BCIT™

BCITRENEW

Five-Year Capital Plan 2019-20 to 2023-24

AUGUST 2018


BCIT

Prioritized List of BCIT Proposed Projects

#	CAMPUS	PROJECT DESCRIPTION	PROJECT CATEGORY	ANTICIPATED CONSTRUCTION START DATE	ANTICIPATED OCCUPANCY DATE	TOTAL PROJECT BUDGET	TOTAL CASHFLOW FORECAST (FISCAL YEARS IN MILLIONS)					
							2019/20	2020/21	2021/22	2022/23	2023/24	Ongoing years
1	Burnaby	Trades & Technology Complex – Phase 1	1	July 2020	June 2024	$152.0 M	$13.5 M	$37.5 M	$31.0 M	$35.4 M	$25.0 M	$10.0 M
2	Burnaby	Centre for Ecological Restoration & Climate Adaptation	1	August 2020	December 2021	$35.0M	$6.7 M	$15.3 M	$13.0 M	$0	$0	$0
3	Burnaby	South Campus Infrastructure Renewal – Phase 2	2	July 2020	December 2021	$25.0 M	$4.8 M	$10.9 M	$9.3 M	$0	$0	$0
4	Burnaby	Student Hub	1	July 2022	December 2023	$77.0 M	$0	$0	$15.8 M	$32.4 M	$28.8 M	$0
5	Burnaby	Learning Innovation Centre	1	August 2022	April 2024	$90.0 M	$0	$0	$18.4 M	$33.3 M	$38.3 M	$0
6	Burnaby	Centre for Clean Energy Innovation & Distribution	1	July 2023	December 2024	$65.0 M	$0	$0	$0	$13.3 M	$27.5 M	$24.2 M
7	Burnaby	SW01 Renewal: Energy Engineering & Health Sciences	2	July 2023	December 2024	$80.0 M	$0	$0	$0	$16.3 M	$33.9 M	$29.8 M
8	Burnaby	Centre for Automotive Innovation	1	July 2023	December 2024	$70.0 M	$0	$0	$0	$14.0 M	$29.7 M	$26.3 M
9	Burnaby	Student Housing	3	July 2020	July 2022	$103.0 M	$20.9 M	$30.3 M	$34.9 M	$16.9 M	$0	$0
						$697.0 M	**$45.9M**	**$94.0 M**	**$122.4 M**	**$161.5 M**	**$183.2 M**	**$90.3 M**

NOTE: ALL COSTS INCLUDE TAXES.

Project 1: Trades & Technology Complex

Category 1: New Priority Projects				
Institution BCIT	**Campus / City** Burnaby	**Project Title** Trades & Technology Complex	**Project Category** 1	**Project Priority** 1 of 9

1. CURRENT SITUATION

BCIT is the largest provider of trades and technology education in BC. However, the Institute is challenged in its ability to maintain the quality of education required to serve the province's trades and technology sector:

- Currently, BCIT is experiencing long waitlists for in-demand trade programs. There is a strong demand for trades training to address industry-driven labour demand;
- BCIT faces challenges with apprenticeship intake capacities. Each year, the number of intakes are filled prior to fulfilling the demand by prospective students, causing them to defer enrolment to another year;
- Most Trades & Technology buildings are more than 50 years old, with several over 60 years old – all have high Facility Condition Indexes (FCIs) indicating poor conditions and ranging from 0.31 to 0.92. BCIT has received only nominal new investments in its trades buildings over the last 20 years;
- Many Trades & Technology buildings have high levels of deferred maintenance costs, ranging from $1.4 million to $20 million.
- Many of the buildings and associated yard spaces are too small, or functionally inadequate relative to the requirements of modern trades and technology education;
- The buildings have old structures and systems that do not reflect modern construction and energy efficiency standards. Replacement and renovation of these buildings is needed to reduce greenhouse gas emissions, and to meet current seismic standards;
- Collectively, the condition of the facilities does not meet the expectations of students and industry;
- The layout of the Trades & Technology buildings does not facilitate inter-disciplinary student interaction and understanding, which is essential for modern trades work; and
- In a number of the Trades programs, teaching space is inadequate for coping with current demand, and lacks flexibility for the future.

TRADES & TECHNOLOGY COMPLEX RENEWAL SUMMARY						
CURRENT OR PROPOSED BUILDING	USE	SIZE	YEAR BUILT	FACILITY CONDITION INDEX	DEFERRED MAINTENANCE	BUILDING OUTCOME
Replacement of Facilities & Corporate Services	Multipurpose Use	3,680 m^2	NA	NA	NA	New Build
NE07 Facilities Management Shops	Maintenance Shops	449 m^2	1965	0.67	$1,367,278	Demolished
NE09 Facilities Management Administration	Multipurpose Use	2,614 m^2	1965	0.71	$4,903,457	Demolished
NE06 Pipe Fitting Structure	Classroom/ Training	1,570 m^2	NA	NA	NA	New Build
Trades & Technology Centre – Phase 1	Classroom/ Training	7,440 m^2	NA	NA	NA	New Build
NE12 Steel Trades	Classroom/ Training	2,900 m^2	1972	0.58	$4,275,188	Renovated

2. PROJECT DESCRIPTION & SIZE

The BCIT Trades & Technology Complex comprises a series of phased projects that will replace and modernize existing functionally inadequate buildings, and enhance and expand the Institute's Trades and Technology teaching space.

Replacement of the Facilities & Corporate Services Complex

This project will include 1) demolition of NE07 and NE09, which currently house Corporate Services/Purchasing, the Print Shop, and Facilities & Campus Development offices, and 2) the concurrent construction of a replacement facility. NE07 and NE09 are both physically and functionally obsolete buildings, which need to be replaced. Demolition of these buildings will open up a prominent site on the campus for the new Trades & Technology Centre. The new building will provide 3,680 m^2 of space.

The New Trades & Technology Centre – Phase 1

The Trades & Technology Centre will be the first phase of the Trades & Technology Complex. The Centre will strengthen trades training, and contribute to a new Trades and Technology identity on the campus. Features of the new Trades & Technology Centre include:

- A prominent building located in the northeast portion of the Burnaby Campus, that is close to transit access, and will form a new campus gateway;
- 21st century teaching and learning spaces;
- An innovative four-level building to make best use of land and the economies of shared building services and systems;
- A Trades Discovery Centre;
- A new Student Learning Commons for facilitating interaction and shared teaching and learning spaces for all trades students;

- A makerspace for inter-disciplinary cooperation;
- Consolidation of existing Construction and Building Science-related programs from functionally inadequate spaces;
- Modeling of sustainable building technologies;
- Renewal of aging storm drainage by daylighting Guichon Creek; and
- Design that allows for future expansion with a second phase.

The new Centre will be constructed in two phases. Phase 1 will include the construction of a four-storey building at the corner of Canada Way and Carey Avenue, replacing buildings NE09 and NE07, which are set to be demolished.

The first phase of the Centre will contain the following elements:

- **Level 1.** Workshops, dry and wet laboratories, Trades Discovery Centre, Maker Space, Learning Commons
  - 2,271 m^2
- **Level 2.** Lecture Theatre, classrooms, student project rooms, and computer and simulation labs
  - 1,860 m^2
- **Level 3.** Classrooms, laboratories, and offices ▶ 1,624 m^2
- **Level 4.** Classrooms, offices, faculty resource/lounge, and board room ▶ 1,685 m^2
- Replacement parking for BCIT use.
- Total area, excluding parking ▶ 7,440 m^2

Programs to be accommodated in Phase 1 are:

- Trades Discovery Centre
- Civil Engineering
- Building Science Centre of Excellence
- High Performance Building Lab
- Architectural Ecology
- Piping
- Welding

The new Trades & Technology Centre will provide learning space for approximately 460 FTEs.

Balance of the Trades & Technology Complex

The remaining components of the Trades & Technology Complex include a combination of new construction, renovation of covered workshop areas, and the renewal of an existing facility.

The **NE06 Pipe Fitting Structure** work will consist of renovations to the yard adjacent to NE06. The project will involve demolition of the existing structure, and construction of three wood-framed modular structures, a storage structure, racking, a pipe structure, and the overall canopy. The new Pipe Fitting Structure will provide learners with a covered outdoor teaching area with spaces for new "Mock-Up Training Modules" that simulate real work

conditions, and allow for a rational reconfiguration of the existing NE06 shop space to address safety issues and functional inadequacies. The new structure will allow the existing programming to be delivered more safely, and may also reduce conflicts that currently hinder program growth. The amount of FTE growth permitted by the Pipe Fitting Structure will be confirmed through further analysis at the Business Case stage.

NE12 Steel Trades Building Renewal will comprise extensive renovations to the existing NE12 building, involving layout upgrades that include renewed and modernized instructional workshops, equipment, classrooms, washrooms, and an administration area. Structural and seismic upgrades are part of the NE12 project, as well as building envelope upgrades that include rain-screened walls with metal cladding, and energy efficient components. The NE12 Building Renewal also includes construction of a two-level, free standing training structure for the steel trades, a new gouging/machine shop structure, relocation of the rebar teaching wall, and minor site works. The Steel Trades Tower will provide learners with hands-on simulated experiences in erecting structural steel girders, plates, and columns to form a complete structure. As the proposed renewal does not add additional teaching space, the Steel Trades Building will not support additional FTEs.

The completed Complex will also include CERCA (Centre for Ecological Restoration and Climate Adaptation), and a simulated shipyard, including a gantry crane (adjacent to the CERCA building). CERCA is identified in this capital plan as a separate project

3. PROJECT OBJECTIVES

- Increase student intake and reduce waitlists for in-demand trades programs.
- Support programs that align with emerging opportunities for skilled personnel presented by high-tech industries, such as construction, renewable energy, pipelines, mines, and transportation infrastructure.
- Improve the campus' profile, specifically the Trades program's image and recruitment opportunities.
- Provide industry partnership and journeyman upgrading opportunities.
- Reduce energy use and operating costs.
- Enable the renewal or replacement of physically obsolete buildings.
- Modernize to meet new technology requirements
- Create a flexible 21st century teaching environment for Trades and Technology programs, especially those associated with construction, technology, and other growth industries.
- Develop integrated and collaborative Trades and Technology programming space.
- Create a formal demonstration space and student commons area to showcase the Trades & Technology program, and assist in trades education recruitment.
- Provide safer workshops and laboratories that are more functional and use space more efficiently, including controlled access for delivery trucks.
- Support daylighting of Guichon Creek.
- Support the implementation of the Campus Plan.
- Demonstrate "Living Lab" principles by employing leading edge building science principles in design and construction.

4. OPTIONS CONSIDERED

- **Status Quo:** This option does not address seismic issues, functional inadequacy, program expansion opportunities, or consolidation requirements.
- **Non-Capital Site Option:** The off-site lease option is also deemed not viable. The programs are an integral part of the overall Trades training taught in BCIT. Students need to be in proximity to other shops, structures, and classrooms within the larger Trades training complex.
- **New & Renewed Facilities:** Preferred. This option best meets project objectives.

5. PROJECT OUTCOMES

Infrastructure Improvements

- This project will make a significant impact in modernizing BCIT's Trades & Technology Complex, creating modern educational environments, and allowing for program expansion.
- The modernization effort will reduce life-safety and occupational health risks, and improve space utilization.
- The phased implementation of BCIT's stormwater management plan will include the daylighting of Guichon Creek.

Cost Effectiveness

- The new and renovated facilities will enable Trades and Technology program integration, and consolidation by creating necessary swing space and program expansion opportunities for in-demand programs.
- The new Centre will provide flexible teaching spaces built to adapt to changes in labour market demand and subsequent program delivery options.
- A cost-effective project delivery schedule will create swing space in the new Centre that will expedite the renewal of NE12.
- The covered works yards will provide flexible and appropriate facilities for trades training at minimal cost.

Innovation

- The new Centre will showcase new technologies and innovations, such as simulation, into the design of labs and workshops, and provide flexible space programming.
- New and renovated facilities will enable student-centered learning that is adaptable over time to changes in teaching and labour market trends.
- The inclusion of observation galleries and a demonstration/atrium space allow BCIT to showcase Trades and Technology education to students and visitors alike.
- The Centre will provide new research labs to expand BCIT's leadership role in Applied Building Science and Architectural Ecology research.

Strategic Alignment

- Ministry of Advanced Education, Skills and Training Service Plan 2018:
  - Objective 2.1 to "ensure affordable access to post-secondary education and skills training" by providing learners with hands-on experience to explore a variety of careers;
  - Objective 2.2 to "respond and adapt to the diverse and changing needs of learners" by providing programs, services, tools, and resources for those who are struggling to gain a foothold in the job market through targeted trades programs for youth, Indigenous persons, persons with disabilities, and women to help them to gain needed skills and secure sustainable employment."; and
  - Objective 3.1 to "build on current strengths to enhance the quality and relevance of the post-secondary education and training system" by:
    - Supporting a wide range of co-op and work experience programs for undergraduates, including programs that support BC's technology-related sector;
    - Partnering with employers and economic sectors to deliver skills upgrading to employees; and
    - Establishing technology and innovation centres in key areas of the economy.
- Ministry of Jobs, Trade and Technology Service Plan 2018:
  - Objective 1.1 to "support current and emerging economic opportunities and investment attraction across BC's diverse economy" by supporting growth of the province's manufacturing sector, in particular the aerospace and marine sub-sectors;
  - Objective 1.2 to "position BC as a destination for developing and growing technology companies, and technology investment" by:
    - Encouraging the development, commercialization, and adoption of technologies and processes that align with government priorities; and
    - Supporting entrepreneurship and the development of entrepreneurial talent; and
  - Objective 1.3 to "ensure the benefits of a strong and growing economy are felt across the province" by fostering partnerships between Indigenous peoples and industry to increase Indigenous participation in the economy, strengthen communities, and increase economic diversification.

Quality Education & Innovation

- Provide 21st century flexible teaching spaces that are built to modern design and materials standards, and correct infrastructure deficiencies.
- Enable program integration, consolidation, and expansion opportunities for in-demand Trades and Technology programs.
- Create a safer teaching and learning environment, while shielding students, teachers, and equipment from some of the natural elements.
- Provide a provincial showcase for trades and technology education.
- Facilitates inter-disciplinary experiences and collaboration through learning commons and makerspaces.
- Enable significant energy and emission reductions.

Energy & Emission Reductions

- The new Centre will feature energy efficient HVAC, lighting, and building envelope that will increase energy efficiency and reduce GHG emissions.
- A 30% reduction in energy, and subsequent green house gas emissions, is targeted for the renewal of NE12.
- New and renovated buildings will be designed to meet or exceed LEED® Gold design standards.

6. PROJECT COST/FUNDING

BUILDING	CONSTRUCTION START DATE	TOTAL COST
Corporate Services Building Replacement	**Third Quarter 2020**	**$28 million**
NE06 Pipe Fitting	**Second Quarter 2020**	**$8 million**
Trades & Technology Centre – Phase 1	**Fourth Quarter 2021**	**$99 million**
NE 12 Steel Trades Renewal	**Fourth Quarter 2024**	**$17 million**
TOTAL CAPITAL COST		**$152 million**

It is expected that BCIT will contribute $28.5 million to the capital cost, with the Province contributing $123.5 million.

The facility operation costs associated with the renovated NE12 and new covered outdoor shop areas will be accommodated within the existing BCIT operations budgets. The new Trades & Technology Centre building will be in addition to baseline operations, and so will likely result in an additional $85/m^2 per annum – a net increase of approximately $630,000.

The Trades & Technology Complex will accommodate existing programs, so there will be no specific increase in program operating costs beyond the ongoing organic growth of the identified programs. The Complex also allows for expanded research facilities that are anticipated to be funded through external grants, and not result in additional operating costs.

Operating costs will require further detailed analysis at the Business Case stage.

7. KEY RISKS

The key risks if the project does not proceed are:

- Retention of existing buildings that do not meet seismic standards, are functionally inadequate, and have high FCIs;
- Progressively widening gap between existing and modern 21st century learning environments;
- BCIT constrained in meeting student demand for the Trades and Technology training places;
- Negative impacts on the recruitment of students, faculty, and staff; and
- The Province's ability to successfully implement its strategic priorities and initiatives will be limited.

8. PROJECT SCHEDULE

Replacement of Corporate Services Building

PROJECT PHASES	2019				2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. CARG Approval Process																								
2. Design Development																								
3. Working Drawings																								
4. Procurement																								
5. Construction																								
6. Occupancy																								

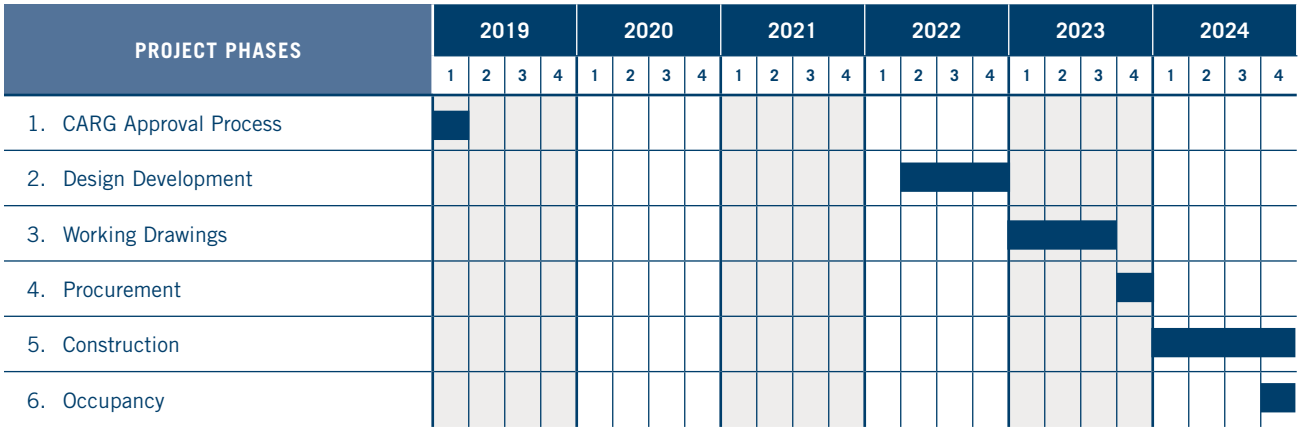
NEO6 Pipe Fitting

PROJECT PHASES	2019				2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. CARG Approval Process																								
2. Design Development																								
3. Working Drawings																								
4. Procurement																								
5. Construction																								
6. Occupancy																								

Trades & Technology Centre – Phase 1 (New Building)

PROJECT PHASES	2019				2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. CARG Approval Process																								
2. Design Development																								
3. Working Drawings																								
4. Procurement																								
5. Construction																								
6. Occupancy																								

NE12 Building Renewal



Project 2: Centre for Ecological Restoration and Climate Adaptation (CERCA)

Category 1: New Priority Projects				
Institution BCIT	**Campus / City** Burnaby	**Project Title** Centre for Ecological Restoration & Climate Adaptation (CERCA)	**Project Category** 1	**Project Priority** 2 of 9

1. CURRENT SITUATION

BCIT has become the leading institution in Canada for providing education in ecological restoration and climate adaptation, which is a new and rapidly developing industry. In 2009, BCIT initiated the first of only two Bachelor of Science (B.Sc.) programs in Canada for Ecological Restoration and, in 2015, developed Canada's only Master of Science (M.Sc.) program in Ecological Restoration as a joint program with Simon Fraser University. BCIT also provides world-class Applied and Natural Sciences programs that include Fish, Wildlife and Recreation; Forestry and Natural Areas Management; Environmental Engineering Technology; Geographic Information Systems; and Geomatics.

Natural areas around the world have been severely impacted by habitat destruction, urban development, invasive species, and directly damaged by the industrial contamination of soils and aquatic environments. There is also a need to prepare for, and address, climate change, developing responses to expected changes in weather patterns, elevated temperatures, increased incidence of extreme climatic events, and higher sea levels. Worldwide, restoration expenditures are estimated at over $3 trillion per year.

Federal, provincial, and municipal governments; First Nations communities; non-governmental organizations; and private industry in urban and rural settings across Canada are engaging in ecological restoration, and climate adaptation. Existing BCIT programs already include collaborative projects, such as those with the independently-financed Rivers Institute.

BCIT has responded to this emerging demand for training and research, but has been challenged to accommodate these programs with current space constraints. Programs are currently scattered in separate locations, with small and functionally inadequate spaces. The proposed CERCA building is part of a larger effort to redevelop the northeast precinct of BCIT's Burnaby Campus, where most of the buildings are more than 50 years old.

2. PROJECT DESCRIPTION

The proposed building will be competed in xx phases. Phase 1 will establish CERCA, allow for expansion of the Department's M.Sc and B.Sc. programs, and provide opportunities to support Indigenous learners in the field of Environmental Stewardship.

Phase 1 comprises a four-storey building arranged around a central atrium. The developed site will include an example of urban ecological restoration through the replacement of an aging culvert, resulting in the "daylighting" of Guichon Creek.

The building layout is designed to provide a 21st century teaching and learning environment that incorporates collaborative and informal learning spaces throughout, and flexibility in program space to allow for future change. The structure of the building will include the extensive use of wood, be built to exceed LEED® Gold standards, and incorporate numerous sustainability features. The building's layout will be as follows:

- **Level 1.** Indigenous Student Liaison, The Rivers Institute/Research, Computer Lab (advanced data visualization), Lecture Hall, Equipment Storage, and Classrooms ▶ 976 m^2
- **Level 2.** Classrooms, Computer Labs, Project Rooms, and Learning Commons in central atrium ▶ 1,136 m^2
- **Level 3.** Offices/Research ▶ 1,159 m^2
- **Level 4.** Student Laboratories ▶ 962 m^2

Phase 1 will be designed to efficiently add Phase 2 to the eastern elevation, and will include additional labs, classrooms, offices, equipment storage, and a 100-seat theatre.

Supported Programs

PHASE 1 will accommodate academic and research programs, including:

- Ecological Restoration (ER);
- The Rivers Institute;
- Fish, Wildlife & Recreation (FWR); and
- Forestry & Natural Areas Management (FNAM).

PHASE 2 will accommodate additional academic and research programs, including:

- Environmental Engineering Technology (EET);
- Geographic Information Systems (GIS); and
- Geomatics.

Project Size

- Phase 1 | 1,859 m^2
- Phase 2 | 2,374 m^2
- **Total | 4,233 m^2**

FTEs

- Phase 1 | 180
- Phase 2 | 320

3. PROJECT OBJECTIVES

- Provide an integrated and innovative learning centre, in partnership with industry and government agencies, that focuses on climate adaptation, and restoration of ecosystems and environmentally sensitive areas, including rivers, lakes, estuaries, wetlands, and terrestrial and wildlife systems.
- Ensure the program mix supports labour market demands for emerging and growing industry professionals.
- Consolidate School Department locations to provide a focal point for Ecological Restoration and related programs, together with industry partners, in order to create a strong sense of place and identity in a facility that encourages inter-professionalism and inter-departmental cooperation.
- Provide a variety of functional spaces, such as wet and dry laboratories, computer labs, digital learning spaces, formal and informal spaces for collaborative learning and research, and project-based learning spaces that ensure flexibility for future change.
- Enhance digital learning capabilities through a technologically advanced building.

- Ensure program continuity, and minimize the impact of renewal on School operations and student learning by:
  - Maintaining continued operation of School programs;
  - Limiting moves and disruptions through a phased approach; and
  - Ensuring safety and security at all times.
- Create more opportunities for public and private partnerships and alignments, including with all three levels of government (e.g., Environment Canada, the Department of Fisheries and Oceans), the Vancouver Aquarium, and the Hakai Institute.
- Ensure best use of capital funds, and maintenance of cost controls for financial viability.
- Create modern building services and technologies in a sustainable facility that reduces energy use and operating costs (beyond LEED® Gold), and that is functionally and financially viable.
- Implement components of the *Burnaby Campus Plan*.

4. OPTIONS CONSIDERED

- **Status Quo**: This option does not address program expansion opportunities, or the consolidation of existing functionally inadequate, seismically at-risk buildings.
- **Non-Capital Site Option**: The off-site lease option is also deemed not viable.Programs are an integral part of the overall Applied and Natural Sciences programs taught in BCIT. Students and faculty need to be in proximity to other classrooms and resources within the BCIT Campus.
- **New Centre**: Preferred.

5. PROJECT OUTCOMES

Infrastructure Improvements

The proposed project is aligned with the provincial government's priorities and strategies, and will:

- Provide flexible 21st century teaching spaces that are built to modern design and materials standards.
- Enable program integration and collaboration among BCIT's Applied and Natural Sciences programs.
- Allow for the phased implementation of BCIT's stormwater management plan, which includes the daylighting of Guichon Creek.

Cost Effectiveness

The new Centre will provide:

- Flexible learning spaces that can adapt to changes in labour market demand, and subsequent program delivery options; and
- More cost-efficient building and teaching technologies.

Innovation

The new Centre will showcase:

- Research in the Applied and Natural Sciences programs;
- Modern laboratories and computer labs, as well as classroom spaces that will allow flexible space programming;

- Advanced sustainability features;
- The daylighting of Guichon Creek as a living laboratory for students to perform field experiments and testing, while also serving as a demonstration project for restoring waterways in urban areas; and
- BCIT's leadership position in ecological restoration by providing new modern research labs.

Strategic Alignment

The new Centre supports:

- Environment & Climate Change Canada's objectives for investing in green infrastructure, protecting communities from challenges of climate change, ensuring watershed protection, and protecting endangered species;
- Fisheries & Oceans Canada's objectives to protect the health of fish stocks, monitor contaminants/pollution in oceans, and support responsible and sustainable aquaculture industries;
- The Ministry of Advanced Education, Skills & Training Service's objective for lasting reconciliation with Indigenous peoples in BC by fostering access to post-secondary education;
- The Ministry of Jobs, Trade & Technology's objective for promoting a prosperous and sustainable economy;
- The Ministry of the Environment & Climate Change's objectives for clean and safe water, land, and air; healthy and diverse ecosystems, native species, and habitats; and a sustainable, resilient low-carbon economy; and
- The Ministry of Forests, Lands & Natural Resource Operations' objectives for sustainable natural resource management, resilience to natural hazards in a changing climate, revitalization of forests and the forest sector, and rural development and resilience.

Quality Education

The new Centre will:

- Serve as a collaborative hub and research centre in the emerging ecological restoration industry;
- Link associated BCIT programs, and provide the opportunity for Faculty and students to collaborate on research initiatives related to marine, mining, forestry and fish, and wildlife and recreation; and
- Create training for in demand jobs with the ability to respond to expanding needs.

Energy & Emissions Reductions

- The building will be designed with energy efficient HVAC, lighting, and other systems that will increase energy efficiency and reduce GHG emissions.

6. PROJECT COST/FUNDING

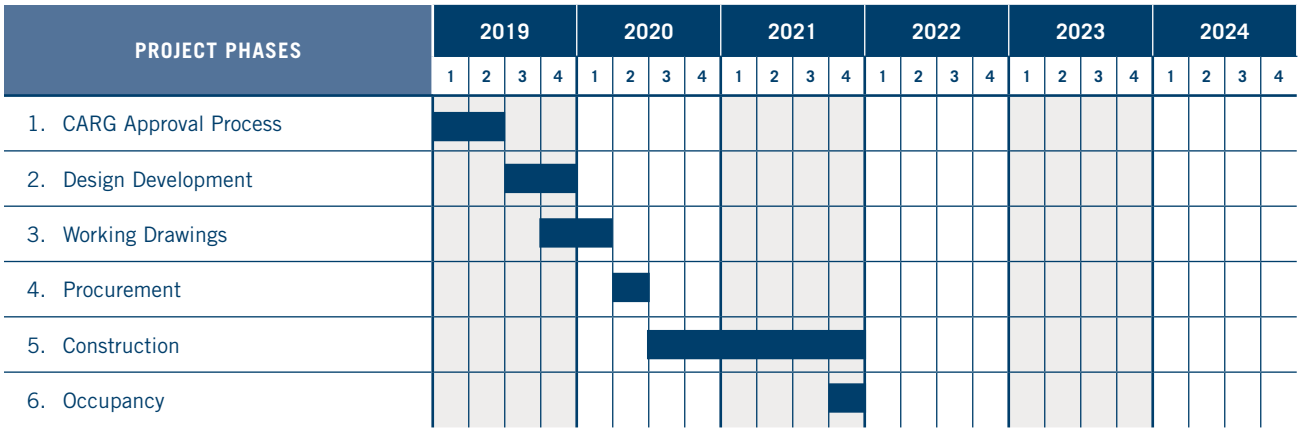
- The total estimated project cost for Phase 1 is $35 million, including equipment, taxes, and escalation based on tendering in the fourth quarter 2020.
- It is expected that BCIT will contribute $7.5 million to the capital cost, and the Province will contribute $27.5 million.
- The new CERCA building will be in addition to baseline facilities operations, and so it will likely cost an additional $85/m^2 per annum, for a net increase of approximately $158,000 for basic building operation services.
- The CERCA will accommodate existing programs, so there will be no specific increase in program operating costs beyond the ongoing organic growth of the identified programs. The building will also allow for expanded research facilities that are anticipated to be funded through external grants, and not result in additional operating costs.

7. KEY RISKS

If the project does not proceed:

- There will be an impact on the recruitment of students, faculty, and staff – a loss of market share to other ecological restoration and climate adaptation research institutions.
- The Province's ability to successfully implement its priorities and initiatives identified in the "Strategic Alignment" section will be limited.
- The Province will lose its lead role in training and research, depend on out-of-province training, and/or lose students to other jurisdictions
- There will be continued deterioration of the Guichon Creek culvert.

8. PROJECT SCHEDULE



Project 3: South Campus Infrastructure Renewal Project (Goard Way Phase 2)

Category 1: New Priority Projects				
Institution BCIT	**Campus / City** Burnaby	**Project Title** South Campus Infrastructure Renewal Project	**Project Category** 2	**Project Priority** 3 of 9

1. CURRENT SITUATION

There is an urgent need to renew critical infrastructure in BCIT Burnaby's south campus. An independent condition assessment shows the majority of the electrical service infrastructure to the southern part of the campus, including its substations, is past expected serviceable life, and is in need of immediate replacement. In addition, there is a need to renew or restore a decaying 700-metre culvert through which Guichon Creek transects the east side of the campus.

2. PROJECT DESCRIPTION

This project involves the replacement of all electrical equipment at the south campus, and follows other recent campus electrical renewal projects, including the *Canada Way Electrical Service Replacement Project* and the *Goard Way Electrical Service Replacement Project*. These combined projects will create a more reliable and robust electrical distribution system for the north campus that has been stretched over capacity on several occasions.

This project will also replace the decaying Guichon Creek culvert with an open drainage channel to mitigate risk to campus operations. The existing culvert provides drainage to a large catchment, including a 218-hectare area of Burnaby, upstream from the campus. The culvert was assessed in May 2015, and found to be in poor condition. Furthermore, its routing extends beneath two major Trades buildings on campus: SE01 – Electrical Training Centre and NE08 – Welding. In addition to mitigating this significant risk to operations, the proposed daylighting will provide an ecological amenity, pedestrian routes, bike ways, and open spaces that serve as important north-south connections through the campus. Modernization of this important infrastructure will ensure continued educational delivery at BCIT, and implement a primary feature of the *Burnaby Campus Plan*.

3. PROJECT OBJECTIVES

- Maintain business continuity for the entire south campus.
- Upgrade critical deferred maintenance conditions related to electrical equipment that has reached end of life.
- Create a more modern electrical distribution system.
- Improve fire protection.
- Create electrical distribution redundancy.
- Align future developments with the *Campus Strategic Vision*, and with above-ground master planning by providing a service corridor, or utility spine, for the south campus.

4. OPTIONS CONSIDERED

Given the risk electrical failure poses to the Institute's operations, immediate replacement of the electrical distribution system is required.

5. PROJECT OUTCOMES

Infrastructure Improvements

The new infrastructure will provide:

- Modernization of the electrical distribution system.
- Mitigation of the risk of electrical service interruption to buildings within the south campus.
- Increased load capacity and improved fire protection.
- Provision of additional capacity for future campus expansion.
- Provision of back-up for north campus electrical service.
- Reduction in the cost of future development as new utilities are more accessible and strategically located.
- A restored Guichon Creek that will serve as an important north-south pedestrian spine/green space through the campus.

Strategic Alignment

The new infrastructure supports:

- The Ministry of Environment and Climate Change's Strategy Goal #2 – To promote healthy and diverse ecosystems, native species, and habitats.
- BCIT's Strategic Initiative #4 – Stewardship and resource development to ensure that physical facilities and campus infrastructure needs are met through an integrated plan that accounts for teaching space, research facilities, equipment, and information and education technologies.
- Implementation of the *Burnaby Campus Plan*.

Quality Education

The new infrastructure will provide for:

- The daylighting of Guichon Creek that will act as a "living laboratory" for BCIT students involved in environmental studies programs, and will serve as a demonstration project for other communities considering urban waterway restorations.
- Upgraded electrical infrastructure that will ensure seamless education delivery, which is currently at risk of interruption due to equipment failure.

6. PROJECT COST/FUNDING

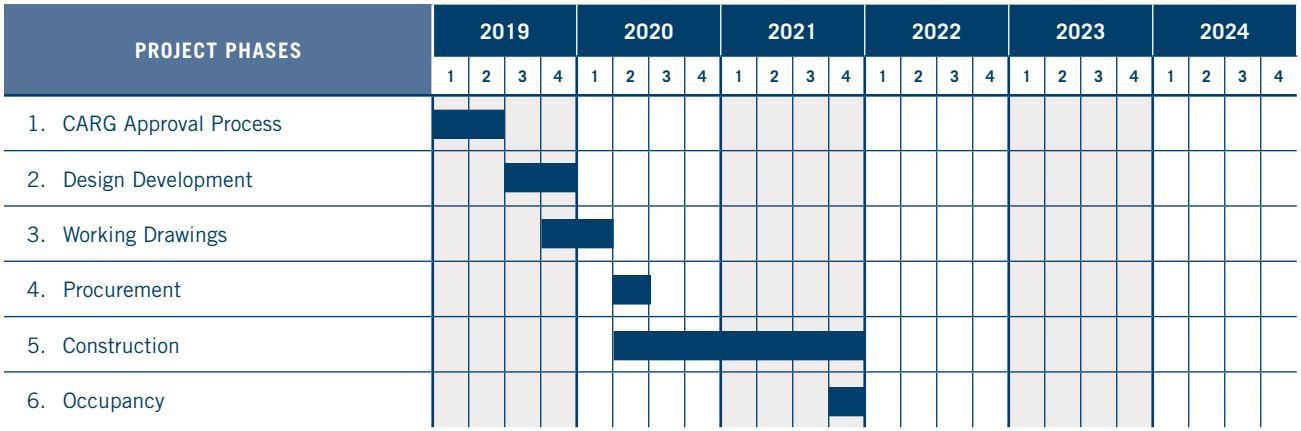
- $25 million is the total estimated project cost, including equipment and taxes.
- It is expected that BCIT will contribute $2.5 million to the capital cost, and the Province will contribute $22.5 million.
- It is expected that the completed project will reduce operating costs associated with urgent and emergency repairs to the existing end of life infrastructure. A more detailed analysis of the operating cost implications will be conducted through the Business Case.

7. KEY RISKS

The key risks if the project does not proceed are:

- Risk of system failure and costs associated with unplanned disruption to operations.
- Continued deterioration of the Guichon Creek culvert.

8. PROJECT SCHEDULE



Project 4: Student Hub

Category 1: New Priority Projects				
Institution BCIT	**Campus / City** Burnaby	**Project Title** Student Hub	**Project Category** 1	**Project Priority** 4 of 9

1. CURRENT SITUATION

This project seeks to leverage the Institute's partnership with the BCIT Student Association (BCITSA) in order to deliver an integrated project that takes an holistic approach to education and wellness. The BCITSA recently passed a referendum to fund a $38.5 million Student Centre that will replace the currently inadequate space for students and services on campus. BCIT also requires a new centre for dialogue and Indigenous initiatives to provide a forum for pan-institutional cultural exchange and Indigenous learning initiatives to fulfill its Provincial mandate.

2. PROJECT DESCRIPTION

This project proposes to partner with the BCIT Student Association (BCITSA) to leverage its approved capital investment in order to deliver a larger, integrated facility that will take an holistic approach to education and wellness. The Student Hub will foster engagement and collaboration through 24/7 accessibility, project spaces, diverse food options, conference services, services for part-time studies, and space for large community events. It will also house a gathering place to accommodate intercultural initiatives, with a particular focus on supporting Indigenous and international students.

Project Size

This project will comprise approximately 7,000 m^2.

3. PROJECT OBJECTIVES

- Provide a centre that extends the concept of a "Gathering Place" to a space of collaborative and responsive changemaking for both Indigenous and non-Indigenous initiatives.
- Provide a resource centre and central hub for students to collaborate and socialize in an informal setting.
- Create a centre for dialogue and a think tank to discuss, design, and implement initiatives in education, training, and community needs.
- Provide a central resource for part-time studies students and faculty with extended hours to match part-time studies training schedules.
- Provide a space for programs, services, community forums, and local events.
- Create innovative learning opportunities that support and enhance existing pathways in education, and relationships amongst Indigenous and non-Indigenous people.
- Support and increase community collaboration that is more effective, unique, and entrepreneurial using the latest technology and thought.
- Support Indigenous initiatives in education, training, research, and advocacy.

4. OPTIONS CONSIDERED

- **Status Quo**: This option does not provide appropriate space for a 'gathering place' to foster cultural exchange.
- **New Centre**: Preferred.

5. PROJECT OUTCOMES

Strategic Alignment

This project is consistent with the following provincial government priorities and strategies:

- The Ministry of Advanced Education, Skills & Training's service goals for promoting lasting reconciliation with Indigenous peoples in BC by fostering access and success in post-secondary education and training; and
- Sustainability objectives as outlined in the *BC Climate Action Plan*.

Quality Education

This new facility will:

- Serve as a hub within BCIT to coordinate and support student initiatives on campus, and help drive student success and engagement; and
- Provide an holistic centre for reciprocal engagement with the Indigenous community, stakeholders, and others to advance education, skills, and training. The hub will provide a central resource for part-time students and faculty to improve engagement, retention, and student success.

6. PROJECT COST/FUNDING

- $77 million is the total estimated project cost, including equipment and taxes.
- The BCIT Student Association will contribute $38.5 million to the project, and the Province will contribute $38.5 million.
- The new Student Hub building will be in addition to baseline facilities operations, and so will likely result in an additional $85/$m^2$ per annum in operating costs. This additional cost will be shared equally with the BCITSA, resulting in a net increase to BCIT of approximately $298,000 for basic building operation services.
- Operating costs will require further detailed analysis at the Business Case stage

7. KEY RISKS

If the project does not proceed:

- There will be an impact on the recruitment of students, faculty, and staff..
- The Province's ability to successfully implement its priorities and initiatives identified in the "Strategic Alignment" section will be limited.

8. PROJECT SCHEDULE

PROJECT PHASES	2019				2020				2021				2022				2023				2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. CARG Approval Process									■															
2. Design Development										■	■													
3. Working Drawings												■	■											
4. Procurement														■										
5. Construction															■	■	■	■	■	■				
6. Occupancy																				■				

Project 5: Learning & Innovation Centre

Category 1: New Priority Projects				
Institution BCIT	**Campus / City** Burnaby	**Project Title** Learning & Innovation Centre (LIC)	**Project Category** 1	**Project Priority** 5 of 9

1. CURRENT SITUATION

BCIT's campus is aging, and lacks sufficient modern and flexible learning and administration spaces. In particular, SE12 contains a number of outdated, inflexible, and functionally inadequate spaces. The building is rated at the highest end of the seismic risk scale – H1, indicating potential structural failure during a major seismic event. SE12 was also found to be extremely expensive to renew to modern building and seismic standards. Including seismic upgrading and deferred maintenance, the cost of renewal was estimated at 80% of a new building. Based on VFA building assessments for the next ten years, an estimated $40 million of deferred maintenance is required to maintain SE12.

NW01 is an older, inefficient administration building that is also at the highest end of the seismic risk scale – H1. It has a very high renewal cost relative to its size, with a 10-year maintenance backlog equal to 54% of its replacement cost.

2. PROJECT DESCRIPTION

The new Learning Innovation Centre (LIC) will provide an integrated learning environment, creating a collaboration and resource hub for teachers and students throughout the Institute, facilitating student success through innovative learning. In addition, this project will give students and teachers the opportunity to incorporate and experiment with new technologies and enhanced audio/visual equipment in the learning spaces. The new building will also facilitate the demolition of two aging and outdated buildings (SE12 and NW01), and alleviate significant seismic risk as both of these buildings are rated as having a high risk to fail during a seismic event.

Supported Programs

The new building will accommodate:

- School of Computing & Academic Studies
- School of Business
- Learning & Teaching Centre
- Information Technology
- General purpose classrooms

New Building Components

- School of Computing & Academic Studies/School of Business
- Learning & Teaching Centre/Student Services/AV
- Learning Commons/Project Rooms
- Generally Timetabled Labs & Classrooms
- Information Technology Services

Demolition of Existing Buildings

- Constructed in 1976, SE12 is a 9,557 m^2 concrete building on a sloped site with the east and south walls of the first floor set below grade.
    - The existing SE12 building is functionally, structurally and physically obsolete, with estimated renewal costs of 80% of total replacement value.
- Constructed in 1962, NW01 is a 1,324 m^2 concrete building with a single storey of administrative space over a basement.
- The VFA Facility Condition Index (FCI) rating for SE12 is 0.47, and indicates 10-year deferred maintenance costs of $40 million. The FCI rating of NW01 is 0.54.
- Structural analysis of the buildings performed by Bush, Bohlman & Partners, revealed significant structural deficiencies. Both buildings are rated H1 – High Seismic Risk.

FTEs

There are no additional FTEs associated with this proposal.

Project Size

The project will comprise approximately 8,000 m^2.

3. PROJECT OBJECTIVES

- Replacement of two existing structurally and functionally obsolete buildings.
- Construction of a modern building to serve the Learning & Innovation Centre, the School of Computing & Academic Studies, the School of Business, and IT services.
- Modernization of the computer data server and communication facilities.
- Maintenance of BCIT's leadership role in computer science education.
- Reduction in building operating costs.
- Redevelopment of the SE12 site to improve campus circulation routes.

4. OPTIONS CONSIDERED

- **Status Quo**: This option does not address functional and structural issues.
- **Renovation of Existing Building:** This option is not cost effective because the buildings' unusual structural design is not economical to renovate, and the renovation cost would be 80% of the total replacement value.
- **New Centre**: Preferred.

5. PROJECT OUTCOMES

Strategic Alignment

The project supports the *Ministry of Advanced Education, Skills and Training Service Plan 2018* Objective 2.2 to "respond and adapt to the diverse and changing needs of learners".

Quality Education

The project will provide a modern educational environment, and the expanded Learning & Innovation Centre will support teaching excellence and pedagogical innovation across the Institute.

6. PROJECT COST/FUNDING

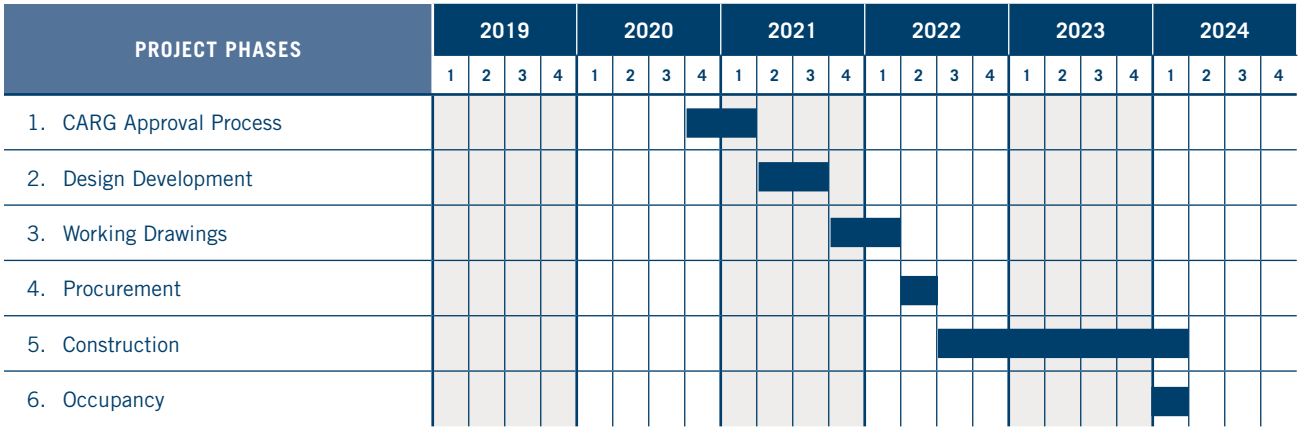
- $90 million is the total estimated project cost, including equipment and taxes.
- It is expected that BCIT will contribute $26 million to the capital cost, and the Province will contribute $64 million.
- The new LIC building will replace existing facilities so will not increase operating costs for base campus services. It is expected that the completed project will reduce operating costs associated with urgent and emergency repairs to the existing end of life building systems.
- As the LIC will accommodate existing programs, there will not be a specific increase in program operating costs beyond the ongoing organic growth of the identified programs.
- Operating costs will require further detailed analysis at the Business Case stage.

7. KEY RISKS

The following are key risks if the project does not proceed:

- Mechanical failure and seismic risk impacts on program continuity.
- Technology limitations on education programming.
- Reliability of Institute data and communication services.

8. PROJECT SCHEDULE



Project 6: Centre for Clean Energy Innovation & Distribution

Category 1: New Priority Projects				
Institution BCIT	**Campus / City** Burnaby	**Project Title** Centre for Clean Energy Innovation & Distribution	**Project Category** 1	**Project Priority** 6 of 9

1. CURRENT SITUATION

The generation, storage, and distribution of energy is a research priority for BCIT. The Institute is a provincial and national leader in the field of energy management, and boasts various unique programs, installations, and research programs, including the BCIT-led Smart Grid, the Centre for Energy Education & Research, or its related Power Engineering program.

Currently, BCIT is restricted in its ability to integrate students within multi-disciplinary research initiatives. Applied research initiatives are most successful when they are available to students and form the core of educational programs. This integration requires localization in a secure and maintained facility that is easily accessible, open after hours, and equipped with the appropriate breakout and learning spaces.

2. PROJECT DESCRIPTION

BCIT proposes the creation of a provincial nexus for education and innovation in energy management, with a correlated set of facilities at its Burnaby Campus. At the heart of these facilities will be a Centre for Clean Energy Innovation & Distribution, which will hold various modules, such as:

- Flexible and reconfigurable spaces for industry and other partners.
- Research labs for clean energy innovation and distribution.
- A lecture theatre for conferences, presentations, and discourse on energy-related matters.
- Expansive space for clean energy prototyping, demonstration labs, test beds, and comparative analysis to educate and showcase accomplishments in clean energy and LNG research.
- Prototyping labs for the design, manufacture, and proof of concept of new ideas, including those in fields adjacent to energy generation and grid maintenance.
- Makerspaces for student, teacher, researcher, engineer, and industry interaction.

The new Centre will play an intricate role in the energy node at the Burnaby Campus. As part of the nexus, it will be the cross-disciplinary hub for the other research facilities and programs on campus, such as the Centre for Energy Education & Research (CEER), and its related Power Engineering program, the Intelligent Microgrid Network (“Smart Grid”), the OASIS Energy Project (Open Access to Sustainable Intermittent Sources), and other future initiatives and applications.

Supported Programs

Creating a cross-disciplinary learning and research environment, the Centre supports the following programs:

- Power Engineering
- Industrial Instrumentation
- Chemical/Environmental Technology
- Mechanical Engineering
- Electrical Engineering

Project Size

This staged project will eventually comprise approximately 6,000 m^2.

FTEs

The Centre for Clean Energy Innovation & Distribution will support 400 FTEs.

3. PROJECT OBJECTIVES

Project Specific

The Centre will:

- Create a multi-disciplinary incubation and technology transfer hub for energy research, education, and discourse – integrating disciplines, such as energy, mobility, infrastructure, and computing;
- Through expanded research capabilities, ensure BCIT's leadership position in the adoption of electric vehicle charging stations;
- Support the Province's mandate for greener transportation; and
- Build partnerships to support and enhance critical infrastructure resiliency.

Future Initiatives That Will Be Possible With the New Centre

The Centre will:

- Empower remote, off-grid, and Indigenous communities with training in the operation and maintenance of custom Smart Grid installations, both in situ and at the new Centre;
- Create a test site for autonomous vehicles, in collaboration with industry partners;
- Provide design, prototyping, manufacturing, and testing of airframes and payloads of Unmanned Aerial Vehicles (UAV, Drones) for Smart Grid inspection;
- Provide a platform for the simulation of cyber security, and train students in the protection of our national infrastructure; and
- Create an LNG research, test, and training facility that will stimulate innovation in breakthrough technologies for LNG production, distribution, and consumption.

4. OPTIONS CONSIDERED

- **Status Quo**: This option does not provide for collaborative and multidisciplinary environments that are critical for the success of applied research initiatives that require the embedding of industry, faculty, and students.
- **New Centre**: Preferred.

5. PROJECT OUTCOMES

Infrastructure

A state-of-the-art core for the School of Energy facility, the new Centre will permit BCIT to build on its provincial leadership role in energy research and education by providing flexible and reconfigurable spaces for industry partners, thereby linking research and training directly to application and market.

The Centre will generate opportunities to attract industry, and researchers, as well as national and international partners. A landmark investment in a physical facility that will serve as a nexus for Energy Innovation & Distribution programs, the Centre will bring researchers, industry, students, and instructors together in a central location.

Strategic Alignment

The Project is aligned with the following provincial government priorities and strategies:

- Ministry of Advanced Education, Skills and Training Service Plan 2018:
  - Objective 2.1 to "ensure affordable access to post-secondary education and skills training" by providing learners with hands-on experience to explore a variety of careers;
  - Objective 2.2 to "respond and adapt to the diverse and changing needs of learners" by providing programs, services, tools, and resources for those who are struggling to gain a foothold in the job market. Targeted programs for youth, Indigenous persons, persons with disabilities, and women in the trades will help these individuals gain needed skills and secure sustainable employment; and
  - Objective 3.1 to "build on current strengths to enhance the quality and relevance of the post-secondary education and training system" by:
    - Supporting a wide range of co-op and work experience programs for undergraduates, including programs that support BC's technology-related sector.
    - Partnering with employers and economic sectors to deliver skills' upgrading to employees.
    - Establishing technology and innovation centres in key areas of the economy.
- Ministry of Jobs, Trade and Technology Service Plan 2018 Objective 1.2 to "position BC as a destination for developing and growing technology companies and investment" by:
  - Encouraging the development, commercialization, and adoption of technologies and processes that align with government priorities; and
  - Supporting entrepreneurship and the development of entrepreneurial talent.

Quality Education

A centralized hub on campus that bridges many adjacent fields and facilities will create an indispensable resource and training opportunity that will build on BCIT's reputation as a key institution for energy generation and distribution knowledge and research. The facility will attract educators, presenters, and partners from around the globe, and provide the opportunity for exchange and discourse on energy-related and other matters of engineering and polytechnic nature, thereby linking research and training directly to application and market.

6. PROJECT COST/FUNDING

- $65 million is the total estimated project cost, including equipment and taxes.
- It is expected that BCIT will contribute $10 million to the capital cost, and the Province will contribute $55 million.
- The new Centre for Clean Energy Innovation & Distribution building will be in addition to baseline facilities' operations, and so will likely result in an additional $85/m^2 per annum for a net increase of approximately $510,000 for basic building operation services.

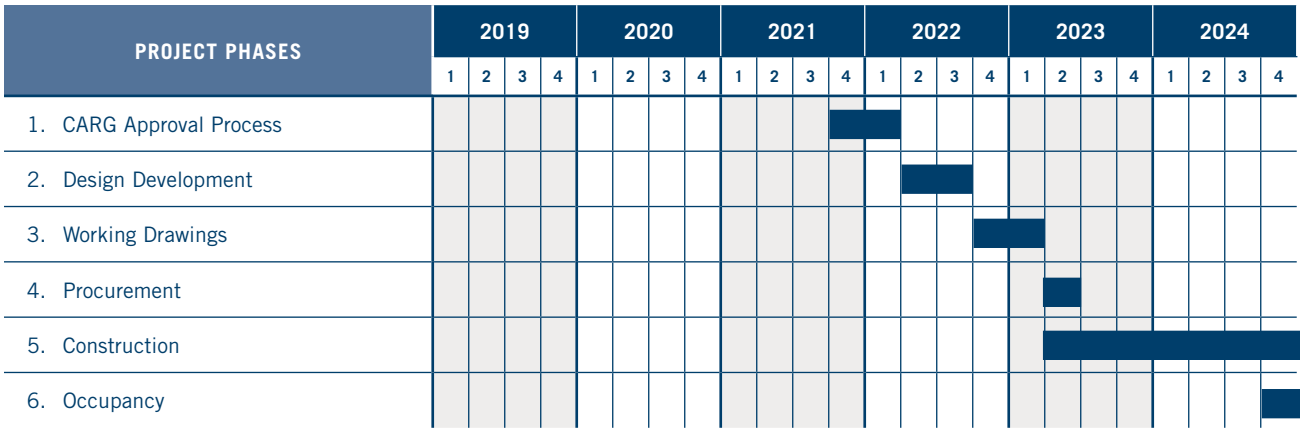
- The new Centre will accommodate existing programs so there will not be a specific increase in program operating costs beyond the ongoing organic growth of the identified programs. The building also allows for expanded research facilities that are anticipated to be funded through external grants, and not result in additional operating costs.
- Operating costs will require further detailed analysis at the Business Case stage.

7. KEY RISKS

The key risks if the project does not proceed are:

- Impacts on recruitment of faculty and staff – loss of market share to other energy generation, storage, and distribution research institutions.
- Negative impacts on industry due to reduced ability/sites to conduct research, and test innovations.
- The Province's ability to successfully implement its priorities and initiatives identified in the "Strategic Alignment" section will be limited.

8. PROJECT SCHEDULE



Project 7: SW01 Renewal: Energy, Engineering & Health Sciences

Category 2: Whole Asset Renewal Project				
Institution BCIT	**Campus / City** Burnaby	**Project Title** SW01 Renewal: Energy, Engineering & Health Sciences	**Project Category** 2	**Project Priority** 7 of 9

1. CURRENT SITUATION

Constructed in 1964, SW01 is a four-storey rectangular building with 25,200 m^2 total gross area that reflects newly captured space through the Gateway Project. The east wing of SW01 has been categorized by Bush Bohlman & Partners as having a high seismic risk (H1), indicating potential structural failure during a major seismic event. Based on VFA building assessments for the next ten years, an estimated $58.7 million of deferred maintenance is required to maintain SW01. Further to these structural and seismic issues, there are functional inadequacies for some of the teaching spaces.

2. PROJECT DESCRIPTION

The proposed renewal of SW01 represents one component of a comprehensive and integrated facility renewal plan for BCIT's Schools of Energy, Computing & Academic Studies, and Health Sciences. This project will complete outstanding functional renovations to classrooms, project rooms, labs, and research facilities not previously included in the scope of the SW01 Gateway Project, for an estimated total of 19,200 m^2. The scope of renewal includes building system replacement, seismic upgrade, and deferred maintenance.

Supported Programs

The renewed building will accommodate the:

- School of Energy;
- School of Construction & the Environment;
- School of Computing & Academic Studies: and
- School of Health Sciences

Other supported services include:

- Student Services; and
- Administration

FTEs

There are no additional FTEs associated with this proposal.

Project Size

This project will comprise approximately 19,200 m^2.

3. PROJECT OBJECTIVES

- Renewal and replacement of existing architectural, structural, mechanical, electrical, and acoustical elements of the building that are inadequate, or have reached the end of their useful life.
- Provision of a modern teaching environment for the Schools of Energy, and Construction & the Environment.
- Improved health education program delivery, and maintenance of BCIT's provincial leadership role.
- Provision of necessary support space for the Health Sciences Centre for Advanced Simulation.
- Provision of seismically safe accommodation.
- Consolidation of programs.
- Improved space utilization through more efficient and flexible functional design.
- Support for BCIT's Burnaby Campus Development planning objectives.

4. OPTIONS CONSIDERED

- **Status Quo**: This option is inadequate for the long-term, and is seismically unsafe.
- **Renovation of Existing Building**: Preferred.

5. PROJECT OUTCOMES

Strategic Alignment

This project is aligned with provincial government priorities and strategies:

- Ministry of Advanced Education, Skills and Training Service Plan 2018:
  - Objective 2.1 to "ensure affordable access to post-secondary education and skills training" by providing learners with hands-on experience to explore a variety of careers;
  - Objective 2.2 to "respond and adapt to the diverse and changing needs of learners" by providing programs, services, tools and resources for those who are struggling to gain a foothold in the job market. Targeted programs for youth, Indigenous persons, persons with disabilities, and women in the trades to help these individuals to gain needed skills and secure sustainable employment; and
  - Objective 3.1 to "build on current strengths to enhance the quality and relevance of the post-secondary education and training system" by:
    - Supporting a wide range of co-op and work experience programs for undergraduates, including programs that support BC's technology-related sector.
    - Partnering with employers and economic sectors to deliver skills' upgrading to employees.
    - Establishing technology and innovation centres in key areas of the economy.
- Ministry of Jobs, Trade and Technology Service Plan 2018 Objective 1.2 to "position BC as a destination for developing and growing technology companies, and for technology investment".

Quality Education

The facility renewal will improve program delivery, and maintain BCIT's provincial leadership role by providing 21st century learning environments.

6. PROJECT COST/FUNDING

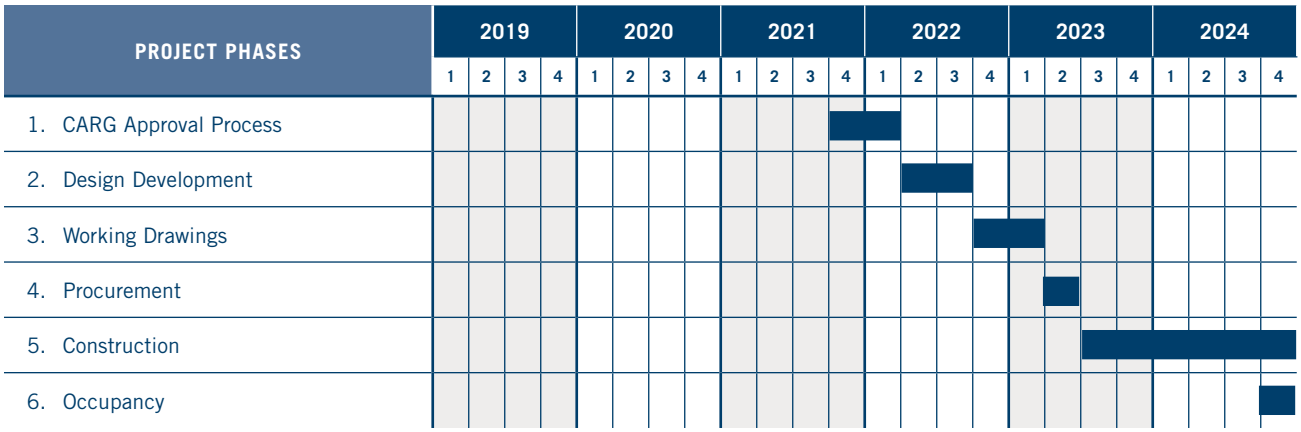
- $80 million is the total estimated project cost, including equipment and taxes.
- It is expected that BCIT will contribute $12 million to the capital cost, and the Province will contribute $68 million.
- The renewed SW01 building will rehabilitate existing facilities, and so will not increase operating costs for base campus services. It is expected that the completed project will reduce operating costs associated with urgent and emergency repairs for the existing end of life building systems.
- Operating costs will require further detailed analysis at the Business Case stage.

7. KEY RISKS

The key risks if the project does not proceed are:

- Adequate swing space will not be available to allow programs to be decanted from the building during renewal – disruption to program delivery;
- Hazardous materials mitigation; and
- Disruptions to program continuity in the event of a seismic event/deferred maintenance.

8. PROJECT SCHEDULE



PROJECT 8: CENTRE FOR AUTOMOTIVE INNOVATION

Category 2: Whole Asset Renewal Project				
Institution BCIT	**Campus / City** Burnaby	**Project Title** Centre for Automotive Innovation	**Project Category** 1	**Project Priority** 8 of 9

1. CURRENT SITUATION

BCIT has identified an emerging need to train automotive technicians with the appropriate skills to work within the rapidly growing intelligent vehicle and intermodal transportation sectors.

As a flagship for polytechnic education, BCIT is the only institution in Canada that can provide comprehensive programming in intelligent intermodal transportation. BCIT has:

- Specialized campuses for aerospace, marine, and commercial transportation, complemented by operation management and engineering divisions;
- Clean energy vehicle technology and cyber security as strong elements of the Institute's research portfolio;
- Car manufacturers using the Institute's Automotive division for authorized Original Equipment Manufacturer (OEM) and brand-specific training; and
- Industry providing state-of-the-art vehicles for modern training, and commitments to even more engagement.

2. PROJECT DESCRIPTION

A multi-disciplinary training centre to showcase modern vehicle technology, the new building will attract industry partners who require augmented training dedicated to next-generation transportation solutions, including autonomous driving, alternative energy propulsion, and vehicles that interact with the infrastructure around them. With the growing need to reduce GHG emissions, and the potential to support Smart City infrastructure, industry partners have expressed interest in supporting this project.

Project Size

This project will comprise approximately 6,000 m^2.

FTEs

The Centre for Automotive Innovation will support 325 FTEs.

3. PROJECT OBJECTIVES

Project Specific

The new building will:

- Create a hub for auto manufacturer's training in the Pacific Northwest;
- Convey emerging technologies through new educational tools, materials, and methodologies, e.g., makerspaces where industry, students, and faculty interact in a multi-disciplinary innovation lab;
- Strengthen and maintain existing partnerships with car manufacturers, OEMs, and authorized vendors, as well as create new ones; and
- Replace the functionally obsolete and deteriorating transportation facilities at the Burnaby Campus.

Future Initiatives (made possible by the new Centre)

The new Centre will:

- Create a research, test, and training facility that will stimulate innovation in LNG vehicle power technologies;
- Create a test site for autonomous vehicles, in collaboration industry partners;
- Provide design, prototyping, manufacturing, and testing of airframes and payloads of Unmanned Aerial Vehicles (UAV, Drones) for Smart Grid; and
- Provide a platform for the simulation of cyber security, and train students in the protection of our national infrastructure.

4. OPTIONS CONSIDERED

- **Status Quo:** This option does not provide for collaboration and multidisciplinary environments. These environments are critical for the success of applied research initiatives that require the embedding of industry, faculty, and students. Additionally, this option does not address the backlog of deferred maintenance associated with existing buildings.
- **New Centre:** Preferred.

5. PROJECT OUTCOMES

Strategic Alignment

The Project is aligned with provincial government priorities and strategies:

- Ministry of Advanced Education, Skills and Training Service Plan 2018:
  - Objective 2.1 to "ensure affordable access to post-secondary education and skills training" by providing learners with hands-on experience to explore a variety of careers;
  - Objective 2.2 to "respond and adapt to the diverse and changing needs of learners" by providing programs, services, tools, and resources for those who are struggling to gain a foothold in the job market. Targeted programs for youth, Indigenous persons, persons with disabilities, and women in the trades to help these individuals to gain needed skills and secure sustainable employment; and
  - Objective 3.1 to "build on current strengths to enhance the quality and relevance of the post-secondary education and training system" by:
    - Supporting a wide range of co-op and work experience programs for undergraduates, including programs that support BC's technology-related sector.
    - Partnering with employers and economic sectors to deliver skills upgrading to employees.
    - Establishing technology and innovation centres in key areas of the economy.
- Ministry of Jobs, Trade and Technology Service Plan 2018:
  - Objective 1.1 to "support current and emerging economic opportunities and investment attraction across BC's diverse economy" by supporting growth of the manufacturing sector, particularly the aerospace and marine sub-sectors;
  - Objective 1.2 to "position BC as a destination for developing and growing technology companies, and for technology investment" by:

- Encouraging the development, commercialization, and adoption of technologies and processes that align with government priorities; and
- Supporting entrepreneurship and the development of entrepreneurial talent.

Quality Education

The new Centre will employ innovative teaching methodologies that will strengthen BCIT's leadership role in intermodal transportation related education. This role will support the emerging need to train automotive technicians with the appropriate skills to work within the rapidly growing intelligent vehicle and intermodal transportation sectors.

6. PROJECT COST/FUNDING

- $70 million is the total estimated project cost, including equipment and taxes.
- It is expected that BCIT will contribute $10.0 million to the capital cost, and the Province will contribute $60.0 million.
- The new Centre for Automotive Innovation building will be in addition to baseline facilities operations, and so will likely result in an additional $85/m^2 per annum, for a net increase of approximately $510,000 for basic building operation services.
- The Centre will accommodate existing programs, so there will not be a specific increase in program operating costs beyond the ongoing organic growth of the identified programs. The building also allows for expanded research facilities that are anticipated to be funded through external grants, and not result in additional operating costs.
- Operating costs will require further detailed analysis at the Business Case stage.

7. KEY RISKS

The key risks if the project does not proceed are:

- Impact on the recruitment of faculty and staff – loss of market share to other intermodal transportation research institutions.
- The weakening of industry and vendor partnerships if the status quo is maintained.
- The Province's ability to successfully implement its priorities and initiatives identified in the "Strategic Alignment" section will be limited.

8. PROJECT SCHEDULE

PROJECT 9: STUDENT HOUSING

Category 2: Whole Asset Renewal Project				
Institution BCIT	**Campus / City** Burnaby	**Project Title** Student Housing	**Project Category** 3	**Project Priority** 9 of 9

1. CURRENT SITUATION

Burnaby has an expensive housing market, and an extremely tight rental housing vacancy rate of less than 1% (CMHC Rental Market Statistics, 2017). Many BCIT students struggle to find and afford stable and adequate housing. The high cost of housing is currently a significant burden for Indigenous, non-local Canadian, and international students.

BCIT has a small portfolio of 336 beds in existing student rental housing at its Burnaby Campus. However, there is currently strong demand for significantly more beds than that. If BCIT were to have a ratio of student beds that is comparable to institutions of similar size, programs, and urban character, BCIT would need about 1,500 more beds. In addition, current student housing units on campus are aging, and will be in need of major rehabilitation in next five to ten years.

2. PROJECT DESCRIPTION

This project is considered to be an initial phase toward a long-term effort to ultimately develop 2,500 new on-campus beds, as described in the Campus Plan. The phase would consist of the following:

- An 11-storey mixed-used facility;
- 450-500 student beds in studio and communal units;
- A lower storey podium with 2,000 m^2 of academic space;
- Retail uses at ground level;
- A cluster of culturally appropriate housing for Indigenous students; and
- Underground parking for BCIT use.

There is a growing trend in North American post-secondary institutions to mix student housing with educational, recreation, retail, and other uses in lively higher density precincts, rather than spreading uses out. Such mixed use campuses make more efficient use of land, especially in strong market areas with high land costs. In addition to meeting student need, the addition of rental units on campus will help mitigate e wider regional housing problem.

Student housing will be planned in a flexible manner to address the unique needs of BCIT's student population. Three groups identified to benefit from this project are:

- Indigenous students, especially from rural and northern communities;
- Non-local Canadian students; and
- International students.

For Indigenous students, housing could be developed in collaboration with BCIT's Indigenous Services Department. This collaboration could include cultural practices and peer/elder oversight, which could provide another layer of student support,s and help them adjust to life at BCIT and the Lower Mainland. A similar initiative could be provided for international students by working with BCIT's International Student Services

Student housing, developed as part of this project, will be designed with flexibility for conversion into market rental housing if campus/student demand is met.

3. PROJECT OBJECTIVES

- Address strong demand for student housing.
- Meet housing needs of a diverse student population.
- Increase the appeal of BCIT to non-local Canadian and international students.
- Make the campus environment and experience livelier, and more vibrant.

4. OPTIONS CONSIDERED

- **Status Quo:** This option does not add to the accommodation supply, or address the housing needs of BCIT students.
- **Renovation:** Due to site constraints and current demand, this option is not practical for adding enough beds to address the housing needs of BCIT students.
- **Off-site Provision:** Although technically possible, this option is more expensive because of high land costs – land at the Burnaby Campus is available at no cost.
- **New Building:** Preferred.

5. PROJECT OUTCOMES

Strategic Alignment

The project aligns with the following provincial public policy objectives:

- Supports Ministry of Advanced Education, Skills and Training's objective to respond and adapt to the diverse and changing needs of learners by increasing the number of student housing beds to contribute to the Province's housing strategy, and support student success; and
- Supports Ministry of Municipal Affairs and Housing's objective to create new housing that meets the needs of local residents by partnering with the Ministry of Advanced Education, Skills and Training to facilitate the development of new housing for university and college students.

Quality Education

Creation of new student housing will address housing needs for many students, which may lead to increased satisfaction and wellness, which may improve students' academic performance.

6. PROJECT COST/FUNDING

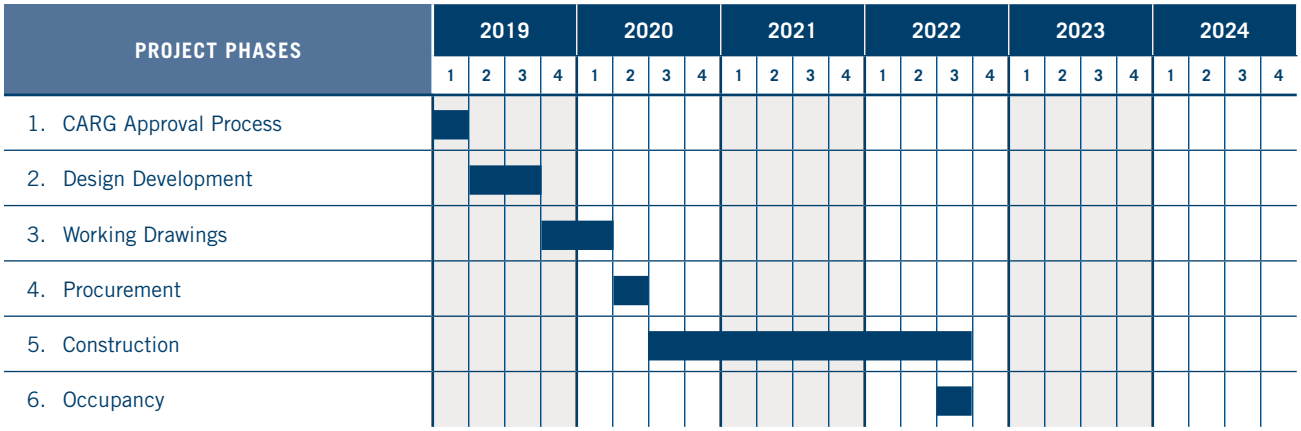
- $103 million is the total estimated project, including equipment, taxes, and escalation.
- It is expected that BCIT will contribute $10 million to the capital cost, and the Province will contribute $93 million. The project could also be financed through the *Student Housing Loan Program*.
- The estimated net annual operating cost of the Student Housing project is $500,000.

7. KEY RISKS

The key risks if the project does not proceed are:

- Not meeting the housing needs of a diverse student population;
- Reduction in the appeal of BCIT to non-local Canadian and international students; and
- Delays in implementing the components of the *Burnaby Campus Plan*.

8. PROJECT SCHEDULE

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