



SUBJECT	Beaty Biodiversity Centre Addition (UBC Vancouver) – Board 3
SUBMITTED TO	Property Committee
MEETING DATE	March 21, 2023
SESSION CLASSIFICATION	Recommended session criteria from Board Meetings Policy: OPEN
REQUEST	<p>APPROVAL REQUESTED</p> <p>IT IS HEREBY RESOLVED that the Property Committee recommends that the Board of Governors grant conditional* BOARD 3 approval for the Beaty Biodiversity Centre Addition as follows:</p> <ul style="list-style-type: none"><i>i.</i> approval of final capital budget of \$45,000,000 and operating budget as set out in the Appendices to the briefing;<i>ii.</i> approval of final funding sources and financing as set out in the briefing;<i>iii.</i> authorization to proceed to award construction contracts; and,<i>iv.</i> approval of final funding release of \$42,700,000. <p>* Conditional on construction tenders being received at or below budget based on 80% of tenders</p>
LEAD EXECUTIVE	Frank Laezza, Vice-President Finance & Operations
SUPPORTED BY	Gage Averill, Provost and Vice President Academic, UBC Vancouver Bhushan Gopaluni, Vice-Provost and Associate Vice-President Faculty Planning pro tem John Metras, Associate Vice-President Facilities Michael White, Associate Vice-President Campus + Community Planning Yale Loh, Treasurer Meigan Aronson, Dean, Faculty of Science Jennifer Sanguinetti, Managing Director, Infrastructure Development Aubrey Kelly, President & CEO, UBC Properties Trust

PRIOR SUBMISSIONS

The subject matter of this submission was most recently considered by the Property Committee on [September 19, 2022](#) (OPEN SESSION) – Board 2 Approval, Funding Release \$500,000; Action/Follow up: Authorization to proceed with select tree removal in advance of Board 3 and to proceed to working drawings and tender.

The following Executive Summary provides a status update from the date of the most recent submission.

EXECUTIVE SUMMARY

In accordance with the [Capital Projects Policy](#), this Board 3 approval request for the Beaty Biodiversity Centre Addition project is provided as part of the project management process for construction projects over \$5,000,000. The Board of Governors has delegated to the Property Committee the authority to make decisions on its behalf for construction projects between \$5 million and \$20 million. The aggregate estimated value of the Beaty Biodiversity Centre Addition project is \$45,000,000.

The Beaty Biodiversity Centre Addition is a six-story addition that will provide critical additional space to support the Beaty Biodiversity Museum (BBM) and Biodiversity Research Centre (BRC) functions. The addition will be seamlessly integrated with the existing centre and will facilitate improved collaboration between existing and new building occupants for enhanced research, programming and public outreach.

The Beaty Biodiversity Centre Addition design process has progressed and the design has been refined to support the functional program. The design and operational teams have worked collaboratively through a highly volatile period of construction cost escalation to identify areas of priority and opportunities for adjustments that will not impact the project intent. Although there have been some adjustments to specific areas, the overall area of 4,430 gross square metres (47,961 gross square feet) is similar to that reported at Board 2.

The project team, the Biodiversity Research Centre (BRC) and Campus + Community Planning (C+CP) took an innovative approach to tree loss by stepping back from the site and employing a broader set of strategies to improve the ecology, social connection, and Musqueam presence in the area. The Central Connector Concept emerged as a platform for a number of related projects linking Wesbrook Mall to Lower Mall that, when taken together, help offset tree loss and augment biodiversity. The Beaty site, acting as the first project, introduces a landscape that reflects Musqueam values and teachings in the selection of plants and the provision of social spaces in the courtyard. The adjacent Fairview Grove research project initiated by BRC will replant the forest floor to improve habitat and biodiversity, inspiring a transition from lawn to a more indigenous landscape on Main Mall. The Central Connector work will be coordinated with the implementation of the project’s proposed landscape and will be led by C+CP.

Capital Budget, Funding & Financing

The team has been diligent in designing a lean building, and has engaged in a continuous value engineering process in order to remain on budget in an ever-escalating construction market. Despite these efforts, with over 80% of the project tendered, the project budget has increased from \$40,000,000 to \$45,000,000. This increase is due to construction market escalation that has exceeded the escalation contingency carried in the Board 2 budget, low bid coverage during the tender period, and an increase in construction period financing resulting from more refined knowledge regarding the project cash flow and donor funding schedule, the increased budget, and a slightly extended construction schedule. The team has determined that any additional value engineering would compromise the project intent and integrity, and specific trade packages are being re-tendered in an effort to provide some relief to the budget. The \$5,000,000 increase will be funded by Faculty of Science Reserves, and an increase in the Academic Capital Fund financing contribution.

Revised funding sources are as follows:

Funding Source	\$ Board 2	\$ Board 3
Donor Funding	20,000,000	20,000,000
Academic Capital Fund	20,000,000	22,000,000
Faculty of Science Reserves	0	3,000,000
Total Funding	\$40,000,000	\$45,000,000

The Academic Capital Fund will allocate debt service payments related to an internal loan of \$22,000,000 payable over 30 years at an interest rate of 5.75%. The annual debt service payment will be approximately \$1,500,000.

Sustainability

The project is on track to achieve LEED Gold certification and to meet performance targets defined by C+CP. Compared to the LEED baseline, the project will achieve 42% cost savings and 84% GHGI savings. Energy conservation measures being pursued include reduction in lab air flow overnight combined with ventilation heat recovery, demand-controlled ventilation in offices and meeting spaces, improved heat recovery ventilation (HRV) performance, reduced fan pressure in systems, low-flow fixtures, improved window performance, and attention to air tightness. Refer to Appendix 4: Sustainability Metrics for further detail.

Schedule

The project schedule has been updated to reflect a slightly extended construction period:

MILESTONE	Target Date Board 2	Target Date Board 3
Executive 1	Jan 2020	Jan 2020
New Building Site Selection Committee	Nov 2020	Nov 2020
PPAC ¹	Dec 2020	Dec 2020
Executive 2+3	Feb 2021	Feb 2021
Board 1	April 2021	April 2021
Board 2	Sept 2022	Sept 2022
Board 3	March 2023	March 2023
Construction Start	April 2023	April 2023
Construction Completion	Jan 2025	March 2025
Occupancy	Feb 2025	April 2025
Board 4	March 2027	March 2027

1 Property & Planning Advisory Committee + Senate Academic Building Needs Committee

APPENDICES

1. Beaty Biodiversity Centre Addition Context Map
2. Functional Program
3. Preliminary Capital Budget and Operation Costs
4. Sustainability Metrics

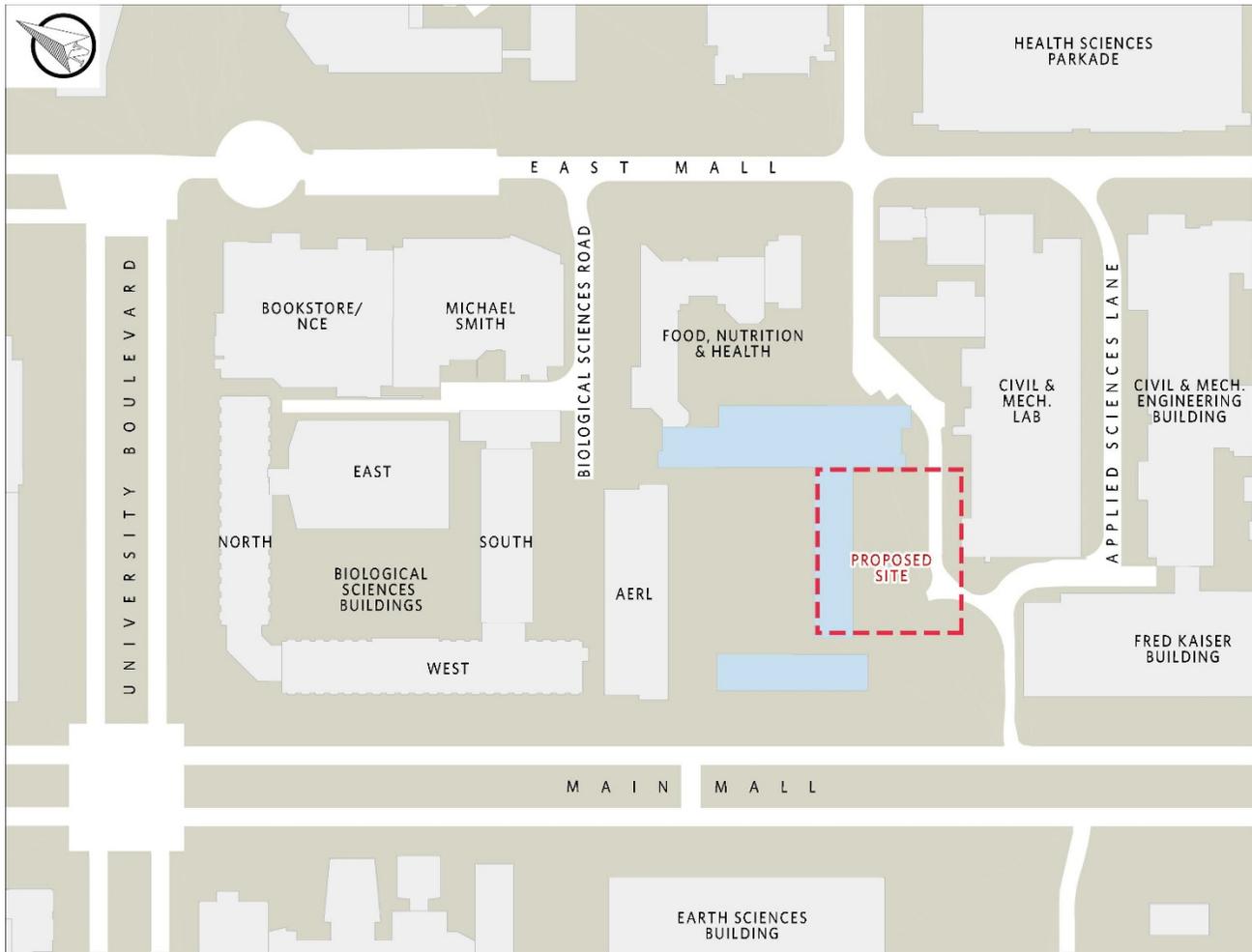
PRESENTATIONS

1. Beaty Biodiversity Centre Addition Board 3

SUPPLEMENTAL MATERIALS (optional reading for Governors)

1. Site Plan
2. Final Design Renderings

Appendix 1 – Context Location Map



Appendix 2 – Functional Program

The program has been refined but is very similar to that reported at Board 2:

Component	Net Area (Square Metres)	Net Area (Square Feet)
Biodiversity Research Centre (BRC)		
Laboratories and Lab support	697	
Theory rooms	219	
Offices	515	
Conservation Science Initiative open collaboration space	22	
Storage	49	
Conservation Science Initiative shared offices	45	
Subtotal BRC	1,547	16,650
Beaty Biodiversity Museum (BBM)		
Dry lab and workshops	81	
Offices	137	
Storage	86	
Collections expanded storage & fossil repository	152	
Collections digitization lab	52	
Subtotal BBM	506	5,441
Beaty Biodiversity Centre Shared Common Spaces		
Workshops and meeting rooms	216	
Multipurpose room	106	
Open collaboration area	64	
Bike storage	25	
Subtotal Shared Common Spaces	412	4,432
Total Net Area New Addition	2,464	26,522
Building Gross-Up	1,993	
Total Gross Area New Addition	4,457	47,978

Existing Building Areas to be Renovated	Net Area (Square Metres)	Net Area (Square Feet)
Shared workshops and meeting rooms	65	
Shared reception, mail room and waiting area	12	
Shared office	9	
BBM volunteer room	47	
BBM lab support room	8	
BRC storage	17	
CSI GIS room	20	
Total Net Area to be Renovated	178	1,916

Appendix 3 - Preliminary Capital Budget and Operation Costs

Capital Budget

UBC Properties Trust has provided the following project cost estimate for the Beaty Biodiversity Centre Addition. This is a class A estimate with an accuracy of +/-5%.

Project Capital Cost Breakdown		Costs \$
Construction Costs		
Construction		32,890,000
Service Requests to UBC Facilities		150,000
Contingency		1,970,000
	Subtotal Construction	35,010,000
Cash Allowances		
FF+E		1,100,000
UBC IT		450,000
Secure Access/Signage/Moving		235,000
Audio Visual		400,000
	Subtotal Cash Allowances	2,185,000
Soft Costs		
Consultants		3,750,000
Preconstruction/Permits		405,000
	Subtotal Soft Costs	4,155,000
	Building Subtotal	41,350,000
Project Management		1,430,000
Building Total		42,780,000
Construction Period Financing		1,100,000
Retained Risk		430,000
GST		690,000
TOTAL PROJECT		45,000,000

<i>Area of Addition (Gross Square Feet)¹</i>	47,978
<i>\$ Per Square Foot ¹</i>	\$938

¹ Gross area does not include 1,916 sq.ft. in existing building that will receive minor renovations, however the cost for this work is included in the overall construction budget

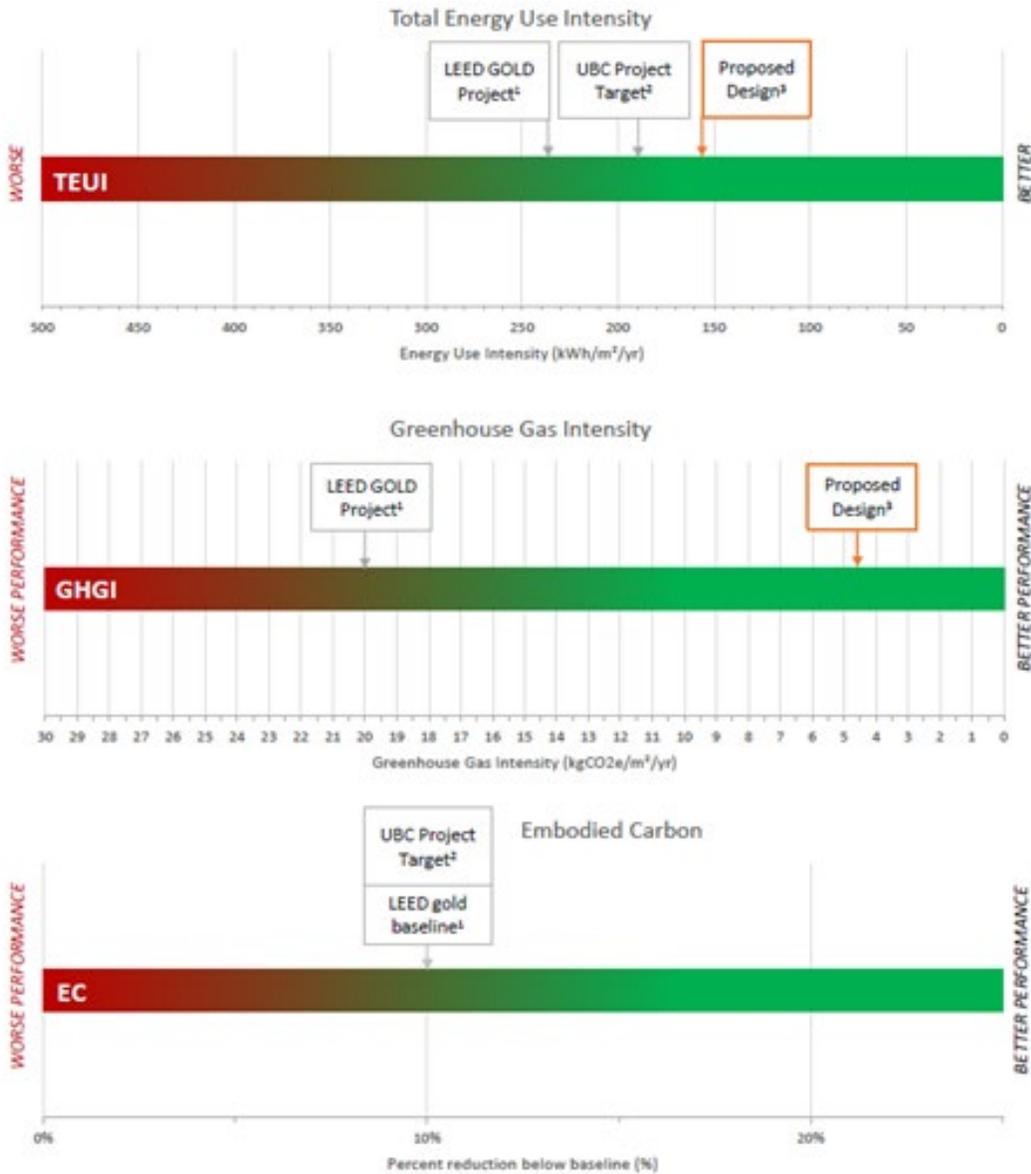
Operations and Maintenance Cost

Annual operating and maintenance (O&M) costs will be calculated at the standard rate (\$8.60/gsf/year for new buildings) and paid by the Faculty of Science. The current O&M rate is under review and may increase prior to occupancy. Lifecycle capital costs will be funded by the UBC operating budget and Provincial government through the Routine Capital Program. Based on the current area estimates, the approximate annual operating and lifecycle costs will be as follows:

Beaty Biodiversity Centre Addition	\$/gsf	Faculty of Science
Total Gross Area		47,978
OPERATIONS AND MAINTENANCE COSTS¹		
Annual Operations + Maintenance	\$6.37	\$305,620
Utilities	\$2.23	\$106,991
Total O+M Cost	\$8.60	\$412,611
LIFECYCLE CAPITAL COSTS		
Cyclical Maintenance	\$3.51	\$168,403
Modernization / Upgrade	\$0.93	\$44,620
Total Capital Renewal Cost	\$4.44	\$213,022

1 Final costs will be based on actual areas built.

Appendix 4 –Sustainability Metrics



¹Based on LEED gold project
²Design Brief target based on UBC energy policy
³Same inputs as baseline

TEUI is Total Energy Use Intensity and is a measure of the total amount of energy a building uses over the course of a year, per unit of building area. The metric considers all energy used in a building, including plug loads (e.g. lighting, appliances) and process loads (e.g. elevators, mechanical systems, fans). TEUI is measured and expressed in kWh/m²/year. Sample building design strategies for achieving TEUI targets: consider occupant and unit density; optimize fenestration; increase airtightness; recover heat during ventilation; and separate heating and cooling from ventilation.

GHGI is Greenhouse Gas Intensity and is a measure of the emissions intensity of a building’s emissions, measured and expressed in tonnes or kilograms of carbon dioxide equivalent per unit area over the course of a year (kg CO₂/m²/year).

EC is Embodied Carbon and is a measure of the carbon dioxide (CO₂) emissions associated with materials and construction processes throughout the whole lifecycle of a building.



Beatty Biodiversity Centre Addition Board 3 Approval Request

March 21, 2023

Jennifer Sanguinetti, Managing Director, Inf Dev



Introduction and summary



Proposed Beaty Biodiversity Centre Addition is:

- A 6-storey addition to support growth
- An opportunity to seamlessly integrate existing and new areas for Biodiversity Research Centre's world-recognized research and to provide enhanced collaboration with the Beaty Biodiversity Museum

Additional details



- Addition will add 4,430 m² (47,690 ft²) to the existing Beaty Biodiversity Centre plus renos
- Includes dry labs, support facilities for world-leading research, and office space for new faculty
- Space for Museum includes fossil repository

Additional details



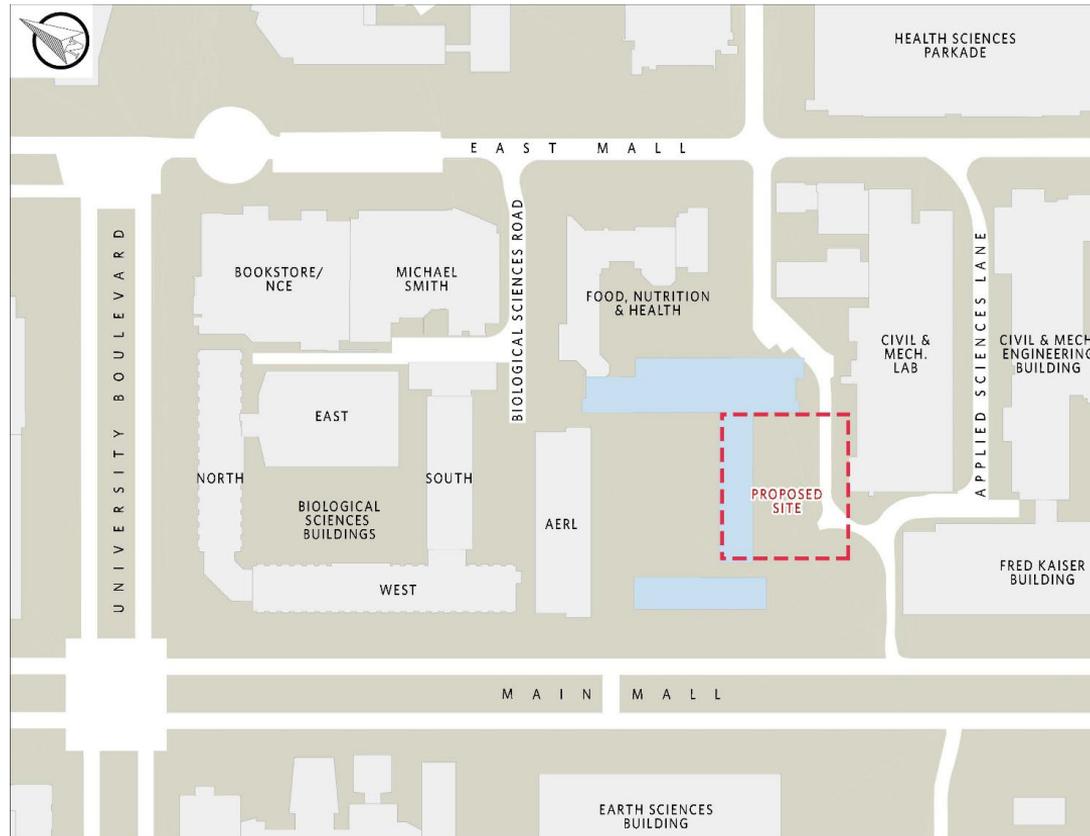
- Capital cost is \$45.0 million - \$5 million inc. from B2
- Increase due to market escalation, low bid coverage, and increase in construction period financing (refined project cash flow & donor funding schedule, increased budget & slightly extended schedule)
- Funding from Academic Capital Fund, Faculty of Science, and confirmed donors

Additional details



- Completed removal of trees in advance of nesting season
- Design team, BRC and C+CP took innovative approach to tree loss – stepped back from the site & employed broader set of strategies to improve ecology, social connection & Musqueam presence in the area
- Central Connector links Wesbrook to Lower Mall

Additional details – Site Map



Additional details – Final Design



Exterior view from Main Mall through Fairview Grove



Exterior view from east showing connection to existing building



Interior view showing typical lab space

Discussion and decision points

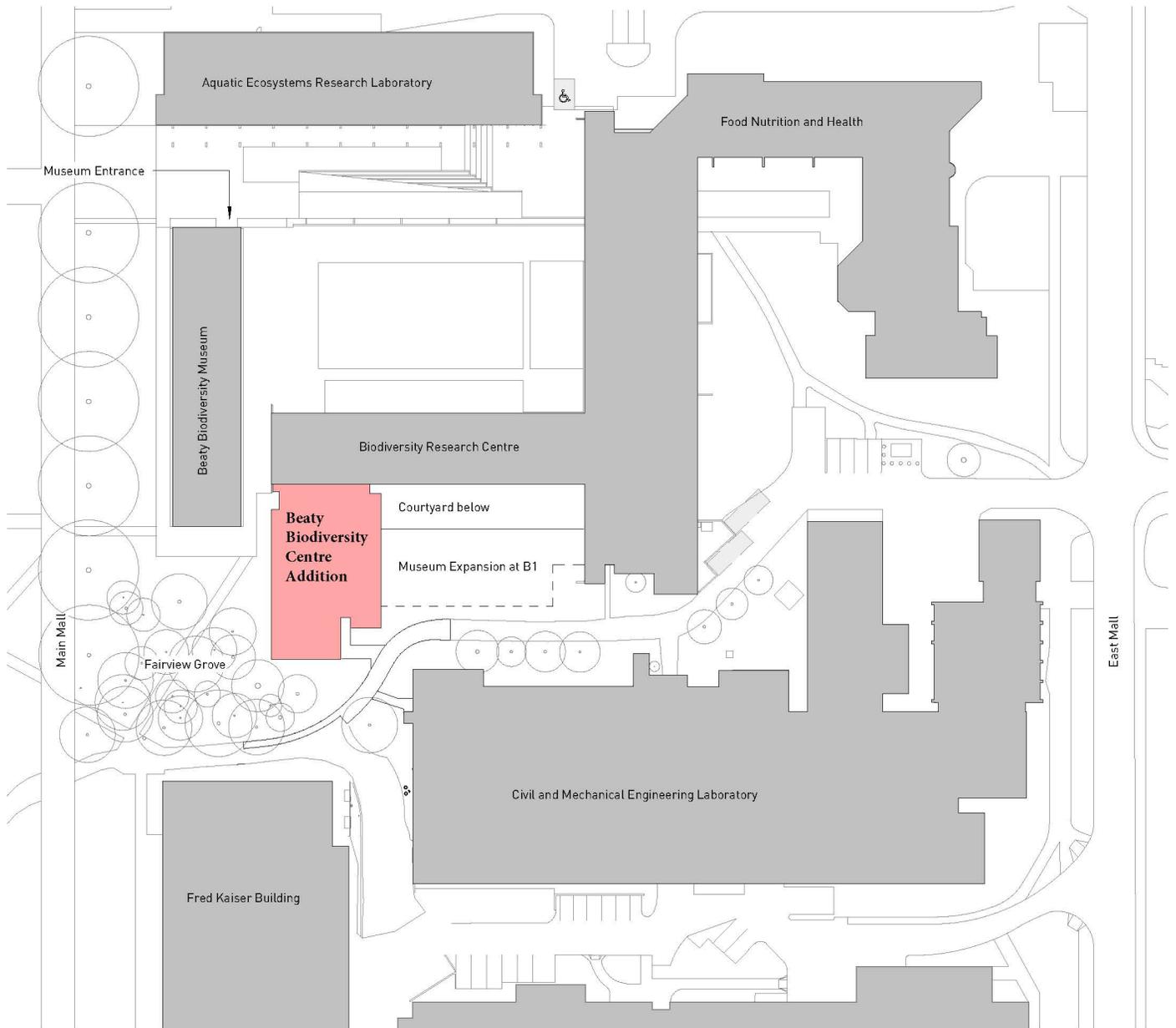


Conditional* Board 3 approval of the BBC Addition project:

1. approval of final capital budget of \$45,000,000 and operating budget as set out in the Appendices to the briefing;
2. approval of final funding sources and financing as set out in the briefing;
3. authorization to proceed to award construction contracts; and
4. approval of final funding release of \$42,700,000.

* Conditional on construction tenders being received at or below budget based on 80% of tenders

Supplemental Materials 1 – Site Plan



Supplemental Materials 2 – Final Design Renderings



Exterior view from Main Mall through Fairview Grove



Exterior view from east showing connection to existing building



Exterior view from east showing courtyard/light well between existing building and Beaty Biodiversity Museum B1 basement level expansion



Interior view of typical lab space