

## FIVE YEAR CAPITAL PLAN



2018/19 – 2022/23

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# FIVE-YEAR CAPITAL PLAN 2018 - 2023

## EXECUTIVE SUMMARY

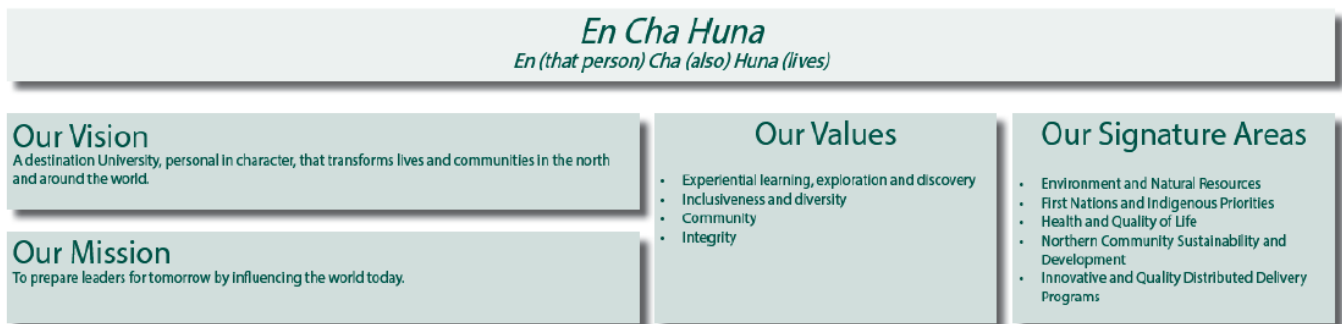
This document outlines the University's plans for the next five years for the planning and construction of new facilities, the repurposing of current facilities and the expansion of others. These projects include academic space repurposing, energy management and facilities construction, housing planning and research infrastructure.

## Our Priorities

This Plan reflects UNBC's commitment to the following internal priorities:

### 2017 - 2021 Strategic Road Map

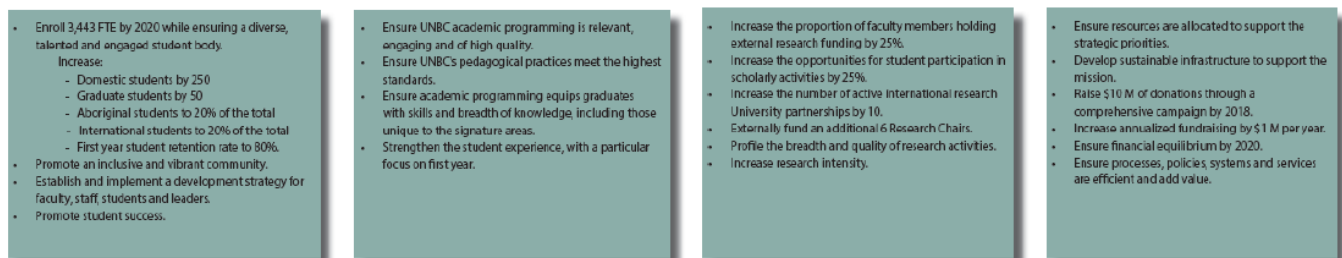
Stewarding our Resources to Support our Vision, Mission and Signature Areas



## Strategic Priorities



## Desired Outcomes 2017 - 2021



It also reflects the priorities of the Ministry including the BC Skills for Jobs Blueprint, Aboriginal and Adult Education, and International Education.

## **PLANNING ASSUMPTIONS**

Since its inception, UNBC has been characterized by periods of intense development and construction, growth in student population, and expansion in areas of direct relevance to British Columbia and northern communities. The immediate future is expected to be characterized by gradual growth in overall student enrolments, and integration of renewable energy consistent with the branding of UNBC as Canada's Green University. New programs in Engineering and Physiotherapy have also been documented as tremendous needs in the region.

All projects are also developed in accordance with Ministry priorities and guidelines including LEED requirements, the Wood First Initiative, and "investing in new or improved skills training equipment, technology and facilities to support accessible skills training opportunities . . .".

## **PLANNED OUTCOMES**

The intent is to be able to meet the identified programming and operational needs with a phased-in capital program over the next five years.

This Plan is also very focused on further developing the University's research facilities and infrastructure to enhance current programming in keeping with our research mandate.

## **CAPITAL PROJECTS**

The proposed projects fall into the following categories:

Category 1: New Priority Projects (projects primarily driven by the need to accommodate growth and to provide labour market demand-driven capacity).

- i. Civil & Environmental Engineering Program Space (renovations and/or a new building)
- ii. Energy Management & Skills Training (FM Building) Infrastructure
- iii. Physiotherapy Program Development

NOTE: Substantial efficiencies and cost savings could be achieved if one or more of these projects were combined.

Category 2: Whole Asset Replacement and Renewal Projects (primarily driven by the need to improve the physical asset condition and to reduce the deferred maintenance backlog).

- i. Agora Renewal
- ii. Research Lab Renewal

Category 3: Student Housing

- i. Planning for “The Future of Housing at UNBC”.

Other Proposed Projects

- i. Research Facilities

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Institution	Campus/City	Project Title	Project Category	Project Priority
University of Northern British Columbia	Prince George	Civil and Environmental Engineering Program Space – A Repurposing Project	1	1 of 5

## 1.0 Current Situation

To provide the space required for the planned Engineering School a two-phased approach is proposed. Phase 1 includes re-purposing current space for expanded Environmental Engineering and offering Civil Engineering. Phase 2 includes a new building for the “School of Engineering” which will include Mechanical and Electrical Engineering as well as dedicated Engineering Research Space.

It is anticipated that the Phase 1 re-purposed space will accommodate 400 FTE undergraduates, 20 graduate students and 20 Faculty and staff when the programs are running.

## 2.0 Project Description

### Phase 1 – Renovation

The project would involve a major renovation (of approximately 653 nasm) to the basement of the Teaching & Learning Building to convert a storage area and maintenance shop to a hydrology and materials testing labs and a technician’s office and make some modifications to current classroom and office space to accommodate a working lounge and design suite for the programs. There will also be secure outdoor compound created for cold weather testing of materials and compounds.

### Phase 2 – New Building

Once the renovations are complete and the expanded program is up and running, a Concept Plan and Business Case for Phase 2 (a minimum of an additional 871 nasm) will be submitted to the Ministry for consideration.

## 3.0 Project Objectives

Labour market surveys (ATEEC 2008, Engineers Canada 2015) indicate an upcoming shortage of Engineers in Canada due to increased retirement rates, and a current shortage of Engineers in Northern regions. The BC Jobs Plan identifies projects in a range of industries in Northern BC that will require significant support from Civil and Environmental Engineers. There will be a focus on cold weather Engineering, appropriate to the region, as well as integration with the developing Green economy.

The project aligns with the UNBC and BC Government priorities and strategies by training our youth for high quality and stimulating employment opportunities in a range of industries that are key to BC’s economic future.

## 4.0 Options Considered

Delivering expanded engineering offerings in the current space is not viable due to the lab and project room requirements. Building a new building immediately to house the program (s) is not currently viable either.

## 5.0 Project Outcomes

- Infrastructure Improvements- upgrading some underutilized spaces
- Cost Effectiveness- the Phase 1 proposal creates many student FTEs for low cost
- Innovation, Strategic Alignment & Quality Education

Students educated in the North tend to stay in the North, both for their careers and to raise families here. Local employers and industries have experienced difficulties in recruiting and retaining highly skilled employees from southern Universities. In dealing with a similar issue, UNBC helped create the Northern Medical Program. The NMP has had good success in training doctors who remain in the region and it is anticipated similar outcomes would be realized from the training of Engineers here.

## 6.0 Project Cost/Funding

A Functional Planning exercise was undertaken in January of 2016 to determine the programming space requirements and to evaluate whether there was appropriate space on campus. The result was that a combination of current space and some renovated space on campus would meet the needs identified.

Due to the complexity of the various renovations (lab, classroom and office space) a variety of costing methods were used (Ministry budget model, internal cost take-off based on similar renovations, and cost consultant) to come up with a total project cost estimate of \$3.5 million for Phase 1.

## 7.0 Key Risks

- A new degree program will have enrolment risks as the program starts up and establishes a reputation. There is strong support for UNBC Engineering programs from local industries and employers.
- Schedule – Due to the number and variety of renovations required, completing all this in the allotted time will be a challenge.

## 8.0 Project Schedule – Phase 1

Engineering	2018/19		2019/20		2020/21	
<b>SCHEDULE</b>						
Planning		Phase 2				
Design	Phase 1		Phase 2			
Construction	Phase 1		Phase 2	Phase 2	Phase 2	
Occupancy	Sep-18					



Institution	Campus/City	Project Title	Project Category (1 or 2)	Project Priority
University of Northern British Columbia	Prince George	Energy Management & Skills Training Building	2	2 of 5

## 1.0 Current Situation

The campus is now over 25 years old and the built environment on campus has grown significantly. The support infrastructure has not kept up with the growth, technological advances, or energy efficiency priorities. Maintenance space is one of the largest space shortfalls on campus at 84% of the ministry standards. In order to address the significant space shortage, the operational and safety issues, and the development of an apprenticeship training program that have resulted from this growth, new and specialized infrastructure is required.

The current Maintenance Shop was built in 2003 to meet the needs of the Facilities Department at the time. Since then the University's needs have changed and expanded, staffing has increased and the required facilities have not kept pace with growth.

In addition, recent safety reviews have identified a number of code and regulatory issues that require infrastructure changes and upgrades. For example, welding ventilation is now required whereby natural ventilation sufficed in the past. The dust collection system in the Carpentry Shop is no longer adequate to meet the needs of the trades, and there is no computer access to required WHMIS information. In addition, the building does not meet code regarding barrier free access. This replacement will also eliminate the VFA deferred maintenance requirements listed for this building.

## 2.0 Project Description

The plan is to redesign, expand (from the current 352 sm) and relocate the shop(s) to accommodate the current Facilities & Energy Management needs; take advantage of the Bioenergy plant surplus heat, replacing the current propane fuel; and consolidate distributed staff. The project will also build replacement shop and storage space that is slated for repurposing for Engineering lab space. Ideally, this project would be combined with the Engineering building requirements.

## 3.0 Project Objectives

- a) Reducing overall energy use by 25% by 2020
- b) Reducing fossil fuel consumption by 85% by 2020
- c) To meet the desired and required safety regulations for the staff and infrastructure.
- d) To provide the additional trades and maintenance space required to meet the needs of the expanded campus and additional maintenance needs of the campus.

- e) To consolidate the shops and maintenance areas to gain operational and energy efficiencies.
- f) To consolidate Facilities Management staff who are currently spread out across the campus in four different locations.
- g) To minimize space required and maximize its use by combining Facilities Shop needs with the need for current and future Engineering lab/shop space.

#### 4.0 Options Considered

Due to the “tin shed” type of building currently in place, expansion is not a viable option. Also, by building inside the ring road we can take advantage of the bioenergy plant’s excess heating capacity, offsetting a large portion of any additional operating costs.

Maintaining the status quo is also not an option due to the Worksafe BC and expanded trades training and operating requirements.

#### 5.0 Project Outcomes

This project will address the identified life-safety and occupational health risks.

It is anticipated that this will provide increased effectiveness and efficiencies amongst the Facilities & Energy Management (FM) department and better serve the long term needs of the University.

The project will also facilitate the re-purposing of some space for the Engineering program and combine shop and lab space to meet the needs of both FM and the Engineering programming.

#### 6.0 Project Cost/Funding

An extensive Functional Planning exercise was conducted in June of 2014. Subsequently a cost consultant was engaged to cost the proposed building project. The estimated budget to address these building requirements is \$21.8 million. A request is being submitted to the Ministry to fund this project.

Operating:

We anticipate minor additional operating costs due to the provision of excess plant capacity.

#### 7.0 Key Risks

There are always certain risks associated with building a new facility such as escalation in costs, schedule delays and the coordination of swing space during construction. These risks will be factored into the detailed planning.

#### 8.0 Project Schedule

Planning	2018/19
Design	2019/20
Construction	2020/21
Occupancy	Fall 2021

Institution	Campus/City	Project Title	Project Category (1 or 2)	Project Priority
University of Northern British Columbia	Prince George	Health Sciences Building Expansion	1	5 of 5

a) Current Situation

This project would entail the sharing of the current Dr. Donald Rix Northern Health Sciences building (NHSB) and other classroom and lab space on the Prince George campus to accommodate the expanded health sciences programming. A number of synergies can be gained by combining programs with the MD program space and staff, which include not only academic but also research opportunities.

b) Project Description

Planning, in conjunction with UBC, has continued and further refined the space requirements for Physiotherapy programming. The current assessment examined the possibility of leveraging existing UNBC and Northern Medical Program facilities as well as associated space at UBC to support the distribution of PT and revealed that existing infrastructure will need to be upgraded to accommodate the additional students, faculty and staff on a permanent basis. A detailed plan including operating and capital renovation costs is forthcoming.

c) Project Objectives

The North is a strategically vital region and one of the economic engines of BC. Developing a building to enable health professions education at UNBC will complement and reinforce the presence of the MD program, and create a true regional hub of health education. Recent data shows that there will be a shortage of PTs in the north with retirements exceeding new appointments. The new space will also enable inter-professional collaboration and achieve significant economies of scale through space sharing. UNBC continues to show increased demand in its Health Science programming at the undergraduate level (biomedical, aboriginal & health and environmental health) and graduate (Disability Management, Education, Psychology) and professional (Nursing and Social Work). There has also been a strong partnership between UNBC and the Northern Health Authority to maximize opportunities for our graduates. In addition to academic delivery there would a significant opportunity to enhance research capacity to ensure a pathway of research into policy development and practice.

d) Options Considered

Sharing current medical education space was evaluated and deemed viable.  
Re-purposing other space on campus will have minimal impact on current programming.

e) Project Outcomes

Surveys into the above mentioned health sciences areas indicate a substantial shortage in the near future. Providing programming in the North to increase these numbers will help address this need.

f) Project Cost/Funding

Capital:

The investment required to develop the expanded facilities at UNBC and UBC to host an expanded distributed PT is estimated at approximately \$1million.

Operating:

Incremental operating funding and start up will be required to cover the increased FTE. These discussions are ongoing and a submission will follow under separate cover.

g) Key Risks

There are also inherent risks in program expansion and clinical placement capacity for health programs. Each of these are being considered in the planning.

h) Project Schedule

Planning      2020/21

# CATEGORY 2: WHOLE ASSET REPLACEMENT AND RENEWAL

Institution	Campus/City	Project Title	Project Category (1 or 2)	Project Priority
University of Northern British Columbia	Prince George	Agora Renewal	2	3 of 5

## 1) Current Situation

- a) One of the original five campus buildings, the Agora was constructed in 1994 and contains Lecture Theatres, Main Entrances, Lobby, Offices and Food Services. It connects all the original buildings and behind all these services is the Utilidor that contains all the campus utility infrastructure.  
The exterior of the building includes cast-in-place concrete walls, stone and brick cladding finishing's and pre-cast concrete elements. The roof includes adhered built-up-roof with concrete interlocking pavers, metal roof assemblies and green roofs.
- b) With the highest FCI (at .395) this building has been deemed the highest maintenance priority.
- c) According to VFA there are \$15.8 million worth of requirements identified in the next five years.



## 2) Project Description

This project will involve an evaluation, repair and upgrade to the mechanical and electrical systems, stabilization of concrete retaining walls, substantial roof repairs (green, BUR, concrete pavers, etc.), and architectural interior work including glazing, doors, accessibility upgrades and access control.

## 3) Project Objectives

The primary objective of the project would be to repair and/or replace aging infrastructure prior to any further damage taking place. A number of the upgrades will also have positive energy savings opportunities.

#### 4) Options Considered

The only option available is to try to address small parts of this project with the yearly Routine Capital funding. Given the project management resources available and the volume of work required, this would take up to ten years to complete and is not a viable option.

#### 5) Project Cost/Funding

Once preliminary planning is complete for this project a detailed plan will be submitted to the Ministry for funding under Major M & R.

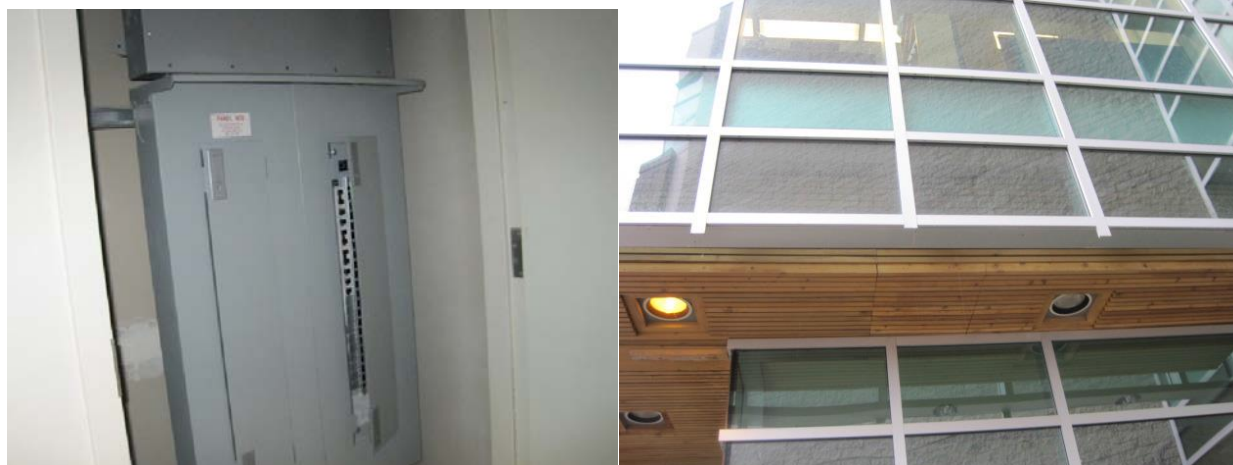
#### 6) Project Schedule

Preplanning	2017/18
Planning	2018
Design	2018/19
Construction	2019

Institution	Campus/City	Project Title	Project Category (1 or 2)	Project Priority
University of Northern British Columbia	Prince George	Research Lab Renewal	2	4 of 5

### 1) Current Situation

- a) One of the original five campus buildings, this building is a four storey building with approximately 7,581 square meters of floor space. The “Research Lab” was originally built as the only lab on campus and housed, teaching labs, research labs and graduate space. This building is now used solely for Research and Graduate students and contains a variety of research labs, a greenhouse, an archaeology lab, DNA sequencing lab, loading bay, Chem Stores, multiple specialized labs and substantial associated mechanical and electrical systems.
- b) The Research Lab has the 2<sup>nd</sup> highest UNBC building FCI at .285 with \$11.7 million worth of Requirements over the next five years according to the VFA reports.



### 2) Project Description

This project will involve an evaluation, repair and upgrade to the mechanical and electrical systems, Fire Alarm system renewal, exhaust system renewal (fume hoods), substantial roof repairs (green, BUR, concrete pavers, etc.), and architectural interior work including glazing, doors, accessibility upgrades and access control.

### 3) Project Objectives

The primary objective of the project would be to repair and/or replace aging infrastructure prior to any further damage taking place. A number of the upgrades will also have positive energy savings opportunities. We will also be undertaking the first functional planning exercise for this building since the Teaching Lab was built in 2002/2004 and the use of this original lab building changed.

#### 4) Options Considered

The only option available is to try to address small parts of this project with the yearly Routine Capital funding. Given the volume of work required, this would take up to ten years to complete and is not a viable option.

#### 5) Project Cost/Funding

Once preliminary planning is complete for this project a detailed plan will be submitted to the Ministry for funding under Major M & R.

#### 6) Project Schedule

Planning	2019/20
Design	2020
Construction	2021



## **CATEGORY 3: STUDENT HOUSING PROJECTS**

### **1. UNBC Housing Evaluation**

#### Project Scope

In keeping with the University's Strategic Plan, it is expected that enrollment will grow by up to 300 students in the next 3 – 5 years. During this period it is also expected that the makeup of the student population will change necessitating a broader range of housing types.

The current Residences on campus are full and we expect we will be facing a shortfall in housing to meet our “guaranteed first year housing” mandate as of next year.

We will be conducting market research and having discussions within the academic community in conjunction with the Campus Master Planning process taking place in the coming months to determine the best type and location for new residence buildings on campus.

#### Timeline:

Marketing study in 2017

Planning in 2018/19

Construction in 2020

#### Funding

The funding of these projects will be a combination of Ministry, Institution and donor/partnership funding.

## **Other Projects being considered**

### 1/ Centre for Preventative Medicine & Exercise Rehabilitation

#### Current Situation

As the population ages, it is expected that nearly one in five Canadian adults will be living with a physical disability in the next 10 years, placing increasing strain on the health care system. Persons with physical disabilities consistently report low participation to physical activity due to lack of resources, knowledge, and accessibility, and are particularly susceptible to inactivity related morbidities. Due to unique environmental barriers, targeting physical activity, and associated health outcomes, among adults with physical disabilities living in rural and northern communities will require a distinct and tailored intervention.

UNBC is proposing the construction of a state of the art research facility that fosters an interdisciplinary approach providing direct positive impact for the individuals of Northern BC. The proposed research program will involve a systematic approach to increase physical activity rates in northern BC, establishing the infrastructure, knowledge to combat the health inequities and provide best practices that will be utilized in other northern and rural areas.

#### Project Objectives

The Centre for Preventative Medicine and Exercise Rehabilitation would be the first exercise testing and training facility in northern BC. This facility would provide a much needed facility for community-based exercise rehabilitation research focused on improving health outcomes and reducing health inequities between individuals living in rural and northern communities versus those from large urban centers. As the only one of 4 research-intensive universities in BC located in a remote region, UNBC is ideally positioned to develop a centre for excellence in physical activity research that addresses the specific barriers to participation for residents of rural and remote communities. The proposed research program will involve a systematic approach to increase physical activity rates in northern BC, establishing the infrastructure, knowledge and highly qualified personnel required to combat the health inequities prevalent throughout the north and establishing a system of preventative medicine to accommodate the shifting demographics. In particular, the proposed research will address specialized populations in rural and northern communities who are particularly susceptible to inactivity related chronic disease: older adults, individuals with mobility impairments, and aboriginal people.

The proposed program of research aligns closely with two of the identified UNBC strategic research areas: community development and northern, rural and environmental health. First, the establishment of an inclusive, accessible exercise testing and research facility will contribute to the Prince George and wider northern BC community by providing a center for excellence in physical activity research and promotion. Secondly, the proposed project has the potential to greatly enhance the health of individuals living in northern and rural communities through innovative physical activity programming and the development of expertise that is regionally specific. Despite the fact that British Columbia is often cited as the 'healthiest' province, significant health disparities exist between residents of the southern mainland and those who live in northern and rural communities;

this center will be an important step to close this gap with a strong focus on inclusive and accessible physical activity that is culturally appropriate to the aboriginal community.

## Project Outcomes

UNBC hopes to establish a centre of excellence in exercise rehabilitation research and enhance its strategic research priority relating to the health of Northern communities. This infrastructure, and the high quality personnel trained, will place UNBC in a stronger position to improve the health outcomes of those living in rural and remote communities and build capacity for emerging health service needs relating to an aging population and the growing needs of the aboriginal community. UNBC is uniquely positioned to develop this facility into a national and international leader in physical activity and the delivery of interventions that address the many barriers and geographic health inequalities prevalent across the rural-urban continuum.

It is also intended that the outcomes of this research will be used to inform health delivery models and public health interventions delivered by the local provincial health authority, Northern Health. UNBC currently has a strong relationship with Northern Health through the University Hospital of Northern BC (UHNBC), BC Cancer Agency Centre for the North, and the UBC Northern Medical Program.

The intended applications of this research are to improve physical activity service delivery and resources available to residents of northern and rural communities in Canada. Additionally, in collaboration with Carrier Sekani Family Services (CSFS), potential outcomes related to knowledge translation activities include the development of evidence-based culturally appropriate resources that can be used by aboriginal communities to increase physical activity participation.

## Project Cost/Funding

The cost of this project is an estimated \$1.45 million. Funding is expected to come from an external Grant application to the Canadian Foundation for Innovation.

## Key Risks

Scheduling and facility operation interruption.

## Project Schedule

Planning	2018
Design	2019
Construction	2020
Occupancy	2020

## 2/ Quesnel River Research Centre (QRRC) Infrastructure

### 1. Current Situation

UNBC's QRRC is an active, innovative and relatively remote environmental research and education facility. Activity and operations have substantially increased recently necessitating additional laboratory facilities and residence space for researchers and students.

### 2. Project Description

The plan to develop QRRC includes extending the current lab, building two 4-bed cabins, upgrading the water and sewer systems to allow this growth, and building a boat storage facility.

### 3. Project Objectives

The scale and quality of the research facilities at QRRC will be improved by adding a new laboratory space as this directly affects our ability to both conduct research from the field station and provide space for teaching specialty courses.

Renovation of this space would improve the functionality of the current building and represents an efficient use of space and funds while utilizing existing QRRC infrastructure.

Expanding and enhancing this space would allow for significant revenue generation by hosting field schools and graduate students and providing dedicated space for researchers.

### 4. Options Considered

There really aren't any alternatives to this expansion with the increased activity in this remote location.

### 5. Project Outcomes

Improving QRRC laboratory and teaching facilities allows for increased capacity resulting in both, more environmental research and training, as well as income for the Centre which will be translated back into QRRC research equipment, personnel and facilities.

### 6. Project Cost/Funding

The estimated project cost is \$750,000. The project will rely on provincial and/or federal funding or a sizeable donation.

### 7. Key Risks

The primary risk on this project is scheduling due to its remote location and very short building season.

There is also a risk of limited construction company interest/availability due to the location.

## 8. Project Schedule

Planning	2015/16
Design	2018
Construction	tbd
Occupancy	tbd

### 3/ Regional Projects:

The highest priority capital projects for UNBC regional centres are both in Terrace.

The first need is for a student study room. In the absence of a library or other dedicated study space at the Terrace Campus, students currently use unoccupied classrooms as available, but often have to move. This would encourage and facilitate better student engagement at the campus.

The second is the long-standing need for First Nations or aboriginal welcoming or social space, which has been discussed in many versions over the last decade. A separate wing or stand-alone building that would allow smudging would meet the identified needs.

The third requirement is for a science teaching laboratory. There have been a number of difficulties in delivering science courses in the Northwest, but a dedicated and properly equipped teaching lab is essential for moving this enterprise forward.



