rental development moved into a leasehold tower would be on the bottom floors

DEVELOPMENT SCENARIOS – ASSUMPTIONS - RENTAL

Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4

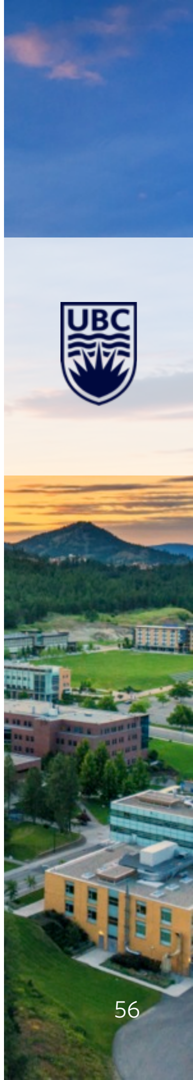
The following assumptions are used for Rental Development in all Scenarios:

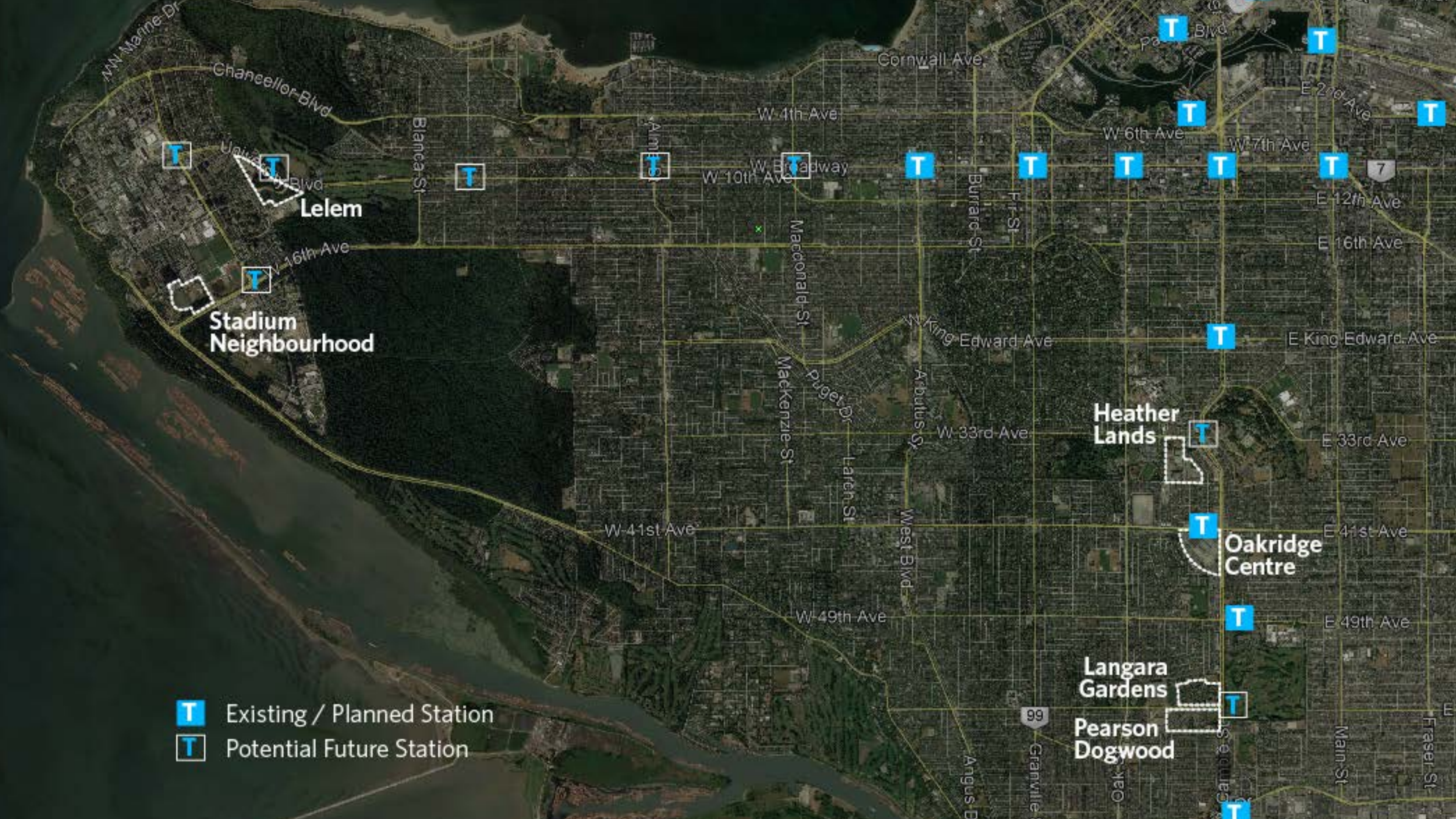
Assumption	Market Rental	Faculty/Staff Rental	Comment
Total Development Cost	**$440 /sqft**	**$400 /sq.ft.**	Includes IIC/COS of $36.7 per sq.ft. ($6.69/$30). Assumes wood construction for F/S rental and concrete (or mixed) construction for Market Rental
Equity Requirement	**20%**	**25%**	Given below market rental income for F/S Rental development, the debt service ratio covenant (typically 1.2) reduces borrowing capacity (and increases equity requirement) for F/S Rental development compared to Market Rental Development
Debt financing	**80%**	**75%**	25 years / 4.25%
Revenue per sqft	**$3.40**	**$2.55**	Current benchmark rate / 75% of Current Benchmark rate for F/S rental
Efficiency Factor	**88%**	**88%**	% of gross development than can be charged rent
Operating Expenses	**22%**	**22%**	Of Revenues
Investment Required in Year 50	**40%**	**40%**	It is assumed that 40% of inflation adjusted replacement value is invested in the rental development after 50 year to extend the useful life to 99 years and to match the duration of the land leases. This re-investment is assumed 100% debt financed.

vi. RECENT NEIGHBOURHOOD PLANS & REZONINGS

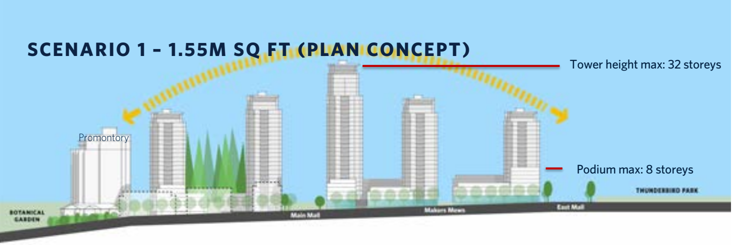
RECENT NEIGHBOURHOOD PLAN COMPARISONS

Neighbourhood	Year of Plan	Gross FSR	Max Height (# of storeys)	Housing Mix
Lelem	2018	1.3	18	• 4% below-market rental • 7% rental • 89% traditional market housing
Heather Lands	2018	2.5	24	• 20% affordable (50% 2-3 bedrooms) • 20% attainable home ownership (leasehold strata targeted to moderate-income) • 35% market units 2-3 bedrooms • 25% traditional market housing
Pearson Dogwood	2014	2.8	28 (under revision, up to 30 being considered)	• 20% affordable (50% 2-3 bedrooms) • 35% market units 2-3 bedrooms • 45% traditional market housing
Langara Gardens	2018	2.8	28	• 20% affordable (50% 2-3 bedrooms) • 35% market units 2-3 bedrooms • 45% traditional market housing
Oakridge Centre	2018	3.71	45	• 10% non-market (mix of senior, family) • 13% rental • 3% affordable • 47% sustainable transit oriented market • 26% traditional market housing



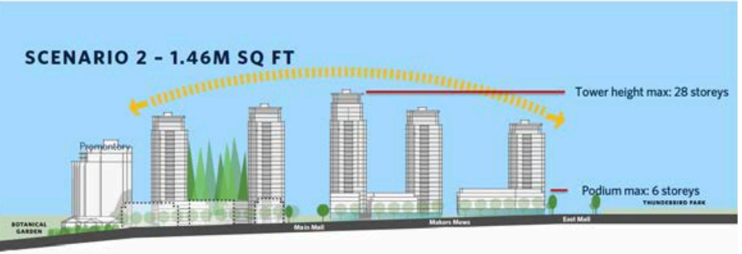

Lelem
Stadium Neighbourhood
Heather Lands
Oakridge Centre
Langara Gardens
Pearson Dogwood
NW Marine Dr
Chancellor Blvd
W 4th Ave
Cornwall Ave
W 6th Ave
W 7th Ave
E 2nd Ave
W Broadway
W 10th Ave
E 12th Ave
W 16th Ave
E 16th Ave
W King Edward Ave
E King Edward Ave
W 33rd Ave
E 33rd Ave
W 41st Ave
E 41st Ave
W 49th Ave
E 49th Ave
Blanca St
Macdonald St
Burrard St
Fir St
MacKenzie St
Puget Dr
Arbutus St
Larch St
West Blvd
Angus Dr
Granville St
Main St
Fraser St
7
99
Existing / Planned Station
Potential Future Station

vii. SCENARIO URBAN DESIGN ANALYSIS



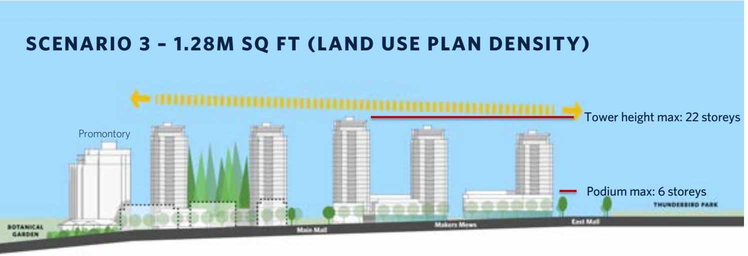
Tower heights	20 - 32 storeys
Podium height	4-8 storeys (majority at 6 storeys)

- Sculpted skyline creates variability of tower heights, minimizing cumulative visual impact
- Signature tower at terminus of Main Mall stepping down to lower heights = legibility / identity
- Lower podiums along south face of parcels
- Majority of podiums 6 storeys



Tower heights	18 - 28 storeys
Podium height	4 - 6 storeys

- Sculpted skyline creates variability of tower heights, minimizing cumulative visual impact
- Signature tower at terminus of Main Mall stepping down to lower heights = legibility / identity
- Majority of podiums 6 storeys (some 4)
- Highest podium facing East Mall, limited shade impact



Tower heights	18 - 28 storeys
Podium height	4 – 6 storeys (majority 4 -5)

- Consistent with Land Use Plan height limits
- Majority of podiums 4 – 5 storeys
- Static skyline, little variability or hierarchy, more cumulative visual impact of towers
- Little / no flexibility to distribute density among parcels