

**VILLAGE OF PEMBERTON
-COMMITTEE OF THE WHOLE MEETING AGENDA-**

Agenda for the **Committee of the Whole** of Council of the Village of Pemberton to be held Tuesday, January 18, 2022, at 1:00pm via electronic means through a ZOOM Webinar. This is Meeting No. 222.

"This meeting is being recorded as authorized by the [Video Recording & Broadcasting of Open Meetings Policy](#)

Please be advised that pursuant to section 10 (a) of the Village of Pemberton Council Procedure Bylaw No. 788, 2015, this meeting will be held electronically with no in-person attendance

Online participation is still encouraged and instructions for the public to view the meeting remotely by ZOOM webinar can be found [here](#).. Link to the Zoom Webinar: <https://us02web.zoom.us/j/82253169449>

Item of Business	Page No.
1. CALL TO ORDER	
In honour of the Lil'wat7ul, the Village of Pemberton acknowledges that we are meeting within the unceded territory of the Lil'wat Nation.	
2. APPROVAL OF AGENDA	1
Recommendation: THAT the Agenda be approved as presented.	
3. ADOPTION OF MINUTES	
a) Committee of the Whole Meeting No. 221, Tuesday, December 7, 2021	3
Recommendation: THAT the minutes of the Committee of the Whole Meeting No. 221, held Tuesday, December 7, 2021, be approved as circulated.	
4. Canada Infrastructure Program – Green Infrastructure Stream Grant – Water Treatment Plant Project	6
Recommendation: THAT the Committee of the Whole recommend to Council that Staff be directed to prepare and submit an application to the Canada-British Columbia: Investing in Canada Infrastructure Program; Green Infrastructure – Environmental Quality Sub-Stream, for funding to support the development of a new Water Treatment Plant Facility for the Village of Pemberton.	
AND THAT Staff prepare a report seeking the formal authorization by way of resolution required by the Village for this project for consideration by Council at the February 1, 2022 meeting.	
5. Nkwúkwma (Benchlands) Application Process Update	85
Recommendation: THAT Committee of the Whole receives the Nkwúkwma (Benchlands) Application Process Update report for information and directs Staff to submit the draft Sub-Area plan to a future Committee of the Whole meeting for review.	
6. OR134 – Redwood Estates, OCP and Zoning Application – Direction to Proceed	
Recommendation: THAT The Committee of the Whole recommend to Council that Official Community Plan and Zoning Bylaw amendment proposed lands located at 7374 East Pemberton Farm Road, legally described as Lot 5, DL 211, LLD Plan EPP21848 (PID: 028-961-102), not proceed in its current form;	

AND THAT Staff be directed to request a substantial amendment to the proposed application to align it more closely with the guidance in the Official Community Plan, existing and proposed development in the area, and the Hillside Development Guidelines;

AND FURTHER THAT the revised proposal be returned to a future Committee of the Whole meeting for review and direction.

7. ADJOURNMENT

**VILLAGE OF PEMBERTON
-COMMITTEE OF THE WHOLE MEETING MINUTES-**

Minutes for the **Committee of the Whole** of Council of the Village of Pemberton held Tuesday, December 7, 2021 at 2:30pm in Council Chambers at 7400 Prospect Street and via electronic means through a ZOOM Webinar. This is Meeting No. 221.

ATTENDING: Mayor Mike Richman
Councillor Ted Craddock
Councillor Leah Noble*
Councillor Amica Antonelli*
Councillor Ryan Zant

STAFF: Nikki Gilmore, Chief Administrative Officer
Sheena Fraser, Manager of Corporate & Legislative Services
Gwendolyn Kennedy, Legislative Assistant*

DELEGATION: Craig Dunn, Meager Creek Development Corporation*

PUBLIC: 1

MEDIA: 1

** Attended electronically*

Please Note: A recording of the meeting was made available to the public & media.

1. CALL TO ORDER

At 2:35pm Mayor Richman called the December 7, 2021 Committee of Whole meeting to order.

In honour of the Lil'wat7ul, the Village of Pemberton acknowledges that we are meeting within the unceded territory of the Lil'wat Nation.

2. APPROVAL OF AGENDA

Moved/Seconded

THAT the agenda be approved as presented.

CARRIED

3. ADOPTION OF MINUTES

a) Committee of the Whole Meeting No. 220, Tuesday, November 2, 2021

Moved/Seconded

THAT the minutes of Committee of the Whole Meeting No. 220, held Tuesday, November 2, 2021, be adopted as circulated.

CARRIED

4. DELEGATIONS

a) Geothermal to Hydrogen Project - Craig Dunn, Meager Creek Development Corporation

Craig Dunn, Managing Director, Meager Creek Development Corporation, presented to the Committee a summary of their plans for producing hydrogen from geothermal power sourced from the Meager Creek area. Mr. Dunn noted that due to time constraints he would deliver a verbal presentation but would follow up by sending the slide deck from his intended PowerPoint presentation.

Mr. Dunn explained that instead of selling geothermal power to the grid, Meager Creek Development Corporation proposes to use the geothermal resource to produce hydrogen, taking advantage of macro-economic and political decarbonization trends. The clean hydrogen will be used in place of carbon-producing fuels such as diesel and gasoline, enabling Meager Creek Development Corporation to access revenue from the sale of carbon tax credits as well as the sale of hydrogen and oxygen, and to realize a better return on investment.

Mr. Dunn expressed his wish to have an opportunity to provide further information regarding the project and its potential benefits to the community when time permits.

Councillors had questions and comments regarding the following aspects of the project:

- Transport of the liquid hydrogen to market.
- Location of the project site.
- Concern regarding landslide risk in the area.
- The level of activity the project will generate.
- Opportunities for the community to benefit from the project.
- Directional and horizontal drilling.
- Opportunities for CO₂ storage.
- Water consumption.
- Power transmission lines.

Mayor Richman thanked Mr. Dunn for his presentation and advised that Council was excited to hear about their project and looked forward to learning more about it in the future.

5. ADJOURNMENT

Moved/Seconded

THAT the December 7, 2021, Committee of Whole meeting be adjourned at 2:59pm.

CARRIED

Mike Richman
Mayor

Sheena Fraser
Corporate Officer

Date: Tuesday January 18, 2022

To: Nikki Gilmore, Chief Administrative Officer

From: Tom Csimá, Manager of Operations and Projects

Subject: Canada Infrastructure Program – Green Infrastructure Stream Grant - Water Treatment Plant Project

PURPOSE

The purpose of this report is to present to the Committee of the Whole the draft Water Treatment Investigation Report, review the results and recommendations of the Report, and discuss the next steps, including seeking the Committee's support to apply for the Investing in Canada Infrastructure Program – Green Infrastructure Stream grant to fund a future Water treatment facility for the Village of Pemberton.

BACKGROUND

As identified in the Village of Pemberton Water System Assessment Report 2020, and budgeted for in the 2021 Capital Projects budget, the Village has undergone preliminary investigations into the treatment of our existing water source, due to elevated levels of manganese and iron.

The Village's engineering consultants have identified a major grant funding opportunity available for infrastructure improvements, known as the Investing in Canada – Green Infrastructure grant. The program guide is attached to the report as **Appendix A**.

The program provides funding delivered by Infrastructure Canada to:

- Help communities reduce air and water pollution, provide clean water, increase resilience to climate change and create a clean-growth economy;
- Build strong, dynamic and inclusive communities; and
- Ensure Canadian families have access to modern, reliable services that improve their quality of life.

Under the program, over \$33 billion in funding is being delivered through bilateral agreements between Infrastructure Canada and each of the provinces and territories.

DISCUSSION & COMMENTS

Investigation

Attached as **Appendix B**, is the Water Treatment Investigation Draft Report, prepared by Kerr Wood Leidal, which is currently being reviewed by Village Staff prior to finalization.

The purpose of the investigation was to review up to three (3) available water treatment options that would provide Village residents with potable water that meets Canadian Drinking Water Quality (GCDWQ) guidelines.

The following notable conclusions were made:

- The existing Wells 2 and 3 groundwater sources will eventually have elevated iron and manganese water levels that do not meet the requirements of the GCDWQ;
- The proposed water treatment process of oxidation with chlorine injection and catalytic media filtration (GreenSandPlus™) will provide adequate treatment and disinfection to the water from the existing wells;
- The proposed Water Treatment Plant (WTP) should be designed to operate at 60 L/s and will have provisions to supply any future adjacent development with the addition of domestic pumps dedicated for that development;
- Four WTP configurations were presented based on the location of the proposed WTP and access to sanitary system. Costs of the WTP range from **\$7.9 to \$8.2 Million** and include 40% contingency;
- Operation and maintenance costs to operate the WTP is estimated to be \$248,000 to \$285,000 per year, which includes staff time, electrical costs, consumable materials, etc. Costs will be impacted by access to sanitary system and sludge disposal.

Grant

Through three (3) targeted sub-streams, investments under the Green Infrastructure Stream will support green infrastructure projects with outcomes across three (3) crucial areas: Climate Change Mitigation, Adaptation, Resilience and Disaster Mitigation, and Environmental Quality which includes upgrades to drinking water treatment and distribution infrastructure.

The funding provided by the federal government towards infrastructure projects is cost shared with the province and applying municipality. The levels of federal and provincial contribution are as follows:

- Government of Canada Contribution (up to): 40%
- Province of British Columbia Contribution (up to): 33.33%
- Remaining to be funded by the applicant, and federal stacking rules apply: approximately (26.67%).

For the estimated total project cost of **\$8.2 Million**, this would require a municipal contribution of **\$2.19 Million**.

The required documents for the grant submission are as follows:

- a) Council Resolution
- b) Project Location
- c) Detailed Cost Estimate
- d) Site Plan/Map
- e) Feasibility Study/Preliminary Design Report
- f) List and status of required licenses, permits and approvals (or indicate if not applicable); All applicable legislative or regulatory requirements will or have been met:
- g) Evidence of Secured Funds

- h) For all projects related to drinking water or wastewater: Water Conservation Plan and a copy of Council/Board/Band Council endorsement for the plan

The 2021 – 2025 Five-Year Financial plan has identified a possible expenditure of \$5 Million in 2025 for a water well expansion which will be included in the grant application as evidence of the Village's commitment to fund this project and meets with item (g) in the list provided above. The remaining requirements noted above have been or are being completed by the consulting engineer other than the council resolution, which must be passed within 30 days of the application deadline.

The application deadline for this grant opportunity is **January 26th, 2022**.

The intention is to finalize the attached Preliminary Design Report and pass the council resolution at the February 1st Council meeting, following the application of the grant on the above noted date. Currently, Staff is seeking the Committee's support to recommend to Council that Staff prepare a grant application for submission for January 26, 2022.

COMMUNICATIONS

There are no communications considerations required for this initiative.

LEGAL CONSIDERATIONS

There are no legal considerations at this time.

IMPACT ON BUDGET & STAFFING

As noted above, this project to investigate and design the water treatment facility has been included in the 2021 capital budget and costs associated with it have already been accommodated. The overall project cost will require budget allocations as required in the grant submission, and as previously identified in the 2021 – 2025 Five-Year Financial Plan. The Village's consultants will facilitate the work of applying for the grant and delivering all necessary design elements, including the Water Conservation Plan, with oversight by Village Staff, the time which will be incorporated into the day-to-day activities of the Operations Department.

INTERDEPARTMENTAL IMPACT & APPROVAL

The success of this application will impact other departments including Planning and Development Services, as well as Finance, and the office of the CAO, as it would be a major infrastructure project.

IMPACT ON THE REGION OR NEIGHBOURING JURISDICTIONS

There is no impact on the region or neighboring jurisdictions.

ALTERNATIVE OPTIONS

There are no alternative options for consideration.

RECOMMENDATION

THAT the Committee of the Whole recommend to Council that Staff be directed to prepare and submit an application to the Canada-British Columbia: Investing in Canada Infrastructure Program; Green Infrastructure – Environmental Quality Sub-Stream, for funding to support the development of a new Water Treatment Plant Facility for the Village of Pemberton.

AND THAT Staff prepare a report seeking the formal authorization by way of resolution required by the Village for this project for consideration by Council at the February 1, 2022 meeting.

APPENDICES:

Appendix A: Canada-British Columbia: Investing in Canada Infrastructure Program; Green Infrastructure – Environmental Quality Sub-Stream Program Guide

Appendix B: DRAFT Water Treatment Investigation Report, dated December 10, 2021, prepared by Kerr Wood Leidal.

Submitted by:	Tom Csimá, Operations Manager
CAO Approval by:	Nikki Gilmore, Chief Administrative Officer



***Canada-British Columbia
Investing in Canada Infrastructure Program***

***Green Infrastructure – Environmental Quality Sub-Stream
Program Guide***

Foreword

This Program Guide provides an overview of the Investing in Canada Infrastructure Program (ICIP) Green Infrastructure – Environmental Quality (EQ) Sub-Stream requirements (ICIP-EQ). This Guide will illustrate how to fill out an application, what the Ministry is looking for in a project, provide a walk-through of the application process and additional helpful information to assist in preparing and submitting an application under ICIP-EQ.

The ICIP's main goal is to create long-term economic growth, build inclusive, sustainable communities and support a low carbon, green economy. The EQ Sub-Stream is focused on infrastructure that will support quality and management improvements for drinking water, wastewater, and stormwater, as well as reductions to soil and/or air pollutants through solid waste diversion and remediation. Projects must meet related outcomes to be eligible. Eligible projects will support public infrastructure, defined as tangible capital assets primarily for public use and benefit.

The Program Guide contains references to the Canada – British Columbia ICIP Integrated Bilateral Agreement which can be found at <http://www.infrastructure.gc.ca/prog/agreements-ententes/2018/2018-bc-eng.html>.

In the event of a conflict between the Program Guide and the ICIP Integrated Bilateral Agreement, the Agreement prevails.

It is important for applicants to familiarize themselves with the requirements described in this guide prior to preparing their application.

The Program Guide has been revised for the Third Intake and published on October 08, 2021.

Contents

1. INTRODUCTION.....	5
1.1 PROGRAM GOAL AND OBJECTIVES	5
1.3 APPLICATION DEADLINE.....	6
1.4 LIMIT ON NUMBER OF APPLICATIONS	7
1.5 COST-SHARING, STACKING AND LIMITS TO FUNDING AWARD	7
2. APPLICANTS	9
2.1 ELIGIBLE APPLICANTS	9
2.2 INELIGIBLE APPLICANTS	9
3. PROJECTS.....	10
3.1 PROGRAM OUTCOMES.....	10
3.2 ELIGIBLE PROJECTS	10
3.3 INELIGIBLE PROJECTS	11
3.5 PROJECT SIZE AND PHASING PROJECTS.....	12
4. COSTS.....	14
4.1 ELIGIBLE COSTS.....	14
4.2 INELIGIBLE COSTS	15
5. GENERAL REQUIREMENTS.....	17
5.1 FUNDING.....	17
5.2 APPLICATION PROCESS	18
5.3 SELECTION PROCESS AND CRITERIA	18
5.4 APPROVAL IN PRINCIPLE - REQUIREMENTS.....	20
6. MANDATORY DOCUMENTS.....	22
6.1 COUNCIL/BOARD/BAND COUNCIL RESOLUTION	23
6.2 EVIDENCE OF SECURED FUNDS	23
6.3 DETAILED COST ESTIMATE.....	24
6.4 SITE PLAN/MAP	25
6.5 PRELIMINARY DESIGN REPORT	25
6.6 LIST OF REQUIRED LICENSES, PERMITS AND APPROVALS	25
6.7 WATER CONSERVATION PLAN	26
6.8 CONTACT INFORMATION.....	26
6.9 IMPACT ASSESSMENT ACT, 2019 REQUIREMENTS.....	26
6.10. HOW TO DETERMINE IF A FEDERAL ENVIRONMENTAL ASSESSMENT (FEA) IS REQUIRED	27
6.11 TIME AND COST CONSIDERATIONS	27
6.12 DIALOGUE WITH ENVIRONMENTAL AGENCIES.....	27
6.13 OTHER REGULATORY CONSIDERATIONS.....	28
6.14 B.C. ENVIRONMENTAL ASSESSMENT PROCESS.....	28
7. INDIGENOUS CONSULTATION	30
8. APPROVED APPLICATIONS	31
8.1 ASSETS.....	31

8.2	SHARED COST AGREEMENT	31
8.3	CONTRACT PROCEDURES AND PROVISIONS	31
8.4	CHANGES OR VARIATIONS TO AN APPROVED PROJECT	33
8.5	COST OVERRUNS	33
8.6	REPORTING.....	33
8.7	CLAIMS	35
8.8	ACCOUNTING RECORDS	36
8.9	COMMUNICATIONS.....	36
	APPENDIX A – FEDERAL PROGRAM OUTCOMES & TARGETS.....	37
	APPENDIX B – EXAMPLES OF ELIGIBLE COSTS AND INELIGIBLE COSTS	38

1. INTRODUCTION

1.1 PROGRAM GOAL AND OBJECTIVES

Canada and British Columbia governments are investing up to \$270 million in the third intake of the ICIP Environmental Quality Program (ICIP-EQ) to support infrastructure projects in communities across the province. Funding under the first and second intake, which represents a commitment of \$399 million by the Canadian and British Columbian governments, is fully allocated.

The ICIP-EQ program will assist communities in developing well planned community infrastructure that will protect public health and environment, promote climate change resilience, and support broad public benefits and service sustainability.

A project must meet at least one of the following outcomes to be eligible:

- increase the capacity to treat and/or manage wastewater;
- increase the capacity to treat and/or manage stormwater;
- increase access to potable water;
- increase the capacity to divert or manage solid waste (including landfill gases);
- increase capacity to reduce and/or remediate soil and/or air pollutants through remediation.

[Guidance on Aligning Projects with Outcomes](#) is available on the [Environmental Quality Program Website](#).

The Program encourages applicants to consider infrastructure to capture added value as described in Section 5.3. Projects that support more than one of the following program goals have a better chance of success:

- improve services to existing residents;
- provide clean drinking water;
- reduce air, soil and water pollution;
- reduce resource consumption;
- increase adaptation and mitigation to climate change;
- enhance natural systems and ecological services; and
- support resource recovery and reuse.

Some [example projects](#) are provided for your reference on the [Program Website](#).

Eligible projects will be subject to technical evaluation and ranked according to the extent to which they meet the program's eligibility criteria and program goals. Funding programs are highly competitive, and it is anticipated that there will be more projects that qualify for funding than the allocated program funds. The amount of funding requests should be reasonable in comparison to the allocated funding. Wherever feasible, applicants are encouraged to phase

their project to reduce funding ask, while ensuring the phased project independently meets the program outcome.

Projects with total estimated eligible expenditures of \$10 million or more will be subject to [climate lens assessments](#) (including a greenhouse gas emissions assessment that includes a cost-per-ton calculation and a climate change resilience assessment) to be completed to British Columbia and Canada's satisfaction prior to Canada's approval of a project for funding.

The approved projects will be subject to [reporting requirements](#) as the projects progress. Details are provided in Section 8.6. The program targets projects that can be completed within three years following approval. An Oversight Committee consisting of representatives from the federal and provincial governments will be responsible for administration of the Agreement.

Local Governments* and Indigenous applicants are eligible ultimate recipients for this merit-based funding.

**Local government refers to Regional Districts and Municipalities throughout this Guide. See Section 2.1 on Eligible Applicants for details.*

1.3 APPLICATION DEADLINE

The deadline for the application intake is **January 26, 2022 (4:00 pm PST)**.

Applicants must follow a two-step process to obtain access to Local Government Information System (LGIS) to submit online application.

- A Business BCeID credential and password are required to access the online application. The deadline to submit your BCeID credentials is **three weeks** prior to the submission deadline (**January 05, 2022**).
- After obtaining a BCeID you are required to request access to the Local Government Information System (LGIS). It is essential to have access to LGIS to be able to submit your [online application](#). We strongly encourage you to apply for BCeID access as soon as you can so that access to LGIS can be received in a timely manner.

See [Accessing the Online Application](#) for more details.

1.4 LIMIT ON NUMBER OF APPLICATIONS

Municipalities may submit **one** application per intake.

Regional Districts may submit **one** application for each community* in their area. A community is defined as a settlement area within a regional district electoral area or an established or proposed service area.

Indigenous Ultimate Recipients may submit **one** application per intake.

Applications not approved from an earlier intake may be revised and submitted as a new application. This will count towards the limit on the number of applications submitted. Prior to revising the previous application, applicants are encouraged to contact program staff for feedback on unsuccessful application and advice on how to improve their application.

**A community is considered as a settlement area within a regional district electoral area which may coincide with a service area boundary*

1.5 COST-SHARING, STACKING AND LIMITS TO FUNDING AWARD

The funding provided by the federal government towards infrastructure projects is cost-shared by other partners, such as provinces, municipalities, regional districts, and Indigenous groups. The levels of federal and provincial contribution are:

<i>Ultimate Recipient</i>	<i>Government of Canada Contribution (up to)</i>	<i>Province of British Columbia Contribution (up to)</i>	<i>Total Senior Government Contribution (up to)</i>
Local government	40%	33.33%	73.33%
Indigenous (off-reserve projects)	75%	15%	90%
Indigenous (on-reserve* projects)	75%	-	75%

**Application must demonstrate benefits and services extended beyond the reserve community for projects partially or fully located on reserve lands.*

The remaining eligible project costs, ineligible projects costs and cost overruns are the responsibility of the applicant.

Where applicants plan to use or have applied for funds from other federal or provincial programs, the source of these funds must be indicated on the application form. The disclosure of other funding sources must be provided by the successful recipient up to the completion of the project. The same project will not be considered for funding under more than one ICIP sub-stream.

Applicants who have other senior government funding or grants in place for their project should note that the program is subject to stacking rules*. Total senior government funding will be reduced to the maximum commitments under this program or may affect funding under other senior government funding programs. Note that Canada Community-Building Funds are a federal contribution for these purposes and cannot be utilized for the ultimate recipient's funding contribution to the project.

Indigenous ultimate recipients may be eligible to access additional funding from federal sources subject to approval from Canada.

** Federal stacking rules are subject to Canada's interpretation.*

2. APPLICANTS

2.1 ELIGIBLE APPLICANTS

A local or regional government established by or under British Columbia statute (*municipality or regional district for the purposes of this funding*).

- Applications from improvement districts, water utilities, societies or private water systems must be made by the sponsoring regional district or municipality. Such an application will count towards the limit on number of applications described in section 1.4. If the application is successful in obtaining program funding, the ownership of the infrastructure and associated assets must be transferred to the sponsoring regional district or municipality.

Supporting documents about intent to transfer ownership should be provided with the application. An Improvement District Conversion Guide can be found here:

http://www.cscd.gov.bc.ca/lgd/gov_structure/library/improvement_district_conversion_guide.pdf

Indigenous Ultimate Recipients:

- A band council within the meaning of Section 2 of the *Indian Act*.
- A First Nation, Inuit or Métis government or authority established pursuant to a self-government agreement or a comprehensive land claim agreement between Her Majesty the Queen in Right of Canada and an Indigenous people of Canada, that has been approved, given effect, and declared valid by federal legislation;
- A First Nation, Inuit or Métis government that is established by or under legislation whether federal or provincial that incorporates a governance structure; and
- An Indigenous development corporation.

2.2 INELIGIBLE APPLICANTS

- Federal entities, including federal Crown Corporations.
- Applicants not defined in Section 2.1.
- Applicants not established within the Province of British Columbia.

3. PROJECTS

3.1 PROGRAM OUTCOMES

The Program supports an outcome-based rather than a project category-based approach. In addition to meeting regulatory requirements and demonstrating public benefit an eligible project must meet following **outcomes** set out by Infrastructure Canada:

- Increased capacity to treat and/or manage wastewater.
- Increased capacity to treat and/or manage stormwater.
- Increased access to potable water.
- Increased capacity to reduce and/or remediate solid waste pollutants (including landfill gases).
- Increased capacity to reduce and/or remediate soil and/or air pollutants.

3.2 ELIGIBLE PROJECTS

The Program supports primarily public infrastructure, which is defined as “tangible capital assets in British Columbia primarily for public use and/or benefit”.

To be eligible for funding, a Project must:

- a) be put forward by an eligible applicant who demonstrates that they will own and be able to operate and maintain the resulting infrastructure over the long term;
- b) meet one or more of the Program outcomes (see Section 3.1);
- c) be for the construction, renewal, rehabilitation, or material enhancement of infrastructure, excluding normal maintenance or operation;
- d) be supported by all requirements set out in Section 5;
- e) stipulate project completion date of no later than December 31, 2026;
- f) be duly authorized or endorsed by, as applicable:
 - in the case of a local government applicant, a resolution from its council/board; or in the case of an Indigenous applicant, a resolution from its band council; or council/board;
- g) be for broad public use or benefit and clearly demonstrate this within the application;
- h) meet or exceed any applicable energy efficiency standards for buildings outlined as below:

- exceed by 25% the energy efficiency requirements of the National Energy Code of Canada for Buildings; or
 - the building will rank in the equivalent of top 25% of its building type under ENERGY STAR;
- i) for publicly accessible buildings, meet or exceed the requirement of the highest published accessibility standard in a jurisdiction;
- j) for First Nations applicants, a project must demonstrate that direct benefits extend beyond the reserve community and result in services being delivered to land off-reserve; and,
- k) be located in the Province of British Columbia.

In addition, projects must meet these requirements:

- a) Wastewater Projects must result in wastewater effluent that meets the Wastewater Systems Effluent Regulations, or provincial regulations where there is a federal equivalency agreement in place.
- b) Drinking water projects must meet or exceed provincial requirements and standards.
- c) Solid waste diversion Projects must result in an increase in the quantity of material diverted from disposal as measured against a baseline using the *Generally Accepted Principles for Calculating Municipal Solid Waste System Flow*.
- d) Projects that reduce or remediate soil pollutants must be undertaken on properties that are contaminated, as confirmed by a Phase II Environmental Site Assessment.

3.3 INELIGIBLE PROJECTS

A project will be deemed ineligible if:

- a) the construction began or a tender has been awarded prior to the final project approval;
- b) the estimated project start date is more than 2 years after the date of application;
- c) the project will be completed after December 31, 2026;
- d) the project deals with assets owned by the Government of Canada including federal Crown Corporations;
- e) it is eligible under the federal Low Carbon Economy Fund;

- f) it is an energy retrofit project, unless the energy retrofit project is on an asset that would be considered eligible for funding under the ICIP IBA or under the National Housing Strategy;
- g) it includes investment in emergency services infrastructure;
- h) it involves relocation of whole communities; or
- i) it relates to seismic risks.

Projects may not be funded if they present risks to program funders, for example if any of the following are deemed likely:

- a high probability of the project not being able to be completed within the program timeline;
- potential for the project to not proceed due to applicant funding difficulties;
- a high probability that the project will require a significant change in scope to proceed due to limited planning being undertaken prior to application;
- the project may not provide the level of service identified;
- the project does not have public support;
- First Nations within 5 km* of the project site haven't been identified;
- the project has the potential to cause environmental or social issues;
- the applicant does not demonstrate they are able to manage, maintain and finance the project over the long term;
- Projects that has not considered climate change and its consequences such as flood, fire, drought, etc.;
- Project has a class C or D cost estimate and does not include sufficient contingency costs; and
- The application does not demonstrate that risks related to the project have been considered and mitigation measures are identified. Risk associated with implementation of value-added components in the project will not be viewed negatively.

**Applicants should use Aboriginal and Treaty Rights Information System (ATRIS) website to locate indigenous communities within 5 km of the project site.*

3.5 PROJECT SIZE AND PHASING PROJECTS

Applicants should be aware that there are [reporting requirements](#) for this Program that must be met (see Section 9.6 for requirements).

There is no cap on the maximum allowable funding amount per project; however, consideration will be given to a fair distribution of funding. Applicants should consider whether phasing is an option where project funding would represent more than 10% of

the total funding available for the intake. Applicants should submit the project that will give them the best value for the given cost.

Where a phase is submitted for funding consideration, the phase should independently meet program outcomes.

If applying for a phase of a larger project, identify how the project will be phased. This should be demonstrated in the accompanying [Detailed Cost Estimate Template](#), and the project descriptions must be organized to easily describe each of the distinct phases of the project, highlighting which phase is the subject of the funding request.

It is important to note that the approval of one phase of a project does not guarantee that other phases will receive funding.

4. COSTS

See Appendix B for examples of eligible and ineligible costs.

4.1 ELIGIBLE COSTS

Eligible costs will include the following:

- a) all costs considered to be direct and necessary for the successful implementation of an eligible project, in the opinion of Canada and British Columbia, excluding those identified under Section 4.2 (Ineligible Costs).
- b) the capital costs of constructing or renovating a tangible asset, as defined, and determined according to generally accepted accounting principles in Canada.
- c) all planning (including plans and specifications), assessment and design costs specified in the agreement such as the costs of environmental planning, surveying, engineering, architectural supervision, testing and management consulting services, to a maximum of 15% of total funding award.
- d) costs related to meeting specific Program requirements, including completing climate lens assessments (as outlined in Section 6) and creating community employment benefit plans (costs for climate lens assessments can be incurred prior to project approval, but can only be paid if and when a project is approved by both the Province and Canada for contribution funding).
- e) the costs of engineering and environmental reviews, including environmental assessments and follow-up programs and the costs of remedial activities, mitigation measures and follow-up identified in any environmental assessment.
- f) the costs of Indigenous consultation, and where appropriate, accommodation.
- g) the costs directly associated with joint federal and provincial communication activities (press releases, press conferences, translation, etc.) and with federal and provincial project signage.
- h) the incremental costs of the eligible recipient's employees related to construction of the project may be included as eligible costs under the following conditions:
 - i. The recipient is able to demonstrate that it is not economically feasible to tender a contract;
 - ii. The employee or equipment is engaged directly in respect of the work that would have been the subject of the contract; and
 - iii. The arrangement is approved in advance and in writing by the Province and by Canada.

Eligible costs are limited to the following:

- a) costs incurred between the project approval date and the project completion date set out in the Shared Cost Agreement, except for costs associated with completing climate lens assessments and creating community employment benefit plans, which are eligible before project approval, but can only be paid if and when a project is

approved by the Province and Canada and a signed Shared Cost Agreement is in place.

4.2 INELIGIBLE COSTS

The following are deemed ineligible costs:

- a) costs incurred prior to the approval of the project, except for expenditures associated with completing climate lens assessments and creating community employment benefit plans as required (but can only be paid if and when a project is approved by the Province and Canada and a signed Shared Cost Agreement is in place);
- b) costs incurred after the project completion date set out in the Shared Cost Agreement with the exception of expenditures related to audit and evaluation requirements pursuant to the agreement;
- c) costs related to developing a funding application and application supporting documentation;
- d) costs incurred for cancelled projects;
- e) costs of relocating entire communities;
- f) land acquisition;
- g) real estate and other fees related to purchasing land and buildings;
- h) financing charges, legal fees, and interest payments on loans, including those related to easements (e.g., associated surveys);
- i) costs associated with operating expenses and regularly scheduled maintenance work;
- j) leasing land, buildings and other facilities;
- k) leasing of equipment other than equipment directly related to the construction of the project;
- l) overhead costs, including salaries and other employment benefits, direct or indirect costs associated with operating expenses, administration and regularly scheduled maintenance work, and more specifically any costs related to planning, engineering, architecture, supervision, management and other activities normally carried out by staff, except those indicated in Eligible Expenditures;
- m) costs related to furnishing and non-fixed assets which are not essential for the operation of the asset/project;
- n) any goods and services costs which are received through donations or in kind;
- o) taxes for which the ultimate recipient is eligible for a tax rebate and all other costs eligible for rebates;
- p) all capital costs, including site preparation, vegetation removal and construction costs, until Canada has been satisfied that the federal requirements under the *Impact Assessment Act, 2019* (IAA, 2019), other applicable federal environmental assessment legislation that is or may come into force during the term of the Agreement, and other applicable agreements between Canada and Indigenous groups have been met to the extent possible and continue to be met; and

- q) all capital costs, including site preparation, vegetation removal and construction costs, until Canada is satisfied that any legal duty to consult, and where appropriate, to accommodate Indigenous groups or other federal consultation requirement, has been met and continues to be met.

5. GENERAL REQUIREMENTS

5.1 FUNDING

The applicant must demonstrate that their share of funding has been, or is being secured, and that a plan is in place to recover any cost overruns beyond budgeted contingencies. Further, the application must demonstrate that funds have been committed to operate, maintain, and plan for replacement. Also see the “Evidence of Secured Funds”, “Confirmation of Funds” and “Council/Board Resolution” sub-sections under Section 6.

Local Government Recipients

- If a local government has accumulated funds in a statutory reserve to finance a share of project costs, please submit evidence of these funds as at application date and supporting information directing the use of reserve funds.
- If a local government intends to borrow a share of costs, a bylaw to authorize the borrowing of funds should receive third reading by a local government prior to submitting an application to the program. A copy of that bylaw should accompany the application.
- Municipalities that intend to borrow should also submit a Liability Servicing Limit Certificate for the amount authorized in the bylaw. Please also submit information about any sources of applicant share of project costs other than reserves or borrowing. Please note that submission of a loan authorization bylaw and supporting information as evidence under the program is separate from submission for approval by the Inspector of Municipalities. That is a separate process that must be completed when approval by the Inspector is desired. **A preference may be given to projects that demonstrate secured funding.**
- A financial analysis will be completed as part of the application review. Local government applicants should recognize that the success of applications may reflect the extent to which applicants have met financial criteria such as having:
 - met the deadlines for legislated financial reporting, including the financial plan, audited financial statements, Local Government Data Entry (LGDE) forms and Statement of Financial Information (SOFI);
 - submitted the financial plan to the Ministry to meet requirements of s 165 of the Community Charter for municipalities and Section 374 of the *Local Government Act* for regional districts; and
 - measures of financial stability and sustainability which may include property tax structures and development costs charge structure.

Indigenous Ultimate Recipients

- On-reserve applicants must demonstrate that their share of the funding is secured, and there is a plan in place to cover any cost overruns, ineligible costs and also for operation and maintenance.
- The applicant must provide source and amount of funding if funding from senior government is going to be used for the project.
- Off-reserve Indigenous ultimate recipients must show the “Evidence of Secured Funds”, “Confirmation of Funds” and “Council/Band Resolution” and demonstrate that their share of funding has been secured and there is a plan in place to cover any cost overruns, ineligible costs and also for operation and maintenance.

5.2 APPLICATION PROCESS

All proponents must complete and submit an [online application](#) via the Local Government Information System (LGIS). [Sample application questions](#) are available on the [program website](#).

A Business BCeID is required to set up access in LGIS. This can take up to 15 business days. New users are encouraged to start the process of requesting a BCeID as early as possible. See [Accessing the Online Application](#) for more details.

5.3 SELECTION PROCESS AND CRITERIA

The Program is merit based and projects are subject to a comprehensive technical ranking assessment and internal provincial review, with a list provided to the Oversight Committee and recommendations submitted to Canada for final approval.

Applicants must ensure that their application demonstrates:

- how the project will be eligible for funding (Section 3.2);
- how the project benefits align with one or more of the outcomes (Section 3.1);
- how the project is supported by community’s long-term planning and management;
- how the project provides value for money during lifecycle of the infrastructure; and
- how the project is supported by sustainable management and planning.

Projects that support more than one program goals have a better chance of success; program goals are:

- Improve services to existing residents;
- provide clean drinking water;
- reduce air, soil, and water pollution;
- reduce resource consumption;

- increase adaptation and mitigation to climate change;
- enhance natural systems and ecological services; and
- support resource recovery and reuse.

The following will be considered for added value:

- **Environmental Protection:**
Protecting the environment is reducing the impact or damage caused by human activity.
- **Enhancing the environment - support for natural systems and ecological services:**
Natural assets, such as wetlands, forests and streams can provide ecological benefits that serve the community and support the environment, by storing rainwater and reducing flooding. Supporting, enhancing, and accounting for natural systems will support sustainable infrastructure delivery. It is important to undertake urban and industrial development in a way that does not negatively impact the environment, such as freshwater ecosystems and air and soil quality.

Natural assets can also provide opportunities to increase community resilience to the impacts of climate change and carbon storage to mitigate the changing climate. The BC Framework Primer on Climate Change and Asset Management ([AMBC Primer](#)) introduces an approach for integrating climate change considerations throughout the asset management process.

- **Resource Recovery and Reuse:**
Rather than losing valuable resources to the landfill or flushing them towards the ocean, resources should be recovered and reused. For example, solid and liquid waste can be reused to conserve water, recover nutrients, capture, and reuse heat (please see [Closing the Loop](#) document for further information).
- **Energy Generation and Reuse:**
Renewable energy supports a sustainable community and includes energy generated from waste as well as other sources such as hydropower, sunlight, wind, rain, tides, waves, etc.
- **Climate Change Adaptation:**
Adaptation solutions can be incorporated into a project to lessen the impacts and potential damages of expected climate effects, or to benefit from opportunities associated with such effects, making a community or ecosystem more resilient to climate change. For example, an adaptation solution could be to use stormwater to restore and protect a wetland area, incorporate flood defense into a wastewater facility, or modify a drinking water intake for drought conditions.

- **Climate Change Mitigation - Reduce greenhouse gases:**
To reduce causal sources and the rate and depth of climate change effects, the amount and concentration of greenhouse gases released to the atmosphere must be decreased. Efforts to reduce emissions and enhance sinks are referred to as “mitigation”.

Internal provincial review may include consideration of factors such as regional distribution of funding, previous funding, communities in need, and unmitigated project risks.

5.4 APPROVAL IN PRINCIPLE - REQUIREMENTS

Shortlisted projects will be given initial ‘approval in principle’ by the Province, which provides some assurance to applicants that funding will be received prior to having to complete these additional requirements

The following will be required to be completed to BC and Canada’s satisfaction prior to Canada’s approval of a project into the program:

- For all projects with total estimated eligible expenditures of \$10 million or more, a [climate lens](#) - greenhouse gas emissions assessment that includes a cost-per-tonne calculation as required by Canada.*
- For all projects with total estimated eligible expenditures of \$10 million or more, a [climate lens](#) - climate change resilience assessment.**
- A federal form to determine if there are any federal environmental assessment requirements that could apply to the project and if there is a requirement to consult with Indigenous Groups.
- For all projects with total estimated eligible expenditures of \$25 million or more, the expected results for community employment benefits as required by Canada, unless waived at the discretion of British Columbia (see Section 8.6 for additional information).***

The following may be required on a case-by-case basis at the discretion of British Columbia:

- For projects with total estimated eligible expenditures of \$15 million or more and a sufficiently complex nature, a Value Engineering assessment

Projects that request a contribution of more than \$50 million from federal sources, involve federal assets, or involve sole source contracting (construction contracts over \$40,000 or, for the acquisition of architectural and/or engineering services, over

\$100,000), if shortlisted, will be subject to a request for further information to support a federal Treasury Board submission.

**Note that costs associated with greenhouse gas emissions and climate change resilience climate lens assessments will be considered as eligible as part of the funding.*

***Information on the requirements for climate lens assessments can be found at:*

<https://www.infrastructure.gc.ca/pub/other-autre/cl-occ-eng.html>.

****Information on the requirements for community employment benefits reporting can be found at: <http://www.infrastructure.gc.ca/pub/other-autre/ceb-ace-eng.html>.*

5.5 FINAL APPROVAL REQUIREMENTS

- Projects with total estimated eligible expenditures of \$10 million or more will be subject to climate lens assessments (including a greenhouse gas emissions assessment that includes a cost-per-ton calculation and a climate change resilience assessment) to be completed to British Columbia and Canada's satisfaction prior to Canada's approval of a project for funding.
- Canada will determine requirements for Environmental/Impact Assessment and Indigenous Consultation. After Approval in Principle, proponent will be required to fill out a form to provide necessary information.
- Projects with total eligible costs of \$25 million or more are expected to provide community employment benefit as required by Canada. Rationale will be required for consideration of waiver at the discretion of the Province.

6. MANDATORY DOCUMENTS

The following **mandatory documents** (15 MB limit per document) must be clearly labeled and uploaded to LGIS as part of your [online application](#) by the application deadline:

- a) [Council/Board/Band Council Resolution](#)
- b) Project Location [.KML file](#)
- c) [Detailed Cost Estimate](#)
- d) Site Plan / Map
- e) Feasibility Study/Preliminary Design Report
- f) List and status of required licenses, permits and approvals (or indicate if not applicable); All applicable legislative or regulatory requirements will or have been met:
 - a. This includes requirements for:
 - 1. Federal Environmental Assessment (FEA) process, provincial Environmental Assessment process; and
 - 2. Requirements for Indigenous Consultation.
- g) Evidence of [Secured Funds](#)
- h) For all projects related to drinking water or wastewater: Water Conservation Plan and a copy of Council/Board/Band Council endorsement for the plan

Where attachments are longer in length, specific reference should be made to the sections of documents you wish to be included in the review.

Applicants are responsible for ensuring full and accurate information is submitted.

Applications will not be reviewed unless all necessary information has been submitted, including mandatory documents.

The following documents may be used to support the application; however, the relevant information should be referenced within the application:

- Partnership agreement/Letter of Support/MOU between project partners if applicable
- Options Assessment
- Business Plan
- Cost Benefit Analysis or Other Study
- Design Drawings or Details
- Letters of Support
- Record of consultation with indigenous communities if applicable

Letters of support, partnership agreements, or memorandums of understanding from the other partners are recommended for projects done in partnership with others or that will have joint ownership. Letters from health officers are useful for projects that support public health objectives.

Applicants should use [Aboriginal and Treaty Rights Information System](#) (ATRIS) website to locate indigenous communities within 5 km of the project site and determine the consultation needs.

Where a project is excluded from a review under the *Impact Assessment Act*, it may require permits or approvals from local, regional, or provincial government agencies. It is the applicant's responsibility to ensure that any additional approvals and permits are identified and/or obtained.

- The energy efficiency requirements of the [National Energy Code of Canada for Buildings 2017](#) will be met for newly constructed or materially rehabilitated infrastructure intended for use by the public, where applicable (describe the variances and plans to achieve compliance).
- For newly constructed or materially rehabilitated infrastructure intended for use by the public, the project will provide appropriate access for persons with disabilities.

Projects that are selected for funding will be required to provide additional information as outlined in Section 5.4 to British Columbia and Canada's satisfaction prior to Canada's approval of a project.

6.1 COUNCIL/BOARD/BAND COUNCIL RESOLUTION

A [council/board/band council resolution](#) or by-law, committing the proponent to contribute its share of the eligible project costs and all the ineligible costs, is required.

The resolution/bylaw must identify the source of the proponent's share of the project's costs. The resolution should show support for the project from a municipality's Council, a regional district Board, or an Indigenous applicant's band council (or other appropriate authorized body).

Where possible, the resolution should be submitted as part of the application package. Where the applicant is unable to submit the resolution with the application (e.g., due to timing considerations with when the Council/Board meets), it must be submitted within one month after the submission deadline. Please indicate on the application form when submission of the resolution will be expected to occur.

Projects not supported by an appropriate resolution will not be considered.

6.2 EVIDENCE OF SECURED FUNDS

Evidence that the applicant's full share of funding has been or will be secured is required. This evidence may be in the form of:

- recent bank statements showing that the amount is on hand;
- a line of credit letter of approval (for non-local government entities);
- staff reports and/or resolutions of board/council directing the use of reserve funds.

Local governments who are recovering their share of funding through borrowing, this evidence may be in the form of:

- a Liability Servicing Limit Certificate indicating that borrowing is within a local government's assent free borrowing limit;
- a loan authorization bylaw that has received third reading; and/or
- a date that borrowing has been approved through a formal public approval process and a copy of the related bylaw.

Other evidence may be accepted at the discretion of the Director or Program Lead.

A [confirmation of secured funds](#) template is available on the [Program Website](#).

6.3 DETAILED COST ESTIMATE

A [detailed cost estimate template](#) has been provided on the [Environmental Quality Program](#) website and submission of a completed cost estimate is a **mandatory document**. Detailed costs estimates must include but are not limited to: an itemized description, cost per unit of measure, number of units, as well as design, engineering, contingency costs, and tax rebate breakdowns. Applicants are to identify which costs are eligible and which are ineligible and to state what class or confidence level the estimates are (e.g., class B or the level of confidence of the proposed cost). Cost estimates must be dated.

The preference is that submitted projects are planned to the degree that required works are identified, generally represented by a cost estimate of Class C (representing +/- 25-40% variability in costs) or better (Class A or B). A Class A or B cost estimate creates more certainty of the estimated costs involved.

Applicants are advised to ensure that plans are in place to cover potential cost overruns and that adequate contingencies are included within the cost estimate. Otherwise, there may be additional risk linked to the proposed project given the potential cost uncertainties

If the project is part of a larger project, the detailed cost estimate should only include the costs for the project being applied for. If a project can be broken into phases, while still meeting a program outcome, each distinct phase should be clearly broken out in the detailed cost estimate that is submitted.

It is important to note that projects will be reviewed in the context of the *Impact Assessment Act* (IAA) 2019 and regulations as discussed in Section 7. Where applicable, project cost estimates should include costs to conduct an IAA study.

Projects requiring climate lens assessments as outlined in Section 5.4 should include costs to complete these and have them attested to by a qualified assessor.

IMPORTANT: It is necessary to provide **up-to-date, detailed, and complete cost estimates** and identify and account for inflation, increasing construction costs and possible delays in start and completion dates. Factors that may delay construction include: the timing of the grant announcement date, fisheries window, public consent, weather and construction seasons, delays in the IAA process, right of way negotiations, regulatory applications, Indigenous consultation, etc. It is important to plan your project to start following final project approvals which are anticipated in Spring 2023.

6.4 SITE PLAN/MAP

A site plan/map should include the location and the general layout of the works to be included in the proposed project.

6.5 PRELIMINARY DESIGN REPORT

This report should be completed by a professional with expertise relevant to the subject area (i.e., an engineer, architect, etc.) and should identify what the solution is, why it is being recommended and should address capital and lifecycle expenditures, annual operating costs, emerging technologies, environmental considerations, and societal impacts.

6.6 LIST OF REQUIRED LICENSES, PERMITS AND APPROVALS

All applicants are required to investigate and submit a list of licenses, permits and approvals which are required for the project to proceed and they must advise on the status of any that have been applied for. This demonstrates that a project is on track and/or that the proponent has considered and commenced applications for these required items.

Note that there is now a requirement under the *Water Sustainability Act* for a water license for all users who divert and use **groundwater** from a well or dugout for non-domestic purposes. The Ministry of Environment & Climate Change's brochure provides information: https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/laws-rules/gw_licensing_brochure.pdf.

6.7 WATER CONSERVATION PLAN

A current, Council, Board, or Band Council endorsed Water Conservation Plan will be required for any project application related to Drinking Water or Wastewater. To meet the requirement, the plan will need to have been updated within the last five years. Please attach or provide a link to the plan and provide a copy of the Council or Board endorsement of the plan. The plan should be relevant to the area which will be served by the project.

Where a water or wastewater system is being transferred to a local government, a commitment should be included to extend the water conservation activities to the transferred system.

Drinking Water or Wastewater projects which create new infrastructure should consider how water can be used efficiently or reduced as part of the project design. Advice on creating a water conservation plan can be found here: <http://www.obwb.ca/water-conservation-guide-for-bc-now-available/>. An additional tool for exploring water conservation options is: <http://waterconservationcalculator.ca>.

BC landscape water calculator tool is: <https://bcwatercalculator.ca/landscape/irrigation>

6.8 CONTACT INFORMATION

Applications and mandatory documents will be submitted through the online LGIS application. Questions can be directed to:

Ministry of Municipal Affairs

Phone: 250-387-4060

Email: infra@gov.bc.ca

6.9 IMPACT ASSESSMENT ACT, 2019 REQUIREMENTS

The *Impact Assessment Act 2019* (the Act) and its regulations are the legislative basis for the federal practice of environmental assessment. A Federal Environmental Assessment (FEA) is a process to evaluate the environmental effects and identify measures to mitigate potential adverse effects of a proposed project. The Act ensures that the environmental effects of a project are carefully reviewed before a federal department/agency decides to allow the proposed project to proceed.

Detailed information on the *Impact Assessment Act* and regulations can be found at the Impact Assessment Agency of Canada's website: www.canada.ca/en/impact-assessment-agency.html

All projects that receive funding through the Agreement must comply with the Act. However, since not all projects are on federal lands or affect the environment in a significant way, many projects may not require an environmental assessment under the Act. It is the responsibility of the Proponent to determine the FEA requirements and contact the relevant Federal departments, as indicated below.

6.10. HOW TO DETERMINE IF A FEDERAL ENVIRONMENTAL ASSESSMENT (FEA) IS REQUIRED

An FEA will be required under *Impact Assessment Act* 2019 if the project meets the definition of a designated project and or it is located on federal lands.

Is it a designated project?

The Project List (Also known as the *Physical Activities Regulation*) identifies types of projects that may require an assessment under the Act: <http://laws-lois.justice.gc.ca/eng/regulations/SOR-2012-147/page-1.html#docCont>.

Only projects on the designated project list require FEA or projects designated by the Minister due to potential for environmental effects or public concerns. Should the Project meet the definition of a designated project, proponents must provide to the Impact Assessment Agency of Canada a description of their proposed project to initiate the process.

Is the project on federal lands?

Projects on federal lands are subject to an assessment of environmental effects. Information must be provided to program staff on whether the project will be located on federal lands. Proponents must engage with the federal lands' owner to establish the process and requirements to meet the *Impact Assessment Act*, 2019.

For more information refer to the Impact Assessment Process Overview:

<https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/impact-assessment-process-overview.html>

6.11 TIME AND COST CONSIDERATIONS

Time and Costs involved in completing the FEA and associated studies will depend on site accessibility and the availability of local expertise, the nature and complexity of the project, potential environmental implications, and the level of public/First Nations interest. When developing the project cost estimates, please consider the potential expenses involved in preparing a FEA.

6.12 DIALOGUE WITH ENVIRONMENTAL AGENCIES

For projects that require a FEA, proponents are encouraged to contact relevant federal departments or provincial ministries (e.g., Fisheries & Oceans Canada, Environment Canada - Canadian Wildlife Service or BC Ministry of Environment). A proactive discussion with such agencies during the project-planning phase will assist in identifying potential environmental impacts and necessary mitigation measures.

IMPORTANT NOTE:

- Where necessary, ICIP funding is conditional upon completion of an environmental assessment review of the project under the Act with a satisfactory outcome.
- Starting BC and Canada environmental assessments early in the planning of a project will assist British Columbia and the Government of Canada in discharging the legal duty to consult and, if appropriate, accommodate Indigenous peoples when the Crown contemplates conduct that might adversely impact established or potential Indigenous or Treaty rights.
- Successful applicants must agree to adhere to mitigation requirements as may be specified in the FEA and/or recommended by federal departments and agencies participating in the review process.
- Any changes to the scope of the project while it is underway could re-open the FEA review and cause the project to have construction delays. In addition, project scope changes need to be brought to the ICIP program staff immediately as they need the Province's approval prior to going forward with any changes to the original approved scope.

6.13 OTHER REGULATORY CONSIDERATIONS

Projects must meet all applicable federal and provincial environmental legislation and standards. Even though a project is excluded from a review under the *Impact Assessment Act*, it may require permits or approvals from local, regional, or provincial government agencies. It is the applicant's responsibility to ensure that any additional approvals and permits are obtained.

6.14 B.C. ENVIRONMENTAL ASSESSMENT PROCESS

Proposed projects or modifications to existing projects that are subject to the *British Columbia Environmental Assessment Act* (BCEAA) are specified in the Environmental Assessment Reviewable Project Regulations by project type, design capacity, and diversion or extraction rate. All applicants should review a copy of the regulations for information on projects that may be subject to the BCEAA. Information must be provided to EQ program staff on whether the project will be subject to BC Environmental Assessment.

Refer to BC Environmental Assessment Office's website at www.eao.gov.bc.ca or contact their office at:

**2nd Floor 836 Yates Street
PO Box 9426 Stn Prov Govt
Victoria, BC V8W 9V1
Email: eaoinfo@gov.bc.ca**

7. INDIGENOUS CONSULTATION

Proponents may be required to consult with Indigenous groups if the project is located in an area where Indigenous communities have potential or established Indigenous or Treaty rights. It is the responsibility of the Proponent to determine whether or not the project requires consultation with Indigenous groups. Applicants should check the [Aboriginal and Treaty Rights Information System](#) (ATRIS) to determine the presence of Indigenous communities within 5 km of the project site.

Information must be provided to program staff on whether or not the project will be subject to Indigenous Consultation. If required, Canada must be satisfied that for each Project:

- a) Indigenous groups have been notified and, if applicable, consulted;
- b) If applicable, a summary of consultation or engagement activities has been provided, including a list of Indigenous groups consulted, concerns raised, and how each of the concerns have been addressed, or if not addressed, an explanation as to why not;
- c) Accommodation measures, where appropriate, are being carried out by British Columbia or Ultimate Recipient at their own cost; and
- d) Any other information such as consultation records has been provided that Canada may deem appropriate.

No site preparation, vegetation removal or construction will occur for a Project and Canada has no obligation to pay any Eligible Expenditures that are capital costs, as determined by Canada, until Canada is satisfied that any legal duty to consult, or other federal consultation requirement, and where appropriate, to accommodate Indigenous groups has been met and continues to be met.

For more information on British Columbia's consultation resources and consultation policy:

<https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/consulting-with-first-nations>

https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/first-nations/legal_obligations_when_consulting_with_first_nations.pdf

8. APPROVED APPLICATIONS

Successful recipients will be notified in writing if their application is approved.

The Province of British Columbia will provide a Shared Cost Agreement* to those proponents approved for funding. The Shared Cost Agreement will outline the terms and conditions associated with the funding. Funding is conditional upon the recipient signing a Shared Cost Agreement with the Province.

Shared Cost Agreements will be prepared only after the requirements described in Section 5.4 have been deemed as met by Canada.

All projects will be expected to be substantially complete within the dates set out in their Shared Cost Agreement. The third intake of the Program will support projects that can be completed within three years of the approval. Where extenuating circumstances outside the proponent's control cause project delays, an approval for extension may be considered (with projects ultimately having to be completed before December 31, 2026).

**Shared Cost Agreement or "Ultimate Recipient Agreement" means an agreement between British Columbia and the Ultimate Recipient under the ICIP.*

****"Ultimate Recipient" means an entity identified under sections A.1 a) of Schedule A in Canada – British Columbia ICIP Integrated Bilateral Agreement and identified within this guide as an eligible applicant.*

8.1 ASSETS

Within the Shared Cost Agreement, ultimate recipients will need to maintain ongoing operations and retain title to and ownership of an asset for at least five years after substantial completion, except to Canada, British Columbia or a municipal or regional government, or with Canada and the Province's consent.

8.2 SHARED COST AGREEMENT

"Shared Cost Agreement" means an agreement between the Province of British Columbia and a Recipient whereby the Province agrees to contribute financially to an approved project.

8.3 CONTRACT PROCEDURES AND PROVISIONS

"Contract" means a Contract between a Recipient and a Third Party whereby the latter agrees to contribute a product or service to a project in return for financial consideration which may be claimed as an Eligible Cost.

All contracts will be awarded in a way that is fair, transparent, competitive, and consistent with value for money principles.

The following objectives for procurement activity for goods, services and construction are based on the principles of fair and open public sector procurement competition, demand aggregation, value for money, transparency, and accountability:

- proponents receive the best value for money spent on contracts;
- vendors have fair access to information on procurement opportunities, processes and results;
- acquisition opportunities are competed, wherever practical;
- proponents only engage in a competitive process with the full intent to award a contract at the end of that process;
- proponents are accountable for the results of their procurement decisions and the appropriateness of the processes followed;
- the cost of the procurement process, to both vendors and proponents, is appropriate in relation to the value and complexity of each procurement;
- contracts are awarded in accordance with the Canadian Free Trade Agreement and international trade agreements if applicable; and
- acquisitions are managed consistent with the policy of the Province of British Columbia (The Province of British Columbia Policies can be accessed at: <https://www2.gov.bc.ca/gov/content/governments/policies-for-government/core-policy/policies/procurement>).

Proponents are responsible for:

- planning, managing and fully documenting the process to acquire goods, services and construction;
- managing solicitation and contract award processes in a prudent and unbiased manner that fairly treats all potential vendors and bidders;
- ensuring that contracts for goods, services and construction are designed to provide the best value; and
- ensuring that all acquisitions are consistent with policy and applicable legislation.

It is expected that all contracts for works associated with projects that are approved for funding will be publicly tendered. Where this is not feasible or practicable, recipients must inform, in writing, the Ministry for approval before proceeding with the project.

The Province reserves the right to review a Recipient's procurement and tendering policies relating to contracts for works associated with projects funded through this program at any time from project approval to a date three years after project completion.

Two resources are available to help applicants to achieve excellence in the awarding of contracts in a way that is transparent, competitive, and consistent with value for money principles:

- The Master Municipal Construction Documents Association (MMCD) provides its members with standardized contract documents and training programs to maximize the benefits of the documents. The Province of British Columbia encourages British Columbia Municipalities to use the Master Municipal Construction Documents for the construction of municipal services. Many B.C. local governments have been, and continue to, subscribe to the MMCD documents, certification, training, and procedures. For further information about MMCD access its website at: www.mmcd.net/.
- BC Bid, the e-Procurement site of the Province of British Columbia can be accessed at: www.bcbid.gov.bc.ca/open.dll/welcome.

8.4 CHANGES OR VARIATIONS TO AN APPROVED PROJECT

Applicants need to advise the Ministry, **in writing**, of any variation from the approved project. **Before** any changes are implemented, they must be approved by the Ministry. Changes that require written approval are those that deviate from the Shared Cost Agreement, general project description/scope or project completion date. Costs that are outside of the current terms of the contract may not be able to be reimbursed.

Program staff will adjust future claims and/or require the provincial government to be reimbursed if any costs that have been reimbursed are subsequently found to be ineligible.

8.5 COST OVERRUNS

The Program will be fully allocated and oversubscribed. Recipients of grant funding will be responsible for managing project risks, including cost increases, as the Program is not designed to deal with cost overruns. Any project cost increases will be the responsibility of the Ultimate Recipient.

8.6 REPORTING

Successful applicants will be required to submit the following reporting documents:

- Periodic Progress Report
- Budget Forecast Report
- Claim
- Final report

A Periodic Progress Report will be required quarterly, and a Budget Forecast Report will be required monthly or upon request by the Province. These reports update the federal and provincial agencies regarding timelines, percentage completion, milestones, forecasting and other information regarding the project.

These reports must be completed and submitted online using the Local Government Information System (LGIS). To access the online reporting users must have a Business BCeID credential and password.

For more information on BCeID access requirements, see [Accessing the Online Application](#).

Conditions will be included in the Shared Cost Agreement which will require the Ultimate Recipient of the grant to conduct activities or prepare documentation related to best practice and sustainable infrastructure management. Claim payments will be conditional on meeting these requirements.

Examples of condition requirements that have been included in past programs include*:

- Confirmation that required permits have been received and/or that the design and construction meets associated regulatory requirements;
- A list of energy efficient features and equipment used in the project;
- For projects that develop a new groundwater source, use of best practices as detailed in the Province's Well Head Protection Toolkit, including a Wellhead Protection Plan;
- A summary of the state of asset management practice within the organization in reference to the Asset Management BC Roadmap and/or AssetSMART 2.0
- Confirmation that the system and operators are or will be certified under the BCEOCP;
- Completion of a council or board endorsed Water Conservation Plan;
- A plan demonstrating how the community is working towards and planning for sustainable wastewater management;
- Confirmation that a new building exceeds the energy requirements under the National Energy Code for Buildings by at least 25%;
- Confirmation that bylaws are in place regarding the decommissioning of on-site sewage on properties connected to the community sewage collection system and requiring community sewer for smaller properties or a Liquid Waste Management Plan that identifies decentralized wastewater management;
- A plan or strategy to manage stormwater/rainwater;
- An asset renewal profile for the asset group related to the project.

** This is not a comprehensive list of all potential condition requirements and others may be added or substituted at the discretion of the Province.*

Applicants will be required to report on the following federal targets which are applicable to the project:

- Reduce by forty percent (40%) the number of long-term drinking water advisories in non-reserve communities
- Increase the number of wastewater systems achieving compliance with federal effluent regulations: from ninety-eight percent (98%) to one hundred percent (100%) for high-risk wastewater systems, and from ninety percent (90%) to one hundred percent (100%) for medium-risk wastewater systems
- Contribute to a national ten mega-tonne (10 mT) reduction of greenhouse gas emissions

Projects with total estimated eligible expenditures of \$25 million or more will need to report on community employment benefits provided to at least three (3) federal target groups (apprentices, Indigenous peoples, women, persons with disabilities, veterans, youth, new Canadians, or small- medium-sized enterprises and social enterprises). This requirement may be waived at the discretion of British Columbia for applicants with lower capacity to capture this information with specific rationale.

Applicants must ensure that they collect and are able to provide data on the applicable performance indicators related to Outcomes and associated Targets (listed in Appendix A).

A Final Report detailing project performance must be completed and submitted with the final claim upon project completion.

8.7 CLAIMS

To receive both the federal and provincial governments' contributions for approved projects, claims must be submitted for eligible costs to the Ministry. Only costs incurred, paid and consistent with and comparable to those identified in the signed shared cost agreement are eligible for reimbursement. Where multiple projects are ongoing (e.g., through different grant funding programs or through a phased approach), please ensure that claims are specific to the approved project only.

Claims must be completed and submitted online using the Local Government Information System (LGIS). The online claim form requires summary of expenditures information, including name of payee, date paid, work rendered start/end dates, invoice number, invoice date, etc. Current progress reports must be submitted online to the Ministry via LGIS for claim reimbursement. All projects are subject to site visits and audit at any time during the project and up to the later of the end date of the Integrated Bilateral Agreement for ICIP between Canada and British Columbia or up to three years after the final settlement of accounts.

To access LGIS, users must have a Business BCeID credential and password. For more information on BCeID access requirements, see [Accessing the Online Application](#).

8.8 ACCOUNTING RECORDS

Applicants must maintain acceptable accounting records that clearly disclose the nature and amounts of the different items of cost pertaining to the project. These records should include both the records of original entry and supporting documents of the applicant, divisions, or related parties, and any third party, named in the application or contract, as appropriate to the project. Applicants must retain accounting records for a minimum of six years after the end date of the Integrated Bilateral Agreement for ICIP between Canada and British Columbia.

Failure to keep acceptable accounting records and tender documents may result in a cessation or interruption in funding and impact future funding.

The Province can require applicants to provide details of the types and amounts of all fees for consultants and contractors.

8.9 COMMUNICATIONS

Procedures for Communications

An important aspect of the program is to communicate its impact in helping improve the quality of life in British Columbia communities. The purpose of joint communications activities is to provide information on the Program to the public in a well-planned, appropriate, timely and consistent manner that recognizes the benefits of the initiative and the contribution of all parties.

A [communications protocol](#) will be set out within the Shared Cost Agreement. Signage recognizing funding contributions should be prepared according to [ICIP signage guidelines](#).

Timeline for Public Events

Please contact the provincial Ministry for your project at least **20 working days** prior to any scheduled public events. The federal and provincial Ministers, or their designated representatives, regularly participate in the events, thus need time to schedule for such an occasion.

APPENDIX A – Federal Program Outcomes & Targets

Ultimate recipients are required to report on outcomes and associated targets through the Province to Canada for the ICIP – Green Infrastructure – Environmental Quality Sub-Stream projects completed in BC. Below are the federal outcomes and targets that are associated with this program for ease of reference.

Environmental Quality <u>Outcomes</u>:
Increased capacity to treat and/or manage wastewater
Increased capacity to treat and/or manage stormwater
Increased access to potable water
Increased capacity to divert or manage solid waste (including landfill gases)
Increased capacity to reduce and/or remediate soil and/or air pollutants

<u>Targets</u> Relevant to the Environmental Quality Sub-Stream*:
Reduce by forty percent (40%) the number of long-term drinking water advisories in non-reserve communities.
Increase the number of wastewater systems achieving compliance with federal effluent regulations: from ninety-eight percent (98%) to one hundred percent (100%) for high-risk wastewater systems, and from ninety percent (90%) to one hundred percent (100%) for medium-risk wastewater systems.
Contribute to a national ten mega-tonne (10 mT) reduction of greenhouse gas emissions.
Ensure one hundred percent (100%) of federally funded public-facing infrastructure meets the highest published applicable accessibility standard in a respective jurisdiction.

**Not all targets will be applicable to every project. Some projects that are eligible under the program outcomes may not have a corresponding target (i.e., soil remediation).*

APPENDIX B – Examples of Eligible Costs and Ineligible Costs

Please note: The following are examples only and are based on staff knowledge of past federal-provincial programs and program criteria. The determination of whether costs are eligible will ultimately rest with program staff. If a cost is not listed below, contact program staff prior to undertaking associated work. (See Section 6.8 for contact information)

General

ELIGIBLE	INELIGIBLE
<ul style="list-style-type: none"> Costs paid under contract for goods or services considered to be direct and necessary to implement the project 	<ul style="list-style-type: none"> Any unpaid costs including invoices or holdbacks Accrued costs Any goods or services costs which are received through donations or in kind
<ul style="list-style-type: none"> Costs incurred after approval and on or before the project completion date stipulated in the Shared Cost Agreement and deemed properly and reasonably incurred 	<ul style="list-style-type: none"> Costs incurred prior to approval date and after project completion date as stipulated in the Shared Cost Agreement (with the exception of costs to complete climate lens assessments which are eligible prior to grant award if the project is successful in obtaining funding through the program)
<ul style="list-style-type: none"> Capital costs as defined by Generally Accepted Accounting Principles (except capital costs included in INELIGIBLE COSTS) 	<ul style="list-style-type: none"> Services or works normally provided by the Recipient, including: <ul style="list-style-type: none"> overhead costs salaries and other employment benefits of any employees of the Recipient <u>unless pre-approved by the Ministry and specifically related to the project</u> leasing of equipment except that directly related to the construction of the project purchasing equipment accounting fees incurred in the normal course of operation auditing fees incurred in the normal course of operation operating expenses and regularly scheduled maintenance
	<ul style="list-style-type: none"> Land acquisition and real estate fees: <ul style="list-style-type: none"> leasing land, buildings and other facilities and related costs

ELIGIBLE	INELIGIBLE
	<ul style="list-style-type: none"> Financing charges, loan interest payments legal fees (including those related to easements)
	<ul style="list-style-type: none"> Taxes for which the Recipient is eligible for a tax rebate and all other costs eligible for rebates

Environmental Assessment/Indigenous Consultation Costs

ELIGIBLE	INELIGIBLE
<ul style="list-style-type: none"> Environmental reviews Environmental costs Remedial activities Mitigation measures Indigenous consultation 	

Climate Change Lens Assessment Costs

ELIGIBLE	INELIGIBLE
<ul style="list-style-type: none"> Greenhouse Gas Emissions Assessment when indicated required in Section 5 of the Guide Climate Resilience Assessment when indicated required in Section 5 of the Guide 	

Design / Engineering Costs

ELIGIBLE	INELIGIBLE
<ul style="list-style-type: none"> Fees paid to professionals, technical personnel, consultants, and contractors specifically engaged to undertake the surveying, design, and engineering of a project 	
<ul style="list-style-type: none"> Accommodation costs included in consulting fees or disbursement for out of town/province professionals 	<ul style="list-style-type: none"> Any legal fees including those for land transfers (easements, Right of Way)

Construction/Materials Costs

ELIGIBLE	INELIGIBLE
	<ul style="list-style-type: none"> • Cost of purchasing land and associated real estate and other fees • Value of donated land • Interim financing and interest costs • Appraisal fees • Land title fees • Leasing of land or facilities
	<ul style="list-style-type: none"> • Building permit charged by proponent to itself • Development cost charges
<ul style="list-style-type: none"> • Insurance related to construction 	<ul style="list-style-type: none"> • Liability insurance for directors
<ul style="list-style-type: none"> • Project management fees 	
<ul style="list-style-type: none"> • Material testing necessary to prove suitability of soils and specified structural elements 	
<ul style="list-style-type: none"> • Fencing for the construction site • Permanent fencing 	
<ul style="list-style-type: none"> • Towing heavy equipment to and from the construction site 	<ul style="list-style-type: none"> • Towing vehicles
<ul style="list-style-type: none"> • Security guard & First Aid attendant (contracted for construction project) 	<ul style="list-style-type: none"> • Ambulance for workplace accidents • First aid courses
<ul style="list-style-type: none"> • Furniture and/or equipment essential for operation of the project 	<ul style="list-style-type: none"> • Tools (e.g. hammer, saw, shovel, rakes, gloves) • Furnishing and non-fixed assets which are not essential for the operation of the asset/project
<ul style="list-style-type: none"> • Utility, electrical, sanitary sewer, and storm sewer set-up/connection services to the site property line 	<ul style="list-style-type: none"> • General repairs and maintenance of a project and related structures
<ul style="list-style-type: none"> • Safety equipment to be kept at the project site (e.g., safety goggles, beakers, eye wash bottles, latex gloves, UV lamp, vacuum hand pump, forceps, etc.) 	
<ul style="list-style-type: none"> • Fire protection equipment as required by the fire department 	
<ul style="list-style-type: none"> • Third party (contractor) rental of a trailer/site office 	
<ul style="list-style-type: none"> • Permanently installed 2-way radios, phone system for facility 	<ul style="list-style-type: none"> • Monthly bills for utilities and phone/internet
	<ul style="list-style-type: none"> • Contributions in kind
<ul style="list-style-type: none"> • Fuel costs for rental equipment 	<ul style="list-style-type: none"> • Vehicle maintenance and fuel costs

ELIGIBLE	INELIGIBLE
<ul style="list-style-type: none"> Temporary construction or permanent signage, specific to the project 	<ul style="list-style-type: none"> General construction signs (e.g., detour, street closed)
<ul style="list-style-type: none"> Relocation/renovation kiosk signs for public information 	<ul style="list-style-type: none"> Temporary “Hours of Business” signs
<ul style="list-style-type: none"> Surveys necessary to determine the site’s suitability for the intended purpose 	<ul style="list-style-type: none"> Any other surveys except to determine the site’s suitability
<ul style="list-style-type: none"> Demolition of unwanted structures from the site 	
<ul style="list-style-type: none"> Landscaping to restore construction site to original state following construction Installation of landscaping 	<ul style="list-style-type: none"> Maintaining landscaping
<ul style="list-style-type: none"> Newspaper/radio ads related to contract tenders and contract award notifications; or public safety, road closure or service interruption notices related to the project 	
<ul style="list-style-type: none"> Printing and distribution costs for public information materials regarding the project 	
<ul style="list-style-type: none"> Printing costs for preparing contract documents or tenders, blueprints, plans/drawings 	
<ul style="list-style-type: none"> Courier services, specific to project e.g., delivering drawings/designs 	
<ul style="list-style-type: none"> Paving of access and curb cuts 	

Communication Activities Costs

ELIGIBLE	INELIGIBLE
<ul style="list-style-type: none"> Any costs reasonably incurred to undertake joint federal and provincial communication activities, such as, but not limited to: <ul style="list-style-type: none"> - federal or provincial funding recognition signage - permanent commemorative plaques - A/V rental and set up costs - event equipment rental and set up costs, such as stage and podium for joint events - event photography 	<ul style="list-style-type: none"> Media consultant Event planners Gifts Hospitality costs, such as, but not limited to: <ul style="list-style-type: none"> - food/beverages - liquor - entertainment



KERR WOOD LEIDAL
consulting engineers

Greater Vancouver
200 - 4185A Still Creek Drive
Burnaby, BC V5C 6G9
T 604 294 2088
F 604 294 2090

Water Treatment Investigation

Draft Report
December 10, 2021
KWL Project No. 0743.016

Prepared for:





Table of Contents

1.	Introduction	1-1
2.	Background/Justification	2-1
3.	Existing System	3-1
4.	Future Development	4-1
5.	Water Treatment Investigation	5-1
5.1	Option 1: Oxidation and Filtration using Catalytic Media	5-1
5.2	Option 2: Oxidation and Media Filtration	5-1
5.3	Option 3: Biological Treatment	5-1
6.	Treatment Options Discussion	6-1
6.1	Recommended Water Treatment Process	6-2
7.	Water Treatment Location and Facility	7-1
7.1	Proposed Water Treatment Building	7-1
7.2	Location 1: Behind Existing Reservoir	7-3
7.3	Location 2: Front Existing Reservoir	7-4
7.4	Potential Well Pump Upgrades	7-4
7.5	Dedicated Watermain to WTP and Existing Chemical Dosing.....	7-5
7.6	Soda Ash Dosing and pH Adjustment.....	7-6
7.7	Tie-ins	7-7
7.8	Facility Layout.....	7-8
7.9	Infrastructure Requirements	7-10
7.10	Summary of Proposed Water Treatment Plant Options	7-12
8.	Class D Cost Estimate	8-1
8.1	Limitations.....	8-1
8.2	Assumptions.....	8-1
8.3	Summary of Capital Cost Opinions	8-1
8.4	O&M Cost Estimate	8-2
9.	Overall Discussion and Summary	9-1
10.	Conclusion and Recommendations	10-1
10.1	Conclusions	10-1
10.2	Recommendations	10-2

Report Submission



Figures

Figure 2-1: Water Quality Data for Wells 1, 2, and 3	2-1
Figure 4-1: Developer Plans	4-1
Figure 6-1: Block Flow Diagram of Recommended (without access to sanitary line)	6-3
Figure 6-2: Block Flow Diagram of Recommended (with access to sanitary line)	6-4
Figure 7-1: Locations for WTP	7-2
Figure 7-2: Proposed Alignment for Intake Pipes	7-7
Figure 7-3: Water Treatment Plant Layout	7-9

Tables

Table 3-1: Per Capita Demand.....	3-1
Table 3-2: Existing Reservoir Details	3-1
Table 3-3: Existing Well Details.....	3-2
Table 6-1: Comparison of Technologies to Treat Existing Groundwater Source.....	6-1
Table 7-1: Anticipated Flow Rate Based on Population Growth	7-1
Table 7-2: Well Pump Requirements for Proposed WTP.....	7-5
Table 7-3: Proposed WTP Options.....	7-12
Table 8-1: Summary of Cost Opinions for Proposed WTP located North of Existing Reservoirs	8-1
Table 8-2: Summary of Cost Opinions for Proposed WTP located South of Existing Reservoirs	8-2
Table 10-1: Summary of Flow Rates	10-1

DRAFT



1. Introduction

This draft report has been prepared for the Village of Pemberton (Village) and summarizes the completed water treatment investigation regarding three (3) groundwater wells that supply water to the Village. Water quality data collected from 2009 to 2020 indicate periods in which iron and manganese levels in the well water exceeded the acceptable guidelines.

The purpose of the investigation was to review up to three available water treatment options that would provide Village residents with potable water that meets Canadian Drinking Water Quality (GCDWQ) guidelines. This report addresses the following tasks:

1. Investigate potential treatment options to address water quality concerns in the Village water system;
2. Evaluate different treatment options and recommend the most suitable option for the application;
3. Identify proposed water treatment plant (WTP) configurations based on locations and access to sanitary system; and
4. Provide a Capital and Operation and Maintenance (O&M) cost opinion for the recommended options.

DRAFT



2. Background/Justification

A review of the existing water system with emphasis on the performance of the source aquifer was performed by the Village in 2020. Water quality results from the Village wells report iron and manganese levels exceeding the Aesthetic Objectives of 0.3 mg/L for iron (wells 1 and 2) and 0.02 mg/L for manganese stated in the GCDWQ (wells 1, 2, and 3). Manganese levels in wells 1 and 2 also exceed the Maximum Allowable Concentration (MAC) of 0.12 mg/L.

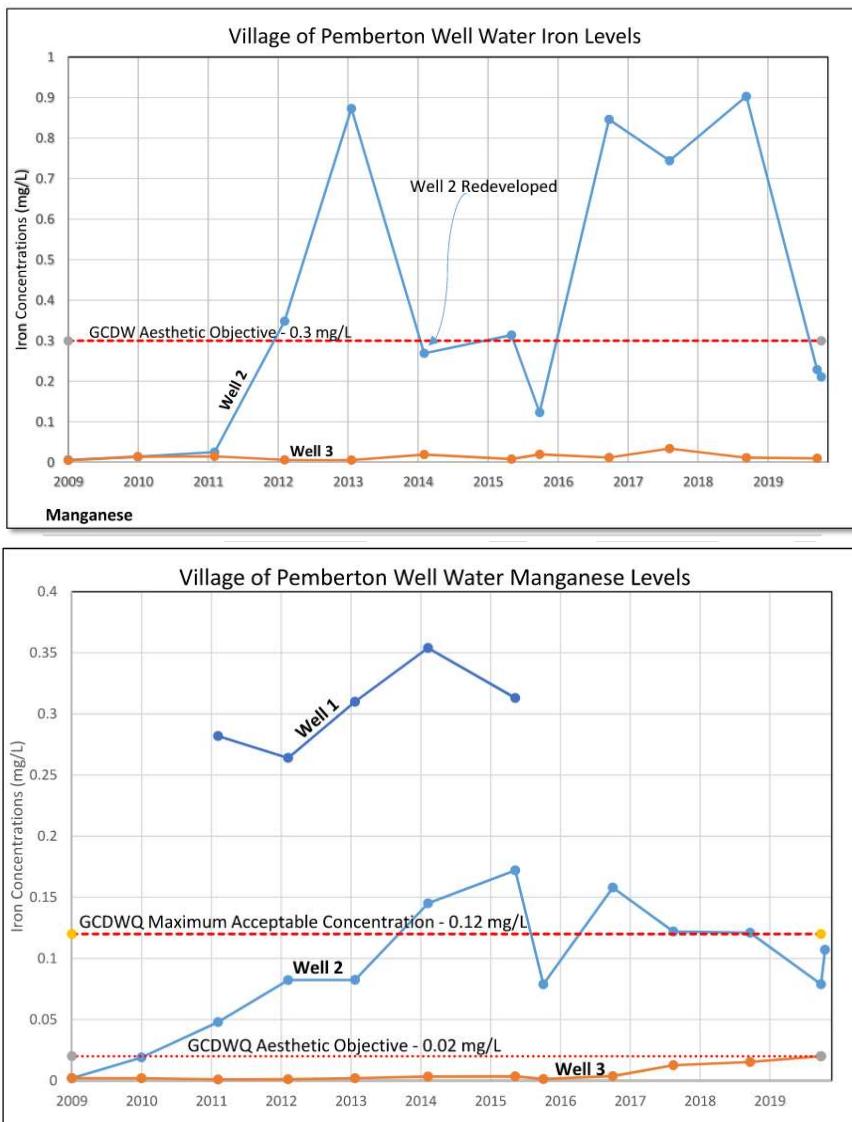


Figure 2-1: Water Quality Data for Wells 1, 2, and 3 ¹

¹ Well 1, not shown on the iron level graph due to scale, had a test result of 16.7 mg/L in 2013, the last time it was tested.



3. Existing System

The existing groundwater system consists of three (3) wells that distribute water, through mostly 50 to 300 mm PVC piping, from the Benchlands reservoirs eastwards to the Sunstone development, southwards to the wastewater treatment plant (WWTP) on Airport Road, and north towards the Pemberton North Water System (PNWS). Sections of existing piping are comprised of asbestos cement that are scheduled to be replaced. The existing system provides soda ash conditioning to increase the pH from 6.5 to 6.8, and chlorination for both primary disinfection and to maintain a minimum free chlorine residual of 0.2 mg/L at the farthest ends of the distribution system. There are no other treatment processes in place with respect to reduction of iron or manganese in the raw water. The tables and enclosed information presented in this section are extracted from the Village of Pemberton, Water System Performance Assessment completed in 2020.

The Per Capita Demand (in litres per capita per day, or LPCD) and Design Pressures are summarized in Table 3-1.

Table 3-1: Per Capita Demand

Per Capita Demand	
Average Daily Domestic Flow	455 LPCD
Maximum Daily Domestic Flow	910 LPCD
Peak Hour Domestic Flow	1,820 LPCD
Design Pressures	
Minimum Pressure at Peak Demand	300 kPa (44 psi)
Maximum Allowable Pressure	850 kPa (123 psi)
Minimum Pressure for Fire Flow Plus Max Day Demand	150kPa (22 psi)

There are three (3) reservoirs totaling 4,511 m³ of storage. The total required storage is 2,506 m³ which leaves 2,045 m³ for future expansion. Table 3-2 summarizes the relevant information for each reservoir. This calculation was completed in Section 2.3 of Village of Pemberton’s Water System Performance Assessment (2020).

Table 3-2: Existing Reservoir Details

Reservoir	Year Constructed	Type	Capacity (m ³)	Top Water Level Elevation (m)
Benchlands Reservoir 1	2002	Circular Concrete Tank	1640	290.5
Benchlands Reservoir 2	2014	Circular Steel Tank	1490	290.5
Ridge Reservoir	2017	Circular Steel Tank	1421	357.6

Table 3-3 summarizes the year of construction, diameter, depth, rated flow, location, and general notes of the three wells in the Village.



Table 3-3: Existing Well Details

Well	Construction Year	Diameter (mm)	Depth (m)	Rated Flow (L/s)	Location	Notes
1	1992	200	29	28.8	Well house	Isolated from distribution due to declining yield and poor quality.
2	1997	300	42	68	Foughberg Park	Current backup well.
3	2007	300	46	52	Pioneer Park	Current duty well.

DRAFT

4. Future Development

Skénkenam Development Limited Partnership applied to develop certain lands within the Pemberton Benchlands, as referenced in the Village of Pemberton Official Community Plan (OCP). The current phase affecting this project is the development of Phases 3, 4, and 7. These phases include Block A DL 8556 (10.49 ha), Block J DL 202 (9.69 ha), and Block I DL 202 (11 ha). The plan was first developed in 2020 but has been delayed due to the pandemic and potential site contamination issues from a historical gun/rifle range. A detailed plan for development is not provided in the rezoning application but described it as occurring over a 30+ year time span.

Phases 6 and 8 are not included due to concerns with site contamination from the operation of the former gun and rifle range. Phases 6 and 8 include Block K, DL 8410, DL 202, and DL 2297. The Water Distribution plan for Pemberton Benchlands includes construction of a new reservoir on the upper limits of the Phase 3, 4, and 7 development boundary, a pump station adjacent to the existing reservoirs, a second pump station next to the newly proposed reservoir, supply of relevant back-up generators, and relocation of the existing reservoir's supply and distribution mains to follow the new proposed alignment of the collector road.



Figure 4-1: Developer Plans



The north side of the reservoirs is surrounded by proposed townhomes. On the east side of the reservoirs, there is a proposed park. There is also a proposed pump station located in this park that would service zone 3 (a small number of lots within the current development as well as the whole extent of the future development to the west).

The development will increase the population by 1,252 people. For the proposed and future developments, this will create an average daily domestic flow of 569,660 L/day (6.6 L/s), a maximum daily domestic flow of 1,139,320 L/day (13.2 L/s) and a peak domestic flow of 2,258,640 L/day (26.1 L/s) for the new development alone.

In the development plan, Skénkenam Development Limited Partnership requests advice on upgrades to the existing water supply in order to develop the Benchlands. It is assumed that the existing trunk in Eagle Ridge Drive has adequate capacity to convey the flow introduced from the Benchlands development. Skénkenam Development Limited Partnership requests confirmation regarding the existing trunk as well as confirmation that the capacities of the pump station and WWTP are adequate to support the development.

DRAFT



5. Water Treatment Investigation

Three water treatment options to reduce the iron and manganese levels in the system were considered. This section briefly summarizes these options.

5.1 Option 1: Oxidation and Filtration using Catalytic Media

Most iron and manganese removal treatment processes require oxidation as the first step of treatment to precipitate the iron and manganese dissolved in the water. Normally this is done by injecting the source water with an oxidant such as sodium hypochlorite or potassium permanganate. Once oxidized, the precipitates can be settled or filtered out. Sufficient oxidant must also be added to ensure the adsorption characteristics of the GreenSandPlus™ are regenerated to continue to attract any dissolved manganese.

Media filtration with GreenSandPlus™ media is an effective and proven means for reducing both iron and manganese in dissolved or precipitated form in raw water. In a GreenSandPlus™ media filter the media acts as a catalyst for the iron and manganese oxidation process. As water passes through the filter bed, the oxidized iron and manganese are retained by the filter media and their concentration in the water reduces as water progresses downward through the filter. The filter would require periodic backwashing to remove the accumulated iron and manganese precipitate.

GreenSandPlus™ media can remove both iron and manganese but removal efficiency of each parameter varies depending on the pH of the water as well as the concentrations of other constituents in the water. Pilot testing is usually completed to establish the removal efficiency of iron and manganese in a specific water. As a minimum, bench scale testing with the actual water should be completed prior to full-scale implementation.

5.2 Option 2: Oxidation and Media Filtration

This treatment process incorporates oxidation of iron and manganese in the water to convert the dissolved forms of the metals to a solid. Often exposure to air is sufficient for oxidizing iron, but for manganese, a stronger oxidant such as ozone or potassium permanganate is used in the oxidation process. Following the oxidation process, water passes through sand media filters to filter out the formed precipitate. Sodium hypochlorite is then dosed to provide virus inactivation and secondary chlorine residuals.

Sand media filters are either gravity or pressure type. The filters are backwashed periodically for removing the precipitated material on the surface of the filters.

5.3 Option 3: Biological Treatment

Biological filters are designed to remove soluble iron and manganese from the water supply by the biological activity and uptake of impurities by the naturally occurring bacteria retained in the filter media. Unlike Options 1 and 2, biological treatment does not require any chemical oxidants and relies on usually two stages of biological filters.

The process consists of raw water passing through the biological filters, where conditions are established to promote the growth of specific bacteria for iron removal, and a different type of bacteria for manganese removal. Soluble particles will build up and be retained in the filter media and form dense and compact precipitates. Over time, insoluble particles build up in the filters and backwashing is required to remove the build up. Due to the compaction of precipitates and longer filter times, the biological treatment process has a longer retention time and therefore allows the system to achieve longer filter run time. Air is injected into the raw water prior to entry into the biological filters to foster bacteria growth.



For application related to the biological treatment of iron and manganese, the process system will require individual treatment (or two stages in a series) to meet the required environmental conditions for biological removal of iron and manganese. This requires controlled aeration and filtration for biological iron removal and intensive aeration and filtration for biological manganese removal. Biological treatment can be applied in gravity or pressure filters, where pressure filters are designed for high-rate operations.

DRAFT



6. Treatment Options Discussion

Table 6-1 lists the advantages and disadvantages of the treatment options for the existing groundwater source.

Table 6-1: Comparison of Technologies to Treat Existing Groundwater Source

Water Treatment Technology	Advantages	Disadvantages	O&M Requirements
Oxidation and Catalytic Media Filtration	<ul style="list-style-type: none"> Can effectively remove both iron and manganese in combination with oxidation. Relatively simple operation. Media is readily available and can be ordered ahead of time. Chlorination provides continuous insitu media regeneration and primary and residual disinfection. 	<ul style="list-style-type: none"> Generation of backwash wastewater. 	<ul style="list-style-type: none"> Periodic backwashing of catalytic media. Oxidant chemical usage.
Oxidation and Media Filtration	<ul style="list-style-type: none"> Relatively simple operation. Media is readily available and can be ordered ahead of time. 	<ul style="list-style-type: none"> Not as effective at removing dissolved manganese, compared to catalytic media. Need for strong pre-oxidant and hypochlorite. Generation of backwash wastewater. 	<ul style="list-style-type: none"> Periodic backwashing or replacement of filter media. Multiple chemicals used.
Biological Treatment	<ul style="list-style-type: none"> Can effectively remove both iron and manganese in combination with air oxidation. No strong oxidants required. Lower backwash requirements and reduced backwash water quantities. 	<ul style="list-style-type: none"> Higher initial cost due to the requirement of oxidation using an air compressor. Relies on naturally occurring bacteria and appropriate environment to consume iron and manganese. Usually requires two stage filtration step for removal of iron and then manganese. Always a risk of a biological process upset that results in poor water quality that takes time to resolve. 	<ul style="list-style-type: none"> More effort and skill required to maintain and operate the system. Complex maturation for new filters.



6.1 Recommended Water Treatment Process

Oxidation and catalytic (GreenSandPlus™) filtration for the specific removal of iron and manganese is the preferred treatment option for the existing source based on the information summarized in Table 6-1.

Options 1 and 2 are similar in process and configuration; however, the primary process difference is that Option 1 only uses chlorination process as the pre-oxidant with GreenSandPlus™. The chlorination pre-treatment completes two steps; step one allows for continuous regeneration of the GreenSandPlus™, and step 2 provides for 4-log virus inactivation and a secondary chlorine residual of the treated water.

For Option 2, a stronger pre-oxidant other than chlorine is required and involves the introduction of another chemical (i.e., potassium permanganate or ozone) to fully oxidize the dissolved iron and manganese. A conventional sand media filter is then used to remove the precipitated iron and manganese. Option 2 still requires disinfection with chlorine and contact time for virus inactivation and a chlorine residual.

Option 1 uses chlorination for two requirements, Option 2 uses chlorination for only one requirement, but also requires a stronger pre-oxidant like ozone prior to the sand media filter. Option 1 is a more efficient and cost-effective process and is easier to operate than Option 2.

With respect to Option 3 biological treatment, benefits such as longer filter times and less backwashing as well as the need for no chemical oxidants are considered favourable, but biological treatment can still be considered an option with many unknowns that can be influenced by the source water. Limitations with biological treatment are summarized below:

1. High reliance on bacteria formation at start of the process. This may require additional adjustments and trial periods at the start of the project resulting in a duration that provides inefficient treatment. Maturation of bacteria for full efficiency may last up to 50 to 60 days for a new filter; ²
2. Chance of bacterial die out resulting in treatment stoppages;
3. Process may be influenced by substances such as ammonia, hydrogen sulfide, and zinc; ³
4. Need for experienced operators that understand the system and requirements to operate biological treatment;
5. Formation of anaerobic conditions in the filter bed resulting in elevated iron concentrations in the filtrate; and
6. Need for specific conditions for iron and manganese oxidising bacteria (i.e., may required two-stage filtration).

Based on the above, a more conventional approach with oxidation by chlorination and catalytic media filtration is recommended.

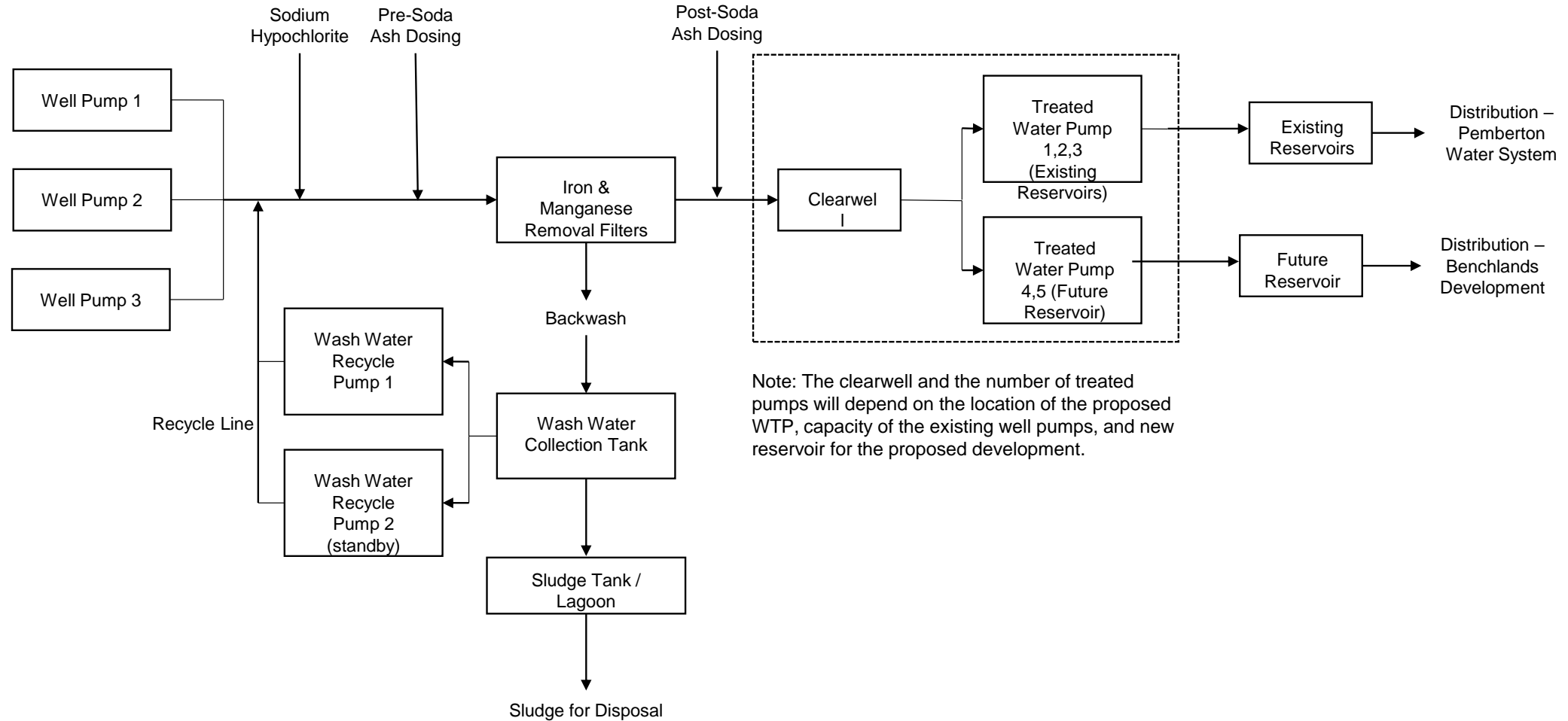
The recommended treatment process is portrayed in the block flow diagram shown in Figures 6-1 and 6-2. These figures show similar details, but the main difference is whether the proposed WTP includes access to a sanitary collection system. These figures can be used as a guide or references as information is described in the report.

² Stevenson, D. G. 1997 Water Treatment Unit Processes. World Scientific, Singapore, pp. 261–266, 275–293.

³ Twort, A. C., Ratnayaka, D. D. & Brandt, M. J. 2000 Water Supply, 5th edn. Arnold, London.

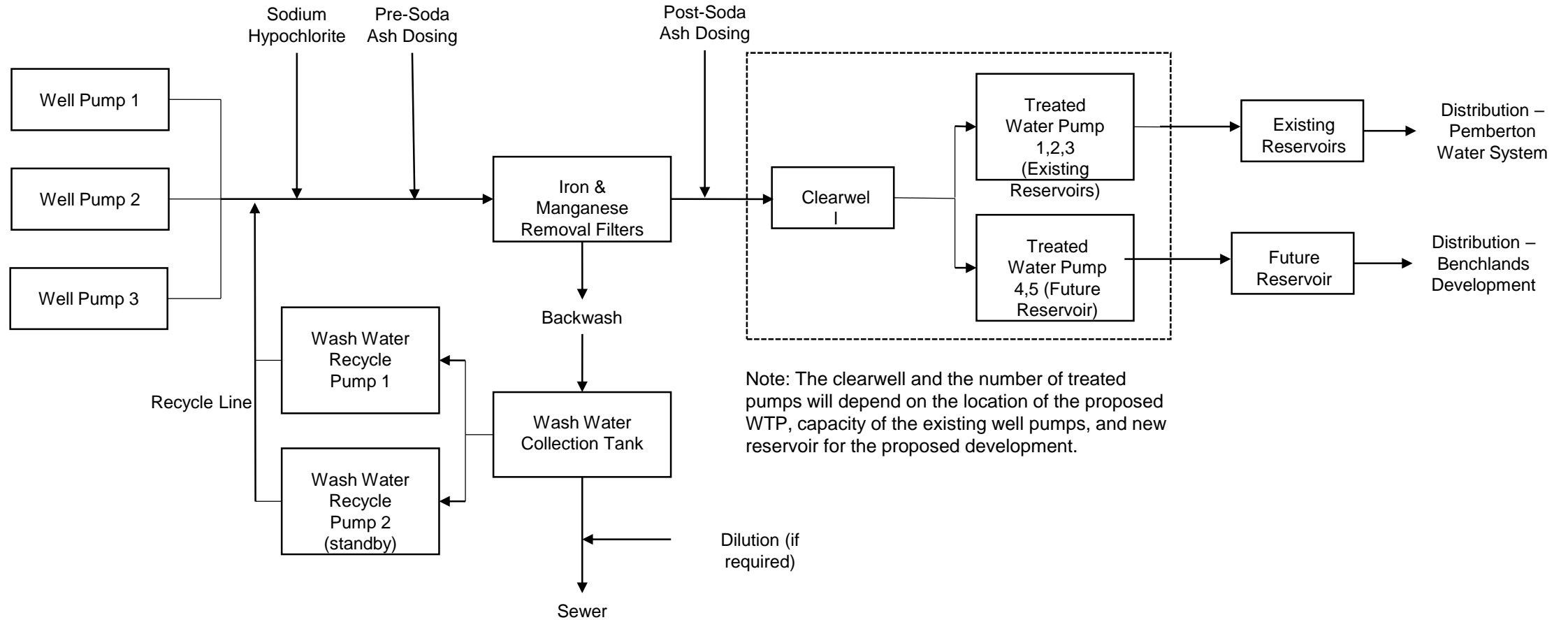


Description of Option 1: WTP without access to sanitary line





Description of Option 2: WTP with access to sanitary line.





7. Water Treatment Location and Facility

Based on the Village's expected population growth (with the future development included), the flow of 60 L/s was chosen for the maximum day design flow of the water treatment plant to meet 2040 demands. Table 7-1 summarizes the anticipated flow rates based on village population growth until 2040 as per the Village Water System Performance Assessment Report, August 2020.

Table 7-1: Anticipated Flow Rate Based on Population Growth

Year	Village Population	ADD (m ³ /day)	ADD (L/s)	MDD (m ³ /day)	MDD (L/s)
2020	3,100	1,880	22	3,700	43
2025	3,510	2,067	24	4,073	47
2030	3,925	2,255	26	4,451	52
2035	4,335	2,442	28	4,824	56
2040	4,750	2,631	31	5,203	60









7.1 Proposed Water Treatment Building

There are two proposed locations for the water treatment building; the north side of the existing reservoirs (Location 1), and southeast of the reservoirs where the developer proposes a new pump station (Location 2). Figure 7-1 below provides the approximate location of the both the proposed locations.

Figure 13

**DEVELOPMENT YIELD
PLAN DRAFT V3.0
RESERVOIR + AOC**







LEGEND JANUARY 2021

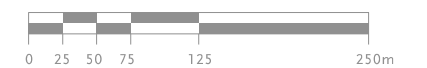
-  Site Boundary
31.23 ha | 77.17 ac
-  Legal Parcel Lines
-  5m Contour
-  ALR Boundary
-  Surveyed + Realigned Streams
-  Existing Water Reservoir
-  Archaeological AOC
-  Proposed Future Water Reservoir

PROPOSED LAND USE - DRAFT V2.0

28%	Single Family Development Areas 8.63 ha 21.33 ac
6%	Strata Townhome Development Areas 2.03 ha 5.02 ac
1%	Apartment Development Areas 0.22 ha 0.54 ac
1%	Civic Infrastructure 0.37 ha 0.91 ac
3%	Neighbourhood Park 1.06 ha 2.62 ac
34%	Nature Park 10.75 ha 26.56 ac
10%	Natural Area 2.99 ha 7.39 ac
11%	Public Road ROW 3.34 ha 8.25 ac
6%	Development Reserve 1.84 ha 4.55 ac
100%	31.23 ha 77.17 ac

DRAFT YIELD

	Large Single Family 18m	24	9%
	Medium Single Family 15m	40	15%
	Small Single Family 12m	47	18%
	Duplex Single Family 11m	24	9%
	Townhome 6m	92	34%
	Apartment	40	15%
TOTAL		267	100%





7.2 Location 1: Behind Existing Reservoir

At Location 1, the proposed WTP will be positioned behind, and elevated above, the existing reservoirs. Siting the proposed WTP at this location provides both benefits and drawbacks. The major benefit of having the proposed WTP at Location 1 is the option to have treated water gravity fed to the existing reservoirs. This would eliminate the need for a clearwell and domestic pump(s) to provide treated water to the existing reservoirs. The removal of clearwell and domestic pump(s) would reduce capital and operation costs, as well reduce maintenance associated with pump operation and future replacement.

Drawbacks related to Location 1 include increased capital costs associated with increased sitework related to locating the proposed WTP to the north of the existing reservoirs. Existing well pumps would likely need to be updated or replaced as the well pumps will need to pump to a higher elevation and will need to account for added pressure associated with treatment.

Design and construction considerations to locate the proposed WTP north of the reservoirs will include the following:

1. Environmental and permit applications related but not limited to tree removal, bird surveys, and working within set back of creeks;
2. Increased work associated with archaeological and geotechnical assessments near Location 1;
3. Review of elevation details related to site location and top water level (TWL) of the existing reservoirs. Additional pump(s) may still be required if elevation difference between the proposed WTP and TWL of the reservoirs is not achievable;
4. Increased sitework preparation such as clearing, excavation, backfill, and compaction, as well as increased construction related to access roads and parking spaces to allow for access to the proposed facility;
5. Additional routing of buried utilities such as raw, treated, backwash, and recycle lines will need to be designed and constructed;
6. Upgrades to existing well pumps to increase head pressures to allow well water to reach higher elevation of the WTP and capacity to pump through the proposed WTP; and
7. Will likely require a future pump station to provide water to a proposed future development. Should the proposed development move forward, a clearwell with domestic pump(s) could be constructed at the proposed WTP at Location 1. This would eliminate any benefits associated with gravity fed treated water to the existing reservoirs as described above. This would provide an opportunity for cost sharing with the developer. It is assumed the cost of the clearwell and pump(s) would be the responsibility of the developer should the proposed WTP be located at Location 1 and gravity feed of treated water is achievable.

Based on information provided by Skénkenam Development Limited Partnership (refer to Section 4), the Village will need to discuss with the developer the proposed location of the proposed WTP which may result in the overall reduction of lots or units located near the reservoir. The Village will also need to discuss with the developer regarding future pump station and reservoir requirements, as a clearwell at the WTP could be constructed to perform the duties of a future pump station. This would save additional space near the reservoirs by reducing the need for a separate pump station building and would be more cost effective for both parties.



7.3 Location 2: Front Existing Reservoir

The second proposed location for the WTP is southeast of the existing reservoirs. Location 2 will be at an elevation lower than the TWL of the reservoirs, so a clearwell and domestic pump(s) would be required to feed treated water to existing reservoirs. Based on field reconnaissance of the existing reservoir site, Location 2 will likely require less site modification and reducing the capital cost of the proposed WTP.

Drawbacks of Location 2 include higher costs associated with constructing the clearwell and installation of domestic pump(s). Additional pump(s) also increase operational and maintenance requirements and adds additional complexity should pump issues (faults, failures, power outages, etc.) become frequent in the future.

If the proposed WTP were to be developed at Location 2, there is an opportunity to incorporate the design for future domestic pump(s). This would provide an opportunity to combine both the clearwell and the future pump station building for the proposed development into a single footprint. Cost-sharing opportunities would be made available as discussed above.

Design considerations for Location 2 will be like similar those noted above but are noted as follows:

1. Environmental and permit applications related to tree removal, bird surveys, and working within set back of creeks;
2. Complete archaeological and geotechnical assessments;
3. Review of elevation details related to site location and TWL of the existing reservoirs to confirm domestic pump(s) sizing;
4. Upgrades to existing well pumps to increase head pressures to allow well water to be pumped through the proposed WTP; and
5. Design and construction of a clearwell and domestic pump(s) to provide water to the existing reservoir. Provisions can be made to include additional space for future domestic pump(s) for future reservoir.

Similar cost sharing opportunities will need to be discussed with the developer.

7.4 Potential Well Pump Upgrades

To provide treated water to the existing reservoirs, the existing well pumps will require approximately 11 m (15 psi) of pressure to pump water through the filters of the WTP. Should the proposed WTP be located at Location 1, additional pressure will also be required to lift raw water above the existing TWL of the reservoirs. This section is a high-level analysis of the existing well pumps based on pump curve drawings provided by the Village. The analysis assumes the following:

1. The TWL of the existing reservoirs is 290.50 m;
2. The existing dedicated water main has a 300 mm diameter with an approximate length of 1.57 km;
3. The elevation of well pumps is approximately 188.3 m based on Well 3 drawings;
4. Hazen-Williams coefficient of 130 was used to determine the major head loss; and
5. Loss associated with pipe fittings were not included in the calculation.

Table 7-2 summarizes preliminary well pump requirements. System curve calculations will need to be refined during detail design to account for exact dedicated water main lengths and diameters, losses with pipe fittings, and exact well pump elevations.



Table 7-2: Well Pump Requirements for Proposed WTP

Well #	Design for Well Pump ¹	Design Head ¹	Major Head Loss	Assumed Minor Head Loss	Assumed Pressure Loss through WTP ²	Estimated Pressure Required ³	Upgrades Required to Meet Flow Demand
2	68 L/s	107 m	5 m	2 m	11-15 m	120-124 m (171-176 psi)	Yes
3	52 L/s	108 m	3 m	2 m	11-15 m	118-122 m (168-173 psi)	Yes

1. Based on pump curves provided by VOP. Well 2: Warson Pump 9WH-1C (stage 2). Well 3: 825 GPM 10" SSI Sub-Pump
 2. Additional pressure required to push water through proposed WTP and lift water to Location 1 (north of existing WTP).
 3. Estimated well pump requirements based on high level calculations.

Based on the estimates presented in Table 7-2, the well pumps will eventually need to be upgraded to meet design flows and pressures to pump raw water through the proposed WTP. It should be noted that existing well pumps could continue to operate until the pumps are replaced but will operate at a slightly reduced flow to meet increased pressure requirements. Operating the existing well pumps in this manner will be less efficient and will require longer duration to fill the existing reservoirs.

Existing infrastructure such as piping, fittings, and flanges near the well pump will need to be evaluated and rated for pressures above 173 psi prior to initiating design of the new well pumps. If rated pressure for piping connections are unable to maintain high pressure requirements for new well pumps, another option such as a inline booster pump at the front end of the proposed WTP would need to be considered and would allow existing well pumps to remain in use.

7.5 Dedicated Watermain to WTP and Existing Chemical Dosing

An existing dedicated water main provides water from Wells 2 and 3 to the existing reservoir. Sodium hypochlorite and soda ash are currently dosed along Aster Street near Pioneer Park. Based on discussion with operators, there do not appear to be issues with the sodium hypochlorite dosing system. The current soda ash dosing system is located at the Well 1 pump station. Operation staff have noted concerns and higher staff requirements with operating the soda ash dosing system and include increased labour requirements associated with preparing soda ash solution and scaling issues when injecting rates decrease during low demand periods.

The Village has requested KWL review past dosing requirements and testing procedures to determine whether the existing soda dosing requirements should be changed. Findings from this investigation are out of scope for this report but will be summarized in a separate technical memorandum.

The cost estimates presented in Section 0 will include a new soda ash dosing system and a bulk bag feeder for comparative purposes. The bulk bag feeder system should reduce operation requirements related to preparation of soda ash solution. Additional information related to chemical dosing is described in the following section and dosing related to the recycle line.



7.6 Soda Ash Dosing and pH Adjustment

Based on water quality parameters discussed in Section 2, pH levels are adjusted with soda ash from 6.0 to 6.8 pH. It should be noted that pH greater than 6.8 may cause some iron precipitation issues in the proposed media filters (GreenSand Plus™). If the required target pH is higher than 6.8, a two-stage dosing process will need to be implemented to restrict formation of the precipitation in the filters and to meet corrosion control requirements. These stages would involve the following:

1. Stage 1 (pre-dosing), pH can be increased to 6.8 (via dosing with soda ash) for efficient filtration; and
2. Stage 2 (post dosing), pH can be increased with soda ash or caustic based on confirmation of enough alkalinity in water after Stage 1 pH adjustment) for corrosion control.

Stage 1 and 2 pH adjustments will need to be further investigated during pre-design based on the technical memorandum to be issued on soda ash dosing, testing, and sampling.

A recycle line (to be discussed in later section) will be piped to the front of the proposed WTP from the wash water collection tank, where chlorine and pH adjustment will need to be injected into the recycle line prior to entering filters. Due to this arrangement, it is recommended that the existing soda ash systems be relocated to the newly constructed WTP. New soda ash dosing systems can replace the existing system once the system is unable to keep up with demands. A new chlorine dosing system should be installed at the proposed WTP to limit the risk involved with relocating the existing chlorination equipment.

Chemical dosing systems will be sized to meet full buildout system so adequate sizing of these systems can be fitted into the proposed WTP.



7.7 Tie-ins

The developer has proposed new routes for the existing watermains to align with the proposed roads, as shown in Figure 7-2. It is assumed two tie-ins for the inlet and outlet piping would need to be installed upstream of the existing reservoirs to service the proposed WTP.

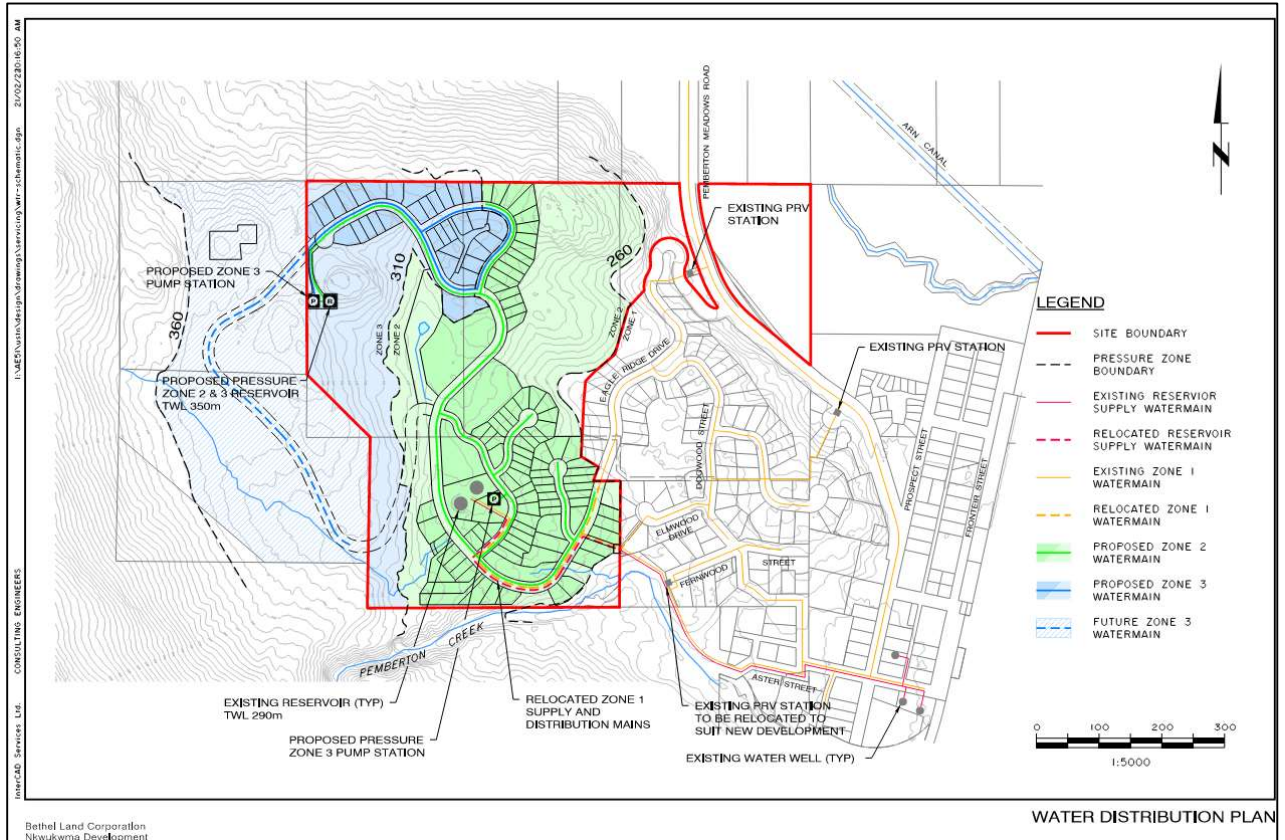


Figure 7-2: Proposed Alignment for Intake Pipes

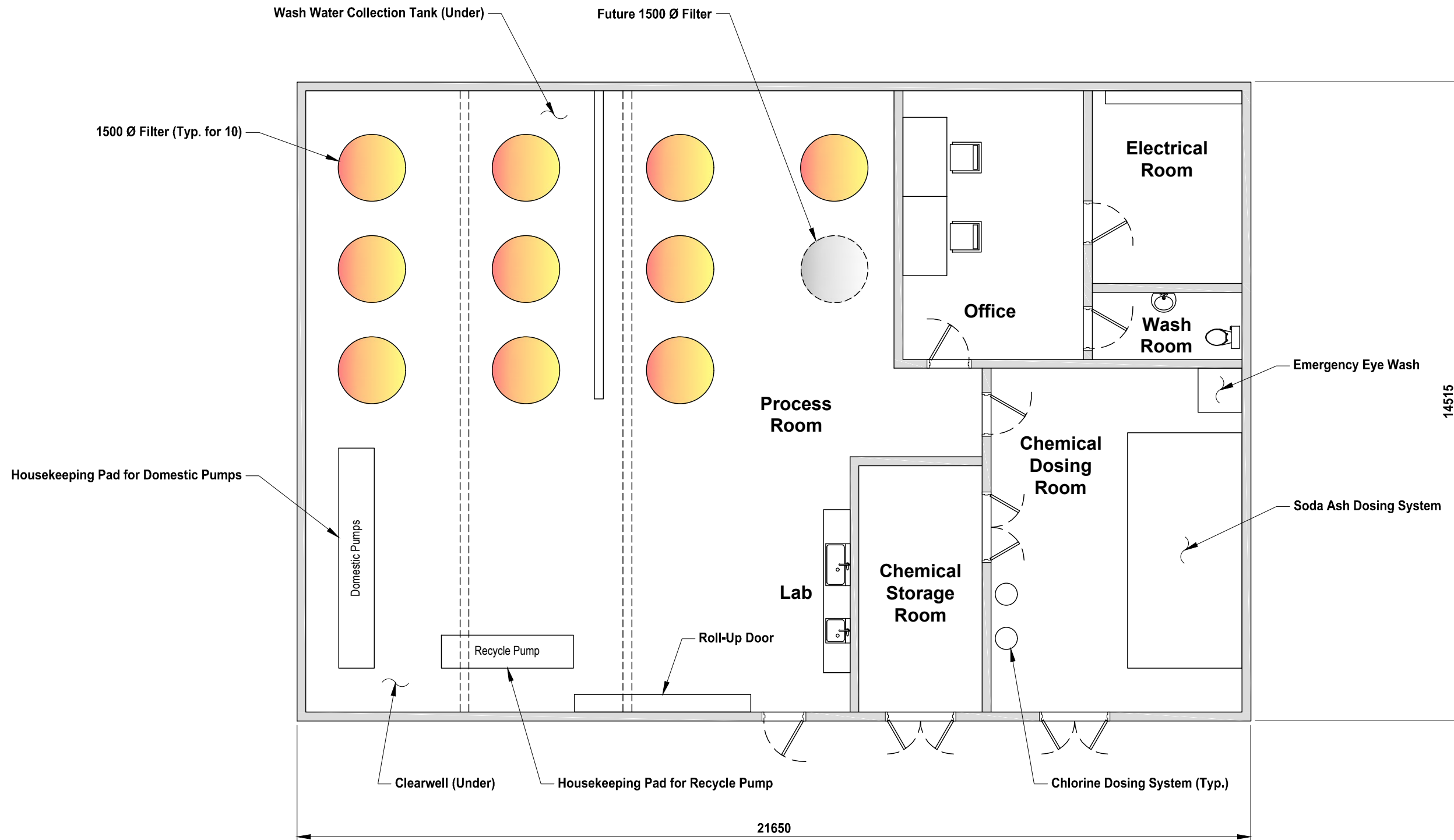


7.8 Facility Layout

As a post-disaster designed building, it is anticipated that the building structure would consist of a mixture of reinforced concrete, potentially concrete block with wood or steel stud framing for interior walls. Surface finishing in process rooms is likely to be cement board and/or chemical resistant fibreglass wall panels. Concrete provides a more durable aesthetic look and provides an opportunity to customize the building layout to suit site and treatment conditions as well as any operator preferences. Based on the design requirement, room layout (soda ash and chlorine dosing), and future development, it is recommended a customized post-disaster concrete building be constructed to house the treatment equipment. The proposed water treatment plant layout is shown in Figure 7-3. It should be noted, the layout is for discussion purposes only, as items may be omitted based on Village preferences, locations of the proposed WTP, and access to sanitary services.

The proposed water treatment plant has a concrete foundation which includes 1.5m pony walls for raw water, backwash supply, and treated water pipe anchoring. This also provides for solid anchoring points for the filter vessels. The dimensions of the proposed water treatment plant are approximately 21.7 m x 14.5 m, or 314 m². The height of the building will be approximately 5 m in height to allow for pump and filter removal and spacing for chemical dosing equipment. A clearwell and backwash tank (if required) would be placed below the WTP floor as shown below. The following lists the major components of the proposed WTP layout that were considered:

1. Three (two duty, one standby) vertical turbine pumps adequately spaced centre to center;
2. Two (duty and standby) vertical turbine pumps adequately spaced. Pumps to be installed when proposed Pressure Zone 2 and 3 reservoir is constructed;
3. Ten 1,500 mm (60") diameter filters spaced approximately 3.5 m apart center to center. Filters are oriented so that operators have easy access to control valves and other components for easy operation and maintenance;
4. Spacing for two future 1,500 mm (60") filters to meet 2040 WTP buildout;
5. Separate electrical room comprising of VFDs, control panels (MCC), and other electrical equipment. A clearance allowance of 1 m to meet code requirements and additional spacing for operations was provided;
6. One 3 m roll up door located in the process room of the proposed WTP to allow for removal of pumps and filters for maintenance, repairs, or equipment replacements;
7. Several access doors located throughout the building to allow for operator ingress and emergency egress;
8. Laboratory area to allow for water collection and sampling work;
9. Chemical dosing and storage rooms to house sodium hypochlorite and soda ash;
10. Standard washroom with water closet and lavatory sink and faucets; and
11. A 50 m³ clearwell and a backwash water collection tank located below WTP.





7.9 Infrastructure Requirements

Electrical

The proposed WTP will require 3-phase 600 VAC power with a minimum of 200 A service but will likely require less amperage if domestic pump(s) are not required.

Based on the site visit, 3-phase power is available off Eagle Ridge Drive, near the road that enters the reservoirs. The village has requested that some electrical equipment stationed near the reservoirs be moved into the water treatment plant. Building service electrical requirements and any additional services need to be evaluated in a subsequent detail design phase.

The Village should discuss with the developer whether 3-phase power will be extended from Eagle Ridge Drive up to the proposed Zone 3 Pump Station. Should extension of 3-phase power proceed up to the proposed pump station, the Village should negotiate responsibility and conditions as part of the development.

Sanitary Systems and Filter Backwash Collection

Use of filters to remove iron and manganese will require periodic backwash to remove accumulated solids in filters. When the filters are backwashed, the generated backwater will head to the wash water collection tank. To conserve water and reduce volumes of backwash water, water from the top of the wash water collection tank will be recycled to the front of the proposed WTP for treatment.

The recycle pump will be programmed to pump the recycled water on a pre-determined intervals (after allowing approximately two hours after backwash for solids to settle down in the wash water collection tank). Based on similar facilities, typical backwash volumes are approximately 5 to 7% of the total water treated by the facility. It is safe to assume more than half of the backwash volume can be recycled to the front of WTP.

Depending on the access and sewer capacities, the settled sludge will be pumped to a sludge tank, if one is used. The sludge tank will need to be cleaned out and haul away on a regular basis.

Currently there are no existing sanitary mains near the existing reservoir locations that would be able to accept any backwash wastewater from the proposed WTP; therefore, wastewater generated from backwashing of media filters and other maintenance procedures will need to be captured and collected in tanks for disposal.

Should a sanitary line be installed for the future development, portion of the backwash from the proposed WTP can be disposed via the sanitary line. Access to a sanitary system would eliminate the need for the backwash settling, and recycle, but a solids collection tank would still be used to reduce the solids loading to the wastewater collection system. This option should be further evaluated in preliminary design phase and should be evaluated against proposed development requirements and wastewater treatment plant capacities.

Based on anticipated filter backwash volumes, a wash water collection tank will be approximately 50 m³ in size which is equivalent to four backwash volumes plus room for freeboard. A 30 m³ tank would be used for sludge collection.



Domestic Booster Pumps Clearwell

Domestic booster pumps may also need to be installed to provide the required pressure to pump water to the reservoir TWL height. Technical requirements along with Village preferences and location will need to be reviewed during the design phase.

At Location 1 (north side of the existing reservoirs), the treatment plant would not require a clearwell or pumps as the water would be gravity fed to the existing reservoirs. At Location 2 (southeast of the reservoirs), a clearwell approximately 12.8 x 3.5 x 1.5 m (50 m³) would be required and would be located below the floor of the proposed WTP. Should the Village include provision to have future domestic pumps installed in the clearwell to provide treated water to a future reservoir, spacing (i.e., concrete pad) could be included into the design and future pumps can be installed when the development is being built. The Village will need to discuss cost share details with the developer.

Based on the above, if a clearwell were to be installed at the proposed WTP, the following pump configurations or a combination of both could exist:

1. Three pumps (two duty, one standby) to pump water to the existing reservoirs;
2. Two pumps (one duty, one standby) to pump water to the future pressure zone 2/3 reservoir.

Since it is considered a benefit for both the Village and developer to have a clearwell with provisions for future pumps, all WTP option discussed below will include a clearwell. Clearwell size will differ based on gravity fed and pumping requirements.

Allowances for well pump replacements and domestic pump installation have been included in the Class D cost estimate.

Construction Phasing

Based on the above, the proposed WTP be constructed in the following two phases.

Phase 1 is the initial design and construction phase of the proposed WTP and includes the construction of the building and installation of treatment process to treat up to the 2040 MDD demand. Phase 1 would also include the installation of a new chlorine dosing system and moving the existing soda ash system to the proposed WTP.

Phase 2 is the installation of future pumps to meet demands created by any adjacent development proposed in the future.



7.10 Summary of Proposed Water Treatment Plant Options

Based on the details discussed above, there are several options or configurations that the proposed WTP can be constructed. These options would depend on the Villages preferences related to the location of the proposed WTP, access to sanitary system, and the configuration of chemical dosing systems.

Table 7-3 summarizes major details for each of the proposed WTP options. A breakdown of costs is provided in Section 0 of the report.

Table 7-3: Proposed WTP Options

Parameters	Option 1	Option 2	Option 3	Option 4
Location	Location 1	Location 1	Location 2	Location 2
# Filter Tanks (dia. 60")	9	9	9	9
Gravity Fed WTP to Existing Reservoir	Yes	Yes	No	No
Clearwell Tank Volume	~ 20 m ³	~ 20 m ³	50 m ³	50 m ³
Domestic Pump(s) to Existing Reservoirs	None	None	3 (2 duty, 1 standby)	3 (2 duty, 1 standby)
Domestic Pumps(s) to Future Reservoir	2 (1 duty, 1 standby)	2 (1 duty, 1 standby)	2 (1 duty, 1 standby)	2 (1 duty, 1 standby)
Wash Water Collection Tank	50 m ³	50 m ³	50 m ³	50 m ³
Access to Sanitary Line	Yes	No	Yes	No
Sludge Holding Tank	None	30 m ³	None	30 m ³
Capital Cost (\$)	\$8,159,000	\$8,024,000	\$8,013,000	\$7,877,000
O&M Cost (\$/year)	\$248,000	\$285,000	\$248,000	\$285,000



8. Class D Cost Estimate

This section summarizes the cost opinions for various options discussed above. Options will be split based on the locations of the proposed WTP and access to the sanitary line for backwashing of the filters.

8.1 Limitations

The projected capital costs presented in this report are based on Class D Capital Cost Opinions. These costs opinions are order-of-magnitude level costs prepared with brief site information and should be used for planning purposes only. The costs may be subject to change upon receipt of significant new site or other information. A 60% allowance (40% contingency and 20% engineering) has been applied to the cost options to reflect their high-level nature.

8.2 Assumptions

The selection, sizing, and projected costs of the proposed WTP are based on the following:

1. All options will meet design flow target of 60 L/s by 2040 and will have provisions to include additional filters and pumps by 2040.
2. All options include a clearwell and pump(s) to provide treated water to the existing reservoir or future Pressure Zone 2 and 3 reservoirs;
3. A revised soda ash system to be installed for all options;
4. Electrical supply is available at existing site;
5. Includes contractor overhead and profit mark up (30%) and PST (7%); and
6. Cost escalation uncertainty with supply chain issues, pandemic fallout or recent provincial flooding could result in a cost escalation of 20-30%.

8.3 Summary of Capital Cost Opinions

A summary of the proposed WTP located at Location 1 (north of the existing reservoirs) cost opinions are provided in Table 8-1.

Table 8-1: Summary of Cost Opinions for Proposed WTP located North of Existing Reservoirs

Item	Option 1, No Access to Sanitary Water Line (North of Reservoirs)	Option 2, Available Access to Sanitary Water Line (North of Reservoirs)
General Requirements	347,600	342,100
Site Work	529,000	485,900
Concrete	638,200	602,400
Building	492,500	492,500
Equipment	2,316,900	2,316,900
Mechanical & Piping	314,000	314,000
Electrical	461,000	461,000



Item	Option 1, No Access to Sanitary Water Line (North of Reservoirs)	Option 2, Available Access to Sanitary Water Line (North of Reservoirs)
Sub-Total	5,099,200	5,014,800
Engineering (20%)	1,020,000	1,003,000
Contingency (40%)	2,040,000	2,006,000
Total	8,159,000	8,024,000

A summary of the proposed WTP located at Location 2 (south of the existing reservoirs) cost opinions are provided in Table 8-2.

Table 8-2: Summary of Cost Opinions for Proposed WTP located South of Existing Reservoirs

Item	Option 3, No Access to Sanitary Water Line (South of Reservoirs)	Option 4, Available Access to Sanitary Line (South of Reservoirs)
General Requirements	341,600	336,100
Site Work	320,300	277,200
Concrete	638,200	602,400
Building	492,500	492,500
Equipment	2,439,900	2,439,900
Mechanical & Piping	314,000	314,000
Electrical	461,000	461,000
Sub-Total	5,007,500	4,923,100
Engineering (20%)	1,002,000	985,000
Contingency (40%)	2,003,000	1,969,000
Total (Rounded)	8,013,000	7,877,000

8.4 O&M Cost Estimate

The Operation and Maintenance, O&M costs are allowances based on similar WTP projects completed by KWL and are intended to be for comparison purposes between the various treatment processes evaluated. It is anticipated that the estimate for O&M costs would be refined with subsequent phases of work such as pilot testing, preliminary design, final design.

At this stage, the proposed WTP O&M Cost estimate is split among six categories which include electrical operating charges, staffing, water monitoring, consumables, waste management, and facility maintenance. The following summarizes how each category were calculated:

1. Electrical charges are based on typical electrical requirements of major equipment (i.e., pumping) and anticipated duty cycle. Electrical cost rates at \$0.10/kwh reflect industrial averages;
2. Staffing charges are based on typical hours required to maintain and operate the WTP. Assumes an hourly charge rate of \$40/hour. Staffing generally relates to routine labour, filter replacement, sludge disposal, and after-hour response;



3. Water monitoring is assumed to be completed at the proposed WTP to measure overall performance of the treatment process and to confirm the distribution is receiving treated water that meets guideline requirements. It is anticipated samples will be collected quarterly at the proposed WTP;
4. Consumables are based on the recommended treatment process which include filter media replacement and removal as well as chemical consumptions;
5. Waste management is the cost associated with disposal of accumulated sludge from the backwashing of media filters. A disposal fee of \$1,500/haul was applied at a rate of two hauls per month for the proposed WTP. The cost associated with hauling could be eliminated if a sanitary line is accessible; and
6. Maintenance are costs associated with the maintenance and replacement of equipment at the WTPS.

Based on the assumptions above, the estimated O&M costs for the proposed WTP ranges between \$248,000 - \$285,000 per year. Lower range cost would be related to WTP options that have access to sanitary system and would not require the need for sludge disposal services. It should also be noted, approximately \$110,000 of the O&M costs are related to replacement and maintenance costs which would most likely be put aside to allow for equipment to age and be replaced.

DRAFT



9. Overall Discussion and Summary

Four proposed WTP options were presented in the information above to treat existing groundwater wells to meet requirements of the GCDWQ. The proposed WTP should be designed to operate at 60 L/s and will have provisions to supply any future adjacent development with the addition of domestic pumps dedicated for that development. The proposed WTP will consist of ten 1,500 mm (60") diameter filters with GreenSandPlus™ media to remove iron and manganese and will be fitted with domestic pumps, recycle pumps, and sludge pumps.

The treatment process at the proposed WTP will consist of oxidation by chlorination and filtration by GreenSandPlus™ media. Oxidations by chlorine disinfection will promote precipitate formation of iron and manganese and provide primary and secondary disinfection of the water. Catalytic media filtration with GreenSandPlus™ will further react with dissolved manganese to promote absorption to the filter media.

Periodic backwash of the GreenSandPlus™ filter media will be required to remove the accumulated iron and manganese in the filter. The backwash water will be sent to wash water collection tank where settling of solids will occur. To reduce the amount of liquid waste for disposal, a recycle pump will pump the supernatant liquid to the front of the WTP for treatment. Solids in the backwash collection tank will settle to the bottom, where a sludge pump will transfer the solids to a sludge collection tank or lagoon for storage and disposal. It is anticipated, disposal of solid waste will occur approximately once to twice bi-monthly at the proposed WTP but will depend on the water quality of the raw water and actual volume of water being treated.

The recycle line will be piped to the front of the proposed WTP from the wash water collection tank, where chemicals will need to be injected upstream or downstream of the filters. Due to the proposed arrangement, it is recommended, the existing soda ash systems be moved to the constructed WTP and a new chlorine system be installed at the proposed WTP. A new pH adjustment system can replace the existing systems once the system is unable to keep up with future demands.

The capital cost of the proposed WTP options range between \$7.9 to \$8.2 million depending on the location, pumping requirements, and access to sanitary systems for sludge disposals. O&M costs estimated to be \$248,000 to \$285,000 per year.



10. Conclusion and Recommendations

10.1 Conclusions

Based on the scope of this water treatment investigation, several conclusions have been reached and are listed below:

1. The existing Wells 2 and 3 groundwater sources, if not periodically redeveloped, will eventually have elevated iron and manganese water levels that do not meet the requirements of the Guideline for Canadian Drinking Water Quality;
2. Anticipated flow rates based on village population growth until 2040 are summarized in the table below:

Table 10-1: Summary of Flow Rates

Year	Village Population	ADD (m ³ /day)	ADD (L/s)	MDD (m ³ /day)	MDD (L/s)
2020	3,100	1,880	22	3,700	43
2025	3,510	2,067	24	4,073	47
2030	3,925	2,255	26	4,451	52
2035	4,335	2,442	28	4,824	56
2040	4,750	2,631	31	5,203	60

3. The proposed water treatment process of oxidation with chlorine injection and catalytic media filtration (GreenSandPlus™) will provide adequate treatment and disinfection to the water from the wells;
4. The proposed WTP should be designed to operate at 60 L/s and will have provisions to supply any future adjacent development with the addition of domestic pumps dedicated for that development;
5. Two proposed locations were identified. Location 1 would have the proposed WTP located north of the existing reservoirs at an elevation above the reservoirs TWL to allow for gravity feed. Location 2 will be located southeast of the existing reservoirs and will require a clearwell and additional pumps to provide treated water to the reservoir. Both locations have advantages and drawbacks;
6. A separate technical memorandum related to soda ash dosing is currently being prepared by KWL and will provide additional insight into the design of future soda ash dosing system for corrosion control of the treated water;
7. To conserve water use and produce reduce volumes of wash waste for disposal at the proposed WTP, a pump from the wash water collection tank will recycle settled water to the front of the WTP for treatment. Hypochlorite injection and pH adjustment systems will need to be installed downstream of the tie-in point of the raw water and recycle line;
8. Four WTP configurations were presented based on the location of the proposed WTP and access to sanitary system. Costs of the WTP range from \$7.9 to \$8.2 Million and include 40% contingency;
9. O&M costs to operate the WTP is estimated to be \$248,000 to \$285,000 per year. Costs will be impacted by access to sanitary system and sludge disposal;



10. Two proposed construction phases were presented:
 - a. Phase 1 is the initial design and construction phase of the proposed WTP and includes the construction of the building and installation of treatment process to treat up to the 2040 MDD demand;
 - b. Phase 2 is the installation of future pumps to meet demands created by any adjacent development proposed in the future.

10.2 Recommendations

Based on the conclusions of this study, a list of recommendations is provided below:

1. The Village to review the proposed WTP options and determine which configuration best suits their needs and requirements;
2. Conduct bench scale testing with water from Well #2 and #3 to confirm Oxidation and Catalytic Media Filtration with GreenSandPlus™ is able to meet treatment requirements.
3. Proceed with pre-liminary design of the preferred WTP option;
4. The Village, supported by KWL, apply for Infrastructure planning and Investing in Canada Infrastructure Program Grant by December 15, 2021 and January 26, 2022 respectively. Refer to email correspondence with subject line: 743.018: Water Conservation Plan Proposal between KWL and the Village; and
5. The Village to confirm existing wastewater treatment plant capacity and determine whether additional volumes as a result of the proposed WTP and future development would impact the treatment facility, or the conveyance of sewage to that facility.



Report Submission

KERR WOOD LEIDAL ASSOCIATES LTD.

Prepared by:

Alfred Louie, P.Eng.
Project Engineer/Project Manager

Kimberley Brown, EIT
Junior Engineer

Reviewed by:

Reviewed by:

Venkat Raman, P.Eng.
Technical Reviewer

Irfan Gehlen, P.Eng.
Principal in Charge

AL/sk

Statement of Limitations

This document has been prepared by Kerr Wood Leidal Associates Ltd. (KWL) for the exclusive use and benefit of the intended recipient. No other party is entitled to rely on any of the conclusions, data, opinions, or any other information contained in this document.

This document represents KWL's best professional judgement based on the information available at the time of its completion and as appropriate for the project scope of work. Services performed in developing the content of this document have been conducted in a manner consistent with that level and skill ordinarily exercised by members of the engineering profession currently practising under similar conditions. No warranty, express or implied, is made.

Copyright Notice

These materials (text, tables, figures, and drawings included herein) are copyright of Kerr Wood Leidal Associates Ltd. (KWL). VILLAGE OF PEMBERTON is permitted to reproduce the materials for archiving and for distribution to third parties only as required to conduct business specifically relating to the Water Treatment Investigation. Any other use of these materials without the written permission of KWL is prohibited.

Revision History

Revision #	Date	Status	Revision Description	Author
A	November 26, 2021	Draft		AL/KSB
B	December 10, 2021	Draft		AL/KSB

KERR WOOD LEIDAL ASSOCIATES LTD.
consulting engineers

Date: January 18, 2022

To: Nikki Gilmore, Chief Administrative Officer

From: Cameron Chalmers, RPP, MCIP, Consulting Planner

Subject: Nkwûkwma (Benchlands) Application Process Update

PURPOSE

The purpose of this report is to update the Committee of the Whole on the status of, and review process for the Nkwûkwma (Benchlands) Official Community Plan and rezoning application. Staff are not seeking comment specific to the application itself, but rather facilitating the Committee with an update in anticipation of substantive discussion about the application in coming months. The report is intended to ensure that the Committee of the Whole is apprised of the processing of this major development application.

BACKGROUND

Application Information

An application has been received from Skénkenam Developments General Partnership (Skénkenam or the Owner) for Official Community Plan (OCP) amendment and rezoning for the proposed Nkwûkwma (Benchlands) neighbourhood.

Skénkenam is a partnership formed between Lil'wat Capital Assets Limited Partnership, which is a wholly owned company of Lil'wat Nation) and Pemberton Benchlands Development Corporation.

Skénkenam purchased ~60 hectares (148 acres) of land northwest of the Pemberton Town Centre from the Province of British Columbia in September 2021 following a substantial diligence and purchase process. The ~60 hectares (ha) fall mostly within the jurisdiction of the Village of Pemberton, with a portion of the lands located within the SLRD. The portions of land identified for development are within the Village boundary, and the Village anticipates a future annexation of the holdings currently located within the SLRD.

For reasons described in subsequent sections of this report, the Owner is requesting an OCP amendment over the entire ~60 ha (~148 acres) Skénkenam holdings within the Village, but only a ~31 ha (77 acre) portion of the land is subject to the rezoning application which is shaded in Figure 1 below. The rezoning contemplates the creation of approximately 270 new single-detached and multi-family units.

The application represents a major development application in the Village and will involve several layers of processing that are outlined in the remainder of this report.

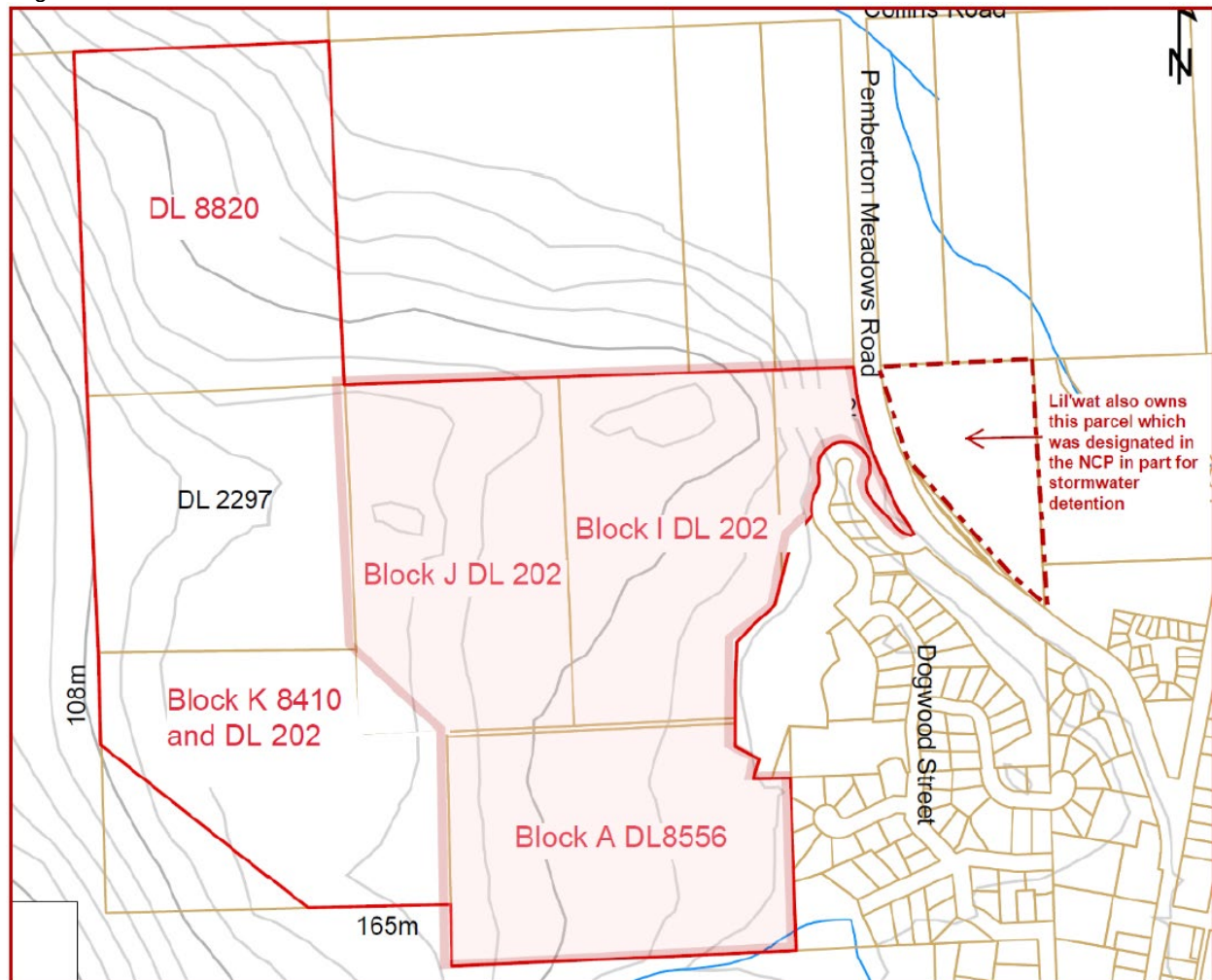


Figure 1: Skénkenam Land Holdings

Policy Background

The Nkwúkwma proposal represents a refinement of the former Benchlands Neighbourhood Concept Plan (NCP) outlined in the Official Community Plan. Council initially approved the NCP in 2007. In 2013 the Village of Pemberton incorporated the policy framework of the Benchlands Neighbourhood Concept Plan into the Official Community Plan to facilitate the future development of the subject lands as a significant mixed-residential neighbourhood of approximately 500 homes with 5% of the homes dedicated as community housing for affordability or accommodating demographics in need. In that regard, the inclusion of the subject lands in the Village residential growth framework is not a new consideration. The lands have been identified as a future growth corridor for some time.

Specifically, the lands proposed for development are identified as within the *Urban Growth Area* on Map A of the OCP and are accordingly within the area contemplated to accommodate future residential growth in the community. Map B of the OCP (Figure 2) which allocates land uses across the community identifies portions of the subject lands as *Residential Neighbourhoods* (yellow), significant portions as *Open Space and Greenways* (light green), and identifies areas of

Public Parks (dark green) and Civic and Institutional (purple). Map C further identifies the lands as suitable for *Intensive Residential Development*.

Map B (Figure 2) also identifies the lands as within the Benchlands Neighbourhood Concept Plan Area which identifies several higher-level policy directions for the creation of the new neighbourhood on the subject lands.

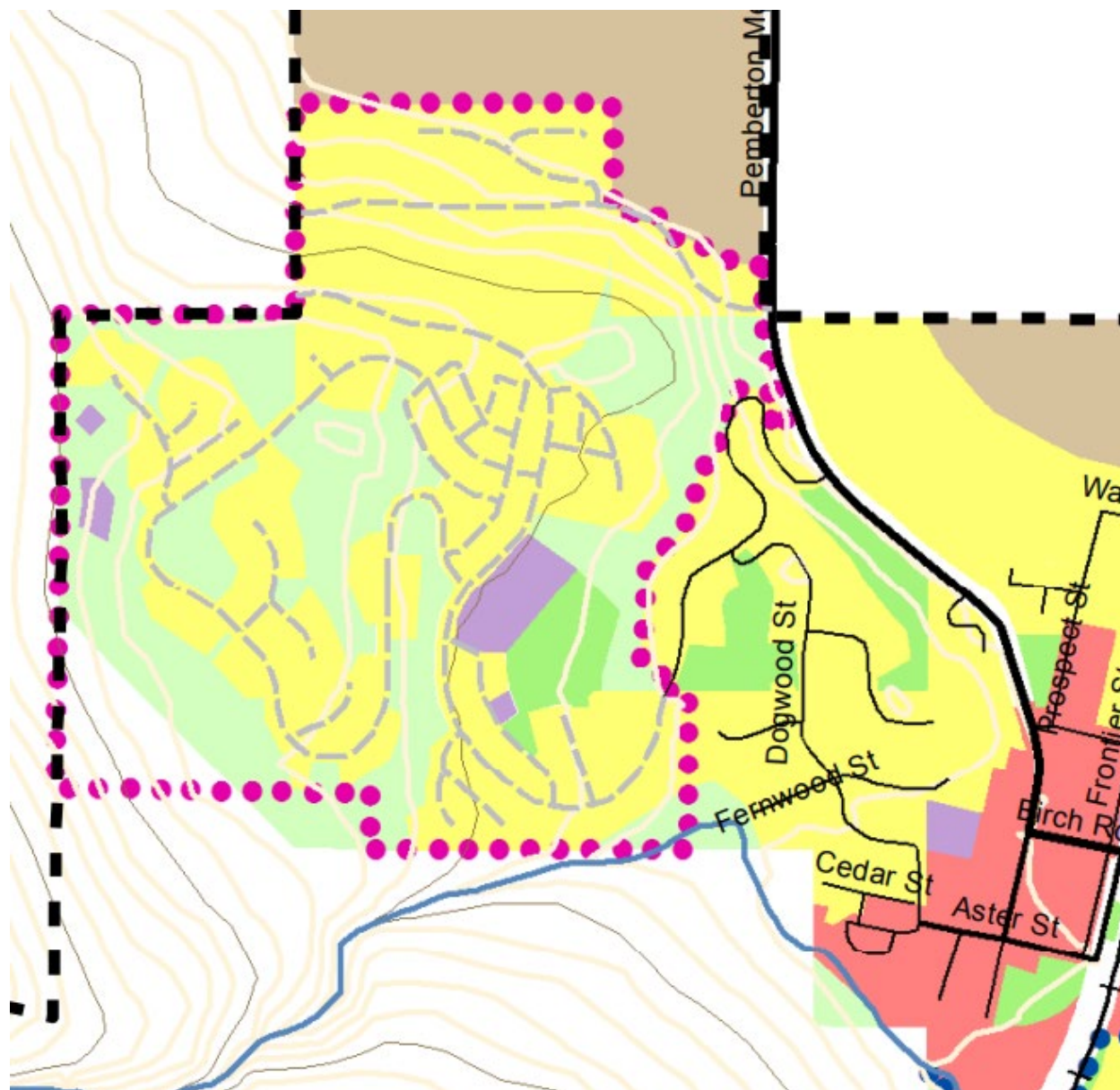


Figure 2: OCP Map B Land Use

Though the lands have been identified as a growth corridor for years, and land uses have been allocated to achieve the development of the new neighbourhood, several changes have occurred in the level of understanding of the site, the community planning framework, the marketplace, and

other considerations that have led to a reconsideration of the planning approach undertaken in 2007.

It is of note that the Village OCP policy and mapping is quite specific, reflecting an earlier iteration of the site plan, which is in the process of evolving. That coupled with the opportunity to refine, enhance, and improve the OCP level policy approach to the development of the lands has compelled Staff and the applicant to pursue a comprehensive amendment to the OCP as outlined in more detail in subsequent sections of this report.

As to zoning, the lands are currently zoned *Residential One (RS-1)* which permits the subdivision and development of the lands as a single-detached neighbourhood. Despite the permissive zoning that currently exists on the site, the Skénkenam and Staff have identified an opportunity to rezone the lands to reflect the updated neighbourhood planning approach, and a new Comprehensive Development (CD) zone will be undertaken to reflect the updated plan for the neighbourhood.

In summary, significant development entitlements already exist for the subject lands in the Village of Pemberton OCP and Zoning Bylaw. However, for reasons described in the next section, and to ensure the new neighbourhood reflects contemporary land use and development approaches and the vision of Council and the community, Skénkenam have made application to amend the OCP and rezone the lands in a manner fundamentally consistent with the principles and policies outlined in the OCP.

APPLICATION PROPOSAL DESCRIPTION

In March 2021, Skénkenam submitted a comprehensive and detailed application submission. The summary and covering report submitted is attached as [Appendix A](#). Of note, and included as [Appendix B](#), the Applicants undertook a thorough and detailed analysis of the lands including the following professional consulting studies to gain a better understanding of the land:

- DRAFT Traffic Impact Assessment
- Geotechnical Analysis
- Initial Environmental Review
- Riparian Areas Regulation Review
- Market Absorption Study
- Site Servicing Study

These submissions have been reviewed and that review will continue through the OCP and rezoning study.

The Applicants have also engaged a design firm with broad experience in community level planning and design. The design process began with an analysis of the land and its topographic conditions, as well as the opportunities and constraints from the technical studies. That analysis has been critical in understanding the site and the development potential and future site layout.

Land Opportunities and Constraints

[Appendix C](#) includes a set of drawings that consolidates the various considerations on the site.

The primary consideration that has impacted the application is the contamination of the former gun-range on the property on the westernmost portions of the site. The extent of contamination has been documented, and the Applicant is working with the Province on potential remediation options. Given the uncertainty of the exact nature, type, and extent of the remediation, the lands have not been included in the first stage of rezoning.

As seen in Figures 3 and 4, (which is in the [Appendix C: Figures 9 and 10](#)), the site has several development constraints, but also includes a significant opportunity for residential growth as contemplated in the OCP. The detailed analysis does however modify the layout and type of development from that considered by Council in 2007.

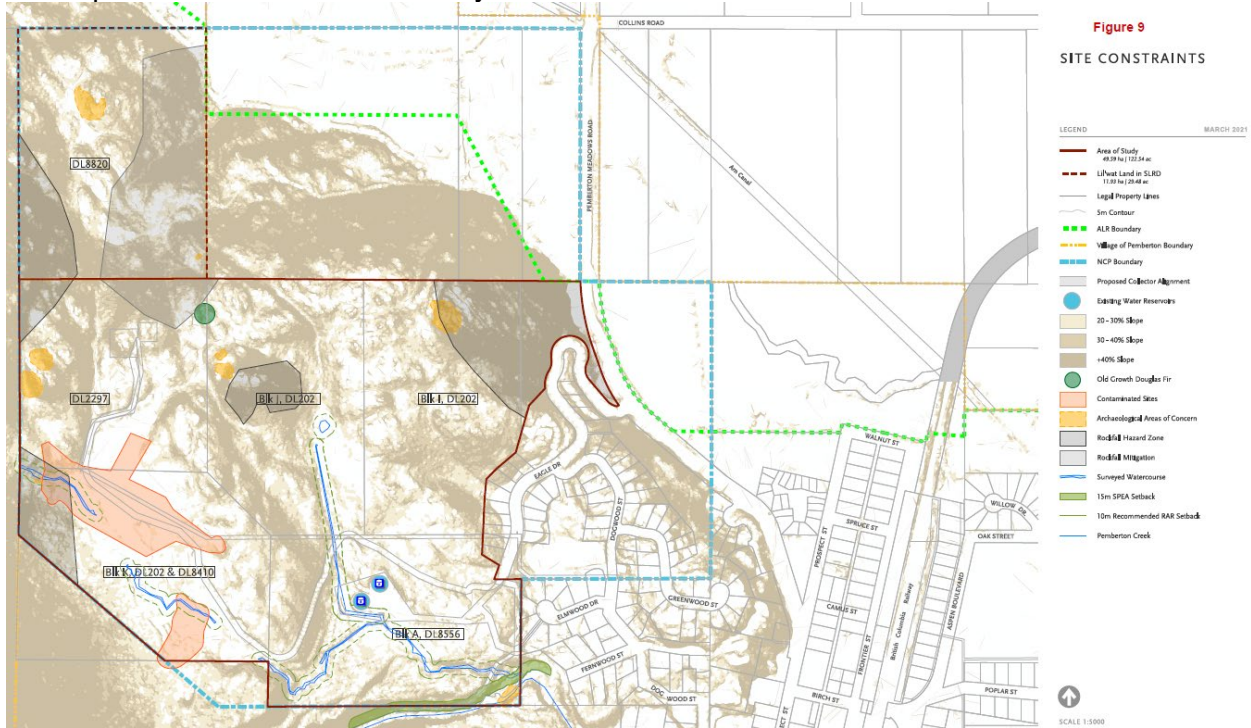


Figure 3: Site Constraints

Committee

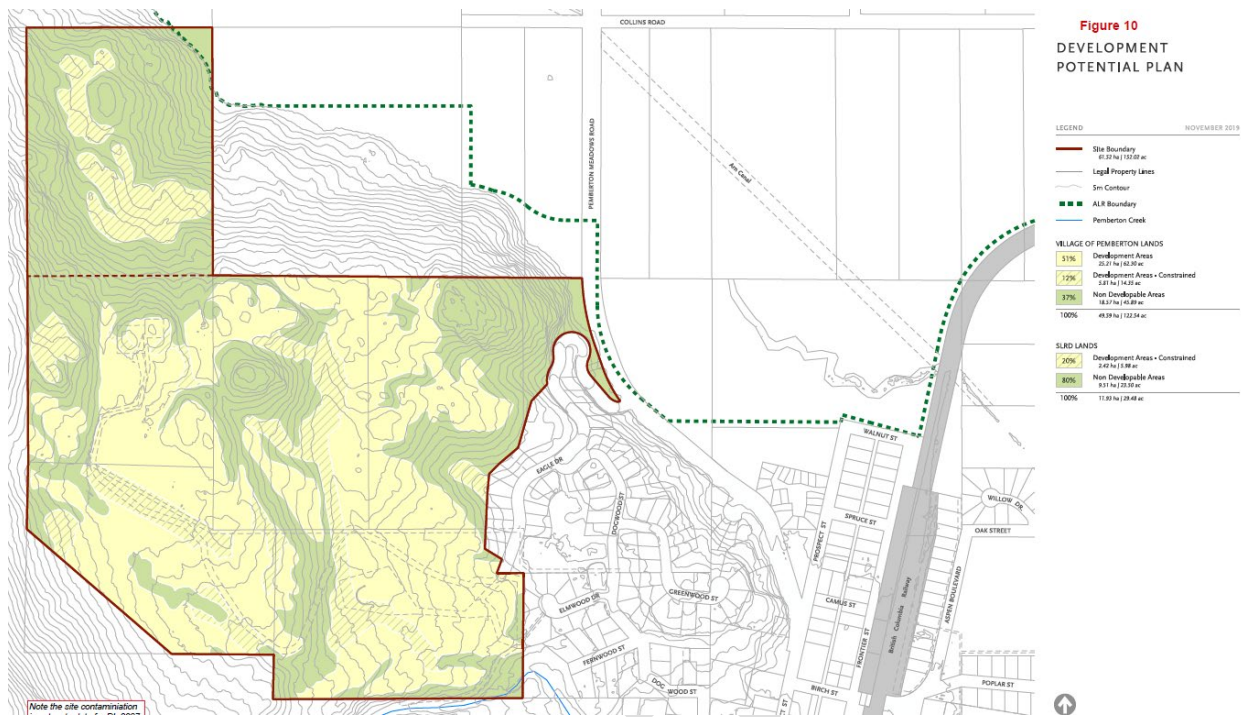


Figure 4: Development Potential Plan

Figures 3 and 4 identify the land potential over the entire site, assuming remediation of the contaminated gun-range site. Additional work and provincial approvals are required with respect to the contamination, and accordingly, those lands are not included in the first rezoning application. The intent at this stage is to prepare an OCP amendment for the entire holdings within the Village, but only rezone a portion of the lands.

The first phase rezoning application is based on a preliminary layout and land-use concept which is shown in Figure 5. Staff are not seeking direction or comment on the site plan yet. That will occur in future meetings once the process has advanced but are providing it below as an example of a potential layout for the first stage of the new neighbourhood.



Figure 5: Application Layout

Official Community Plan Amendment Application Approach

The Applicant and Staff have agreed to an enhanced OCP amendment process. Given the scale, complexity, and the length of time to develop the site, the OCP amendment process will include the creation and adoption of a Sub-Area Plan (SAP) for the proposed development. Adopted as a schedule to the Village of Pemberton OCP, the SAP will establish policy for the future development of the lands, site specific development considerations, and detailed Development Permit Area Guidelines to regulate the development of land and multi-family and commercial buildings.

This level of regulation for a specific neighbourhood will be a new introduction to the OCP but will result in a comprehensively planned and considered neighbourhood in the context of the OCP planning framework. As the neighbourhood will likely take decades to complete, this approach will ensure a consistent planning framework for both the Village and Skénkenam.

Collaboration on the first draft of the SAP is underway and will be brought forward for future consideration by the Committee of the Whole. At that time Staff will seek substantive comment on the development approach and land-use.

Rezoning Application Approach

The rezoning will be to a newly created Comprehensive Development (CD) zone to accommodate the specific development outlined in the final approval, to accommodate specific development targets, and potentially to secure developer obligations over the life of the project.

This approach to zoning affords the Village and Skénkenam greater ability to address site and development specific zoning regulations and consistency through the lengthy development process.

DISCUSSION & COMMENTS

Consultation

On July 27, 2021, Council received a report prepared pursuant to Section 475 of the *Local Government Act* with respect to early and ongoing consultation. At that meeting, Council passed the following resolutions:

Moved/Seconded

THAT Council has considered the obligations under Section 475 of the *Local Government Act* with respect to the Official Community Plan amendment application by Nkwúkwma (Benchlands) and requests that the Applicant organize, advertise, and host at least two (2) public information meetings prior to consideration of First reading of the forthcoming OCP amending bylaw.

AND THAT Council has considered Section 475 of the *Local Government Act* and directs Staff to consult with the following organizations before consideration of First Reading to the forthcoming OCP amending bylaw:

- Lil'wat Nation
- Squamish-Lillooet Regional District
- Ministry of Transportation and Infrastructure
- Ministry of Environment – Contaminated Sites Branch
- Ministry of Forest, Lands, and Natural Resources – Archeological Branch
- Vancouver Coastal Health
- Sea-to-Sky School District (No. 48)
- Conseil Scolaire francophone de la C.B. (School District No. 93)
- Pemberton Valley Dyking District
- Pemberton Valley Trails Association
- Pemberton Off-Road Cycling Association
- Pemberton & District Chamber of Commerce
- BC Hydro
- TELUS
- Shaw Communications
- Canadian Broadcasting Corporation
- Pemberton Wildlife Association

CARRIED

Moved/Seconded

THAT Staff provide guidance to the applicants to ensure that a robust advertising campaign is conducted in advance of the developer-led public information meetings to ensure that all residents are offered the opportunity to be heard.

CARRIED

Referrals have since gone out to the agencies listed in the resolution and responses have been received from most of them. As part of the OCP review process, the referral comments will be addressed and incorporated into future Committee of the Whole and Council reviews of the detailed development application. Staff anticipate a second round of referrals to most of the agencies listed above when the draft SAP is prepared and under review.

The Applicant has also continued broader public consultation since Council's resolution in July 2021 to build on the initial community open house in March 2020. A community meeting was scheduled in Mt. Currie for members of Lil'wat Nation in December 2021 but was deferred.

The Applicants also hosted an information booth in the Village Centre on December 3, 2021, to promote the December 8, 2021, community open house which was held virtually. Staff are satisfied the Applicants undertook a robust advertising approach and provided better than average notice of the open house event.

A minimum of one additional community open house to introduce and solicit feedback on the draft SAP and rezoning application will be held, and the Applicant is in the process of undertaking matter specific consultation to address trails and other community issues.

The Applicants are preparing, and will maintain throughout the development process, a detailed consultation report of all community consultation contacts. That report will be provided to the Committee of the Whole and Council in future reports.

Planning Policy Process

The planning policy process at this time is focused primarily on assessing and consolidating the referrals and public comments on the application, and further analyzing the impacts and multiple considerations on land use and development, all of which will be addressed through the first draft of the SAP document and DPA guidelines.

Staff anticipate bringing the first draft of the SAP back to Committee of the Whole in the coming months. This future session will be to present the plan and receive feedback on the details of the development application and land use framework and policy.

Engineering and Servicing Process

To date, the most substantial consideration of the application pertains to municipal services, and the ability of the Village to provide water, sanitary sewer, and stormwater infrastructure in support of the project. The application includes a detailed on-site engineering study, but the primary efforts to date have been to establish a means to assess the off-site infrastructure to bring water to the site and discharge it appropriately.

This off-site servicing analysis involves significant updates to the Village's water and sanitary models, and the creation of a new stormwater model to assess the capacity and function of existing municipal systems and most importantly, determine the impact of the new development and the extent and timing of off-site infrastructure improvements, all within the context of other current and potential demands on these systems.

In support of this work required, the Applicants have agreed to provide more than \$100,000 to fund the costs of these detailed servicing models. The Village has established a means of cost-recovery from future development applications to offset this cost as the information derived from the updated models will have significant value to future development and the ability of the Village to assess and determine servicing capacity in the area.

The models and resultant off-site engineering improvements are critical to understanding the viability of the project, the requirements of the development, as well as the community benefits and amenities borne by the development. The models will facilitate a more fulsome financial analysis of the development application by both the Village and Skénkenam.

Community Amenities and Benefits

At this stage, the Village and the Applicants have aligned that the community amenity process will follow the general framework of the Village's Community Amenity Policy. As Council is aware, the process for determining community amenities includes a fulsome analysis of development requirements and community benefits and that information will fall out of the servicing model analysis.

Matters such as affordable housing, trails and recreation infrastructure, and other community amenities are forthcoming and will be a primary consideration of the rezoning process which is in its infancy at this time.

SUMMARY AND NEXT STEPS

This report has been provided as an update report, with an emphasis on the status of the application, and a general outline of the application process ahead. Currently, Staff is not seeking comment or feedback specifically on the merits of the development application, details, or associated impacts as the process is still in early stages. The community and Committee of the Whole will have additional opportunity provide input into the process specific to the application in the coming months once additional information on the application has been compiled and processed.

Staff are requesting receipt of the report and endorsement of the process as outlined in the report but have included an alternative for Council to provide suggestions on enhancing the process or specific process considerations for Staff to include going forward.

COMMUNICATIONS

There are no communications considerations arising from this report.

LEGAL CONSIDERATIONS

There are no legal considerations arising from this report.

IMPACT ON BUDGET & STAFFING

Staff and consulting time are covered by the development application fees and cost-recovery.

INTERDEPARTMENTAL IMPACT & APPROVAL

The application will affect multiple municipal departments, all of whom will be engaged in the review and processing of the applications.

IMPACT ON THE REGION OR NEIGHBOURING JURISDICTIONS

The OCP amendment application and likely annexation of lands has impacts on the SLRD and Lil'wat Nation, both of whom have been referred the application and will be provided additional opportunity for comment.

ALTERNATIVE OPTIONS

Option One: THAT Committee of the Whole receive the Nkwûkwma (Benchlands) Application Process Update report for information and direct Staff to submit the draft Sub-Area plan to a future Committee of the Whole meeting for review.

Option Two: THAT Committee of the Whole recommend to Council that the following process considerations be addressed in the review of the Nkwûkwma (Benchlands) Official Community Plan and rezoning application:

- {To be added by the Committee of the Whole}

AND THAT Staff be directed to submit the draft Sub-Area plan to a future Committee of the Whole meeting for review.

RECOMMENDATIONS

THAT Committee of the Whole receive the Nkwûkwma (Benchlands) Application Process Update report for information and direct Staff to submit the draft Sub-Area plan to a future Committee of the Whole meeting for review.

ATTACHMENTS:

[Appendix A:](#) Skénkenam Application Submission Cover Report

[Appendix B:](#) Appendices to Application Submission

[Appendix C:](#) Initial Application Drawing Submission

Prepared by:	Cameron Chalmers, RPP, MCIP, Consulting Planner
Manager Approval:	Scott McRae, Manager of Development Services
CAO Approval by:	Nikki Gilmore, Chief Administrative Officer

Date: January 18, 2022
To: Nikki Gilmore, Chief Administrative Officer
From: Cameron Chalmers, RPP, MCIP, Consulting Planner
Subject: OR134 - Redwoods OCP and Rezoning Application - Direction to Proceed

PURPOSE

The purpose of this report is to seek direction from Committee of the Whole (Committee) respecting an application for Official Community Plan (OCP) amendment and rezoning for a new development referred to as Redwoods. As the application represents a substantial increase in density and development form from other adjacent developments and has raised a number of concerns during the initial review of the application, Staff have elected to seek early policy-level input from the Committee before undertaking a detailed review. Staff propose two options for Committee consideration. The first is to direct Staff to proceed with processing the application substantially as submitted. The second option is to direct that the application be reconsidered and resubmitted before proceeding.

BACKGROUND

On December 15, 2021, the Village received an application from 1309325 BC Ltd. for OCP amendment and rezoning on a portion of lands located at 7374 Pemberton Farm Road East, legally described as Lot 5, DL 211, LLD Plan EPP21848 (PID: 028-961-102). The lands are currently undesignated on Map B of the OCP and are zoned Rural Residential 1 (RR-1) in the Zoning Bylaw. This zoning would permit the subdivision of land to two-hectare parcels.



Figure 1: Location Plans

The application contemplates a mixed-use development consisting of 176 multi-family townhouses, stacked townhouses and 2,751 square metres (29,600 square feet) of commercial floor space on 3.28 hectares (8.11 acres). Proposed commercial uses include financial institution, personal service, neighbourhood commercial, fitness centre, restaurant, daycare, office, and general retail.

The drawings submitted in support of the application are attached as **Appendix A**.

The application also includes a Traffic and Parking Summary study, a site servicing plan, and geotechnical report have been submitted in support of the application. These technical submissions have not been reviewed and analyzed in any detail, pending direction from the Committee to proceed, or not, based on the planning concerns. Should the Committee direct Staff to proceed with the application process, these, and potentially other, technical reports will be assessed.

Policy Framework

The subject lands are identified as within the Urban Growth Boundary on Schedule "A" of the OCP. This is a result of amending Bylaw No. 675, 2011, which made a number of mapping amendments to the OCP and introduced a policy section that affects the subject lands. Lands within the Urban Growth Boundary are deemed part of the Village inventory of development land to accommodate growth.

The lands in the application are currently undesignated in the OCP on Map B but are identified as within the Hillside Special Study Area on Maps B and C. This designation is the same designation applied to the Ridge and Sunstone neighbourhoods. However, the OCP and the designation does not provide specific policy guidance or planning framework for the development of the lands. Rather, it makes general objective statements including the following:

- *The Hillside Lands will develop as a satellite neighbourhood slightly distanced from the existing urban area, yet with the opportunity to be a well-designed compact neighbourhood integrated with open areas as well as existing and proposed land uses such as the Pemberton Plateau subdivision, independent school, Pemberton Industrial Park and Mount Currie. The challenge in the development will be to maximize densities while not compromising the natural features and viewscapes of the lands.*
- *For the most part the predominant land uses on the sloping site will be residential, parks and open spaces.*
- *Pemberton's downtown is the dominant commercial node as well as the cultural and social focal point. Regardless, other areas within the Hillside lands have some potential for additional uses such as commercial accommodation (resort/hotel/lodge), institutional (churches, education) and/or community uses (recreation, leisure facilities, emergency services) and limited neighbourhood commercial (to serve the needs of the neighbourhood).*
- *The Sub-Regional Planning Study has identified a minimum gross residential density of 5.25 units per hectare. As noted previously, the site has several areas that should not be developed primarily due to steep terrain, trail alignments or preservation areas (riparian or archaeological). The challenge will be to maximize site densities without compromising the character of the site. The Village encourages specific developments to incorporate innovative site design principles (such as clustering, conservation design*

and site-specific zoning) to retain the integrity of the lands while meeting projected density targets. Reduced densities will only be considered if it is to preserve the natural character or amenities of the site.

Though the OCP does not include specific land use allocations or concepts, the 2011 amendment applied the “Overlap of Enhancement of Agriculture, (Intensive) Residential, and Multi-Family/Commercial development permit area”. This designation may be interpreted such that these are deemed acceptable uses on a site-by-site basis.

In summary, the OCP effectively allows Village Council to consider a range of residential and commercial uses, within the general objectives outlined above. It contemplates a **gross** residential density of 5.25 units per hectare over the entire planning area, including multi-family development. This leaves room for a Council to consider, on a site-by-site basis how each individual application reflects the interpretation of the OCP, impacts on surrounding lands, and the overall suitability and viability of each proposal.

APPLICATION PROPOSAL DESCRIPTION

As shown on **Appendix A** to this report, the application proposes a mixed-use commercial/multi-family development. It proposes a mix of 176 townhouses and stacked townhouse on 3.28 hectares for a net density of 53 units per hectare and a Floor Area Ratio of 0.47. It also proposes a significant mixed commercial, service, and retail component of 2,751 sq. m. (29,600 square feet).

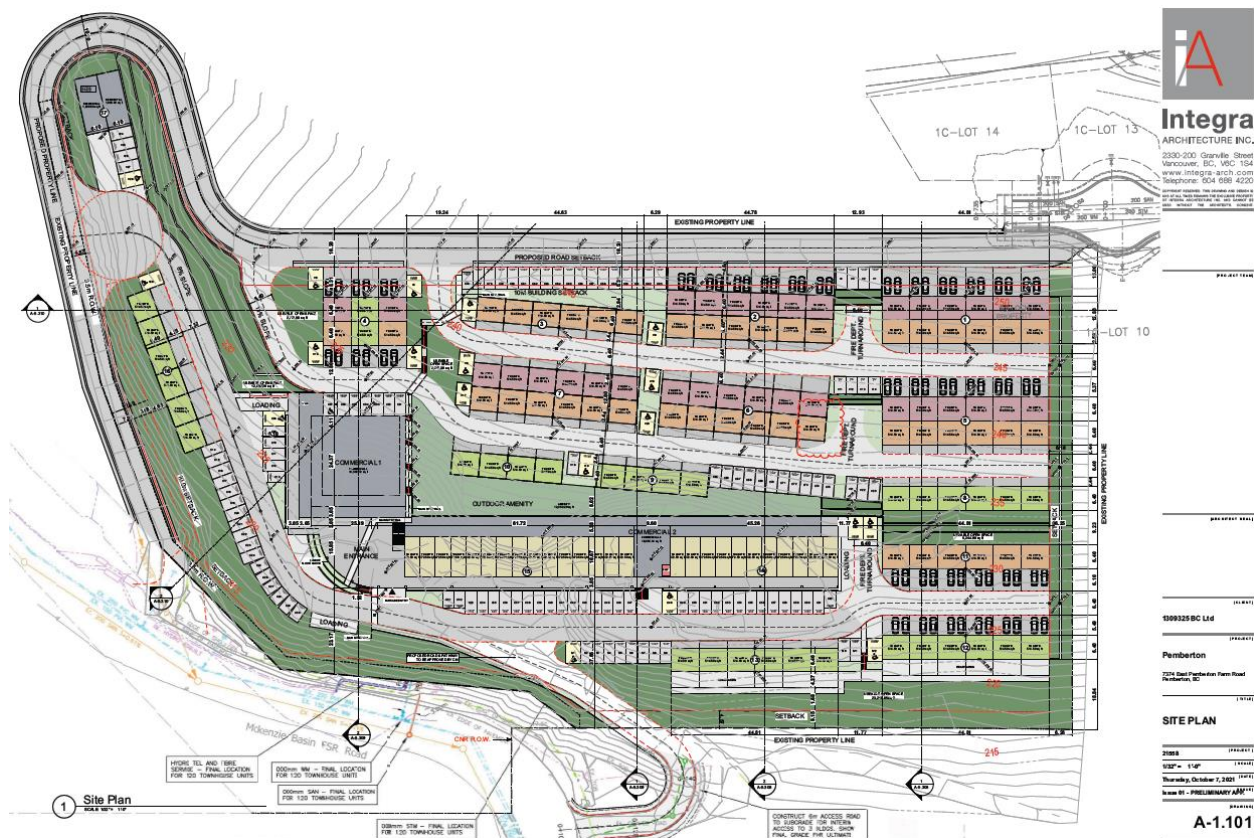


Figure 2: Site Plan

The drawings propose a total of 17 buildings of 3-4 storeys. The proposal is to site the buildings in a terraced manner on the hillside, with some buildings cut into the site and others sited above.

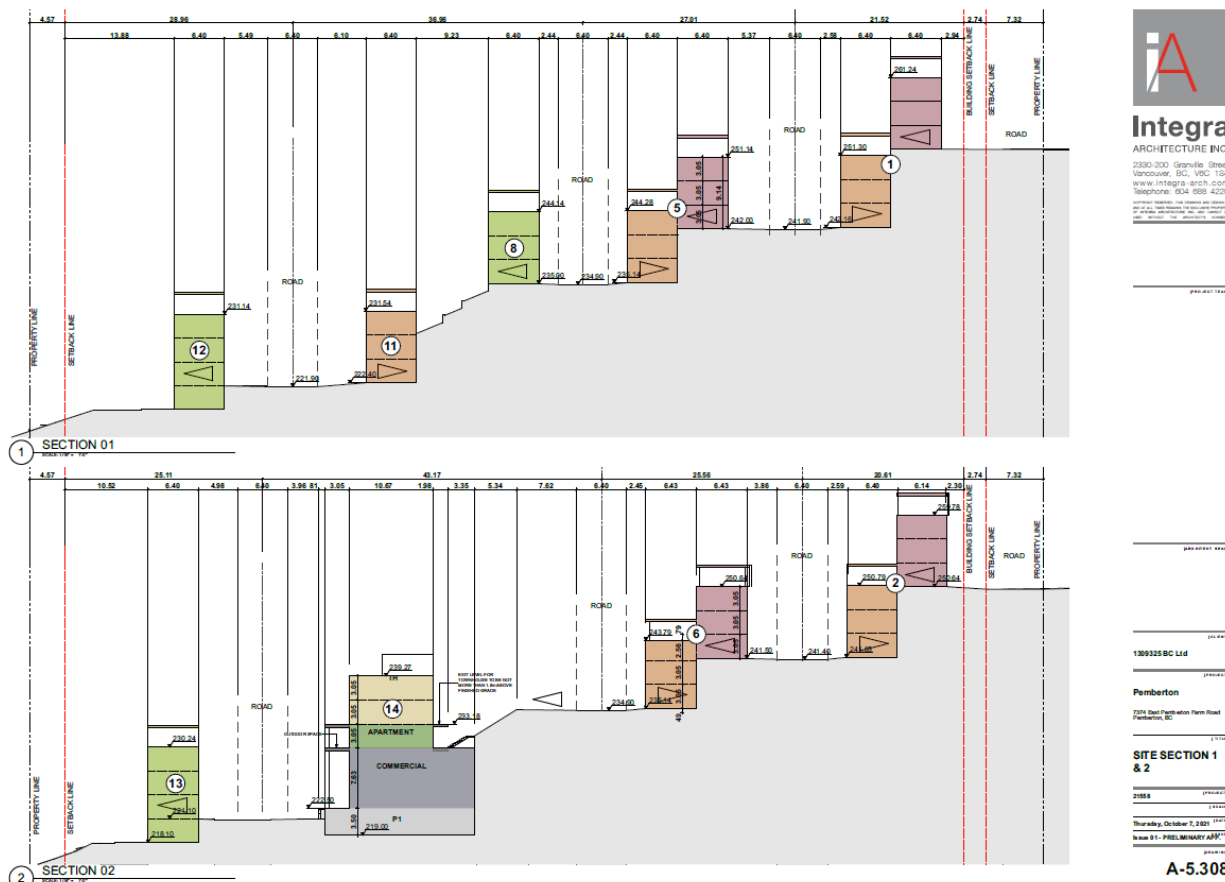


Figure 3: Site Sections 1 and 2

As mentioned previously, Staff have not undertaken a detailed analysis or review of the specific site plans and building designs. Staff will undertake a detailed review should the Committee elect to proceed with the processing of the application. Staff are not seeking Committee feedback on the specifics presently. However, the proposal raises a number of questions about the suitability of the proposal in light of OCP policy, compatibility with adjacent development, visual prominence of the site, and the character of the proposed neighbourhood that Staff are seeking Committee direction to proceed before investing additional time and resources into processing the application.

DISCUSSION & COMMENTS

Initial review of the application proposal raises several concerns that Staff request the Committee contemplate in providing direction to Staff respecting the future processing of the application.

The submission represents a substantial increase in density and form than typically seen in the Hillside Special Planning Area and Pemberton in general. On a site basis, it would be one of the largest developments in Pemberton in terms of density, building scale and massing, and commercial space. In the context of the existing and emerging neighbourhood, Staff are concerned about the allocation of this level of density in what the OCP refers to as a satellite neighbourhood.

Staff are also concerned that the proposed building massing on the site will create a substantial departure from other hillside developments, the objectives of the Hillside Development Guidelines, and Council's recent directions on hillside development. As apparent on the drawings in **Appendix A**, the buildings will be prominently visible, given the scale, amount, and type of buildings proposed.

Of particular concern is the significant amount of commercial proposed on the site and the types of uses proposed in that location. The OCP does provide some direction about providing "neighbourhood servicing commercial", but the application appears to extend well beyond that, proposing financial institutions, offices, and personal service establishments. Staff observe that many of these uses are better suited for the Village Downtown and have had a challenging time remaining viable even in the Downtown. In the absence of compelling analysis respecting the viability of this extent and type of commercial, and the prospective impacts on the Downtown, Staff do not deem the allotment of commercial proposed to be either viable or in the interests of the Village in its current form, even if successful.

Staff's concern, and the impetus behind this report, is that many of the initial concerns identified are fundamental to the proposal and based in the proposed building form and density. It is unlikely that the initial concerns will be addressed by minor adjustments to the proposal. Should the Committee share similar concerns, it is likely a more substantial reconsideration of the proposal will be required. Staff have accounted for these options as described below.

Options and Implications

Staff has prepared two options for the Committee to consider.

Option 1 would be an appropriate option if the Committee is concerned with the fundamental approach to the development expressed in the application. If the concerns are fundamental to density, building type, commercial allotment, or additional basic elements of the proposal, then the Committee could direct Staff to proceed based on Option 1

Option 2 effectively directs Staff to continue with the review of the application as submitted, and that the application appear at a future Council meeting for consideration of bylaw readings. For clarity, this does not constitute any endorsement or approval of the application and does not create an obligation on a future Council to approve the application. Similarly, it does not limit the requirement of the application to address concerns raised by Staff and referral agencies in the normal processing of the application. This may include, but not be limited to, requests of additional information, amendments to the site plan, site servicing details, amenities and other standards considerations in the development process.

Should the Committee wish to proceed with the review of the application with the current application as the foundation, then the Committee could direct Staff to proceed based on Option 2.

COMMUNICATIONS

There are no communications implications from this report. Additional communications will be required for future processing of the application.

LEGAL CONSIDERATIONS

There are no legal considerations arising from this report.

IMPACT ON BUDGET & STAFFING

Staff time and consulting costs are being covered by application fees.

INTERDEPARTMENTAL IMPACT & APPROVAL

There are no interdepartmental impacts arising from this report or at this stage of the review process. Other departments will be engaged in future processing.

IMPACT ON THE REGION OR NEIGHBOURING JURISDICTIONS

There are no impacts on neighbouring jurisdictions associated with this report. They will be referred the application in the next stage of processing.

ALTERNATIVE OPTIONS

Option One:

THAT The Committee of the Whole recommend to Council that Official Community Plan and Zoning Bylaw amendment proposed lands located at 7374 East Pemberton Farm Road, legally described as Lot 5, DL 211, LLD Plan EPP21848 (PID: 028-961-102), not proceed in its current form;

AND THAT Staff be directed to request a substantial amendment to the proposed application to align it more closely with the guidance in the Official Community Plan, existing and proposed development in the area, and the Hillside Development Guidelines;

AND FURTHER THAT the revised proposal be returned to a future Committee of the Whole meeting for review and direction.

Option Two:

THAT The Committee of the Whole recommend to Council that Staff be directed to proceed with the processing of the application by 1309325 BC Ltd. on lands located at 7374 East Pemberton Farm Road, legally described as Lot 5, DL 211, LLD Plan EPP21848 (PID: 028-961-102), substantially in the form submitted in the application submission;

AND THAT subject to a complete and thorough application process, the proposed application be brought to Council for consideration of first reading to amending bylaws to the Official Community Plan and Zoning Bylaw.

RECOMMENDATIONS

THAT The Committee of the Whole recommend to Council that Official Community Plan and Zoning Bylaw amendment proposed lands located at 7374 East Pemberton Farm Road, legally described as Lot 5, DL 211, LLD Plan EPP21848 (PID: 028-961-102), not proceed in its current form;

AND THAT Staff be directed to request a substantial amendment to the proposed application to align it more closely with the guidance in the Official Community Plan, existing and proposed development in the area, and the Hillside Development Guidelines;

AND FURTHER THAT the revised proposal be returned to a future Committee of the Whole meeting for review and direction.

ATTACHMENTS:

Appendix A: Application Submission Drawings

Prepared by:	Cameron Chalmers, RPP, MCIP
Manager Approval:	Scott McRae, Manager of Development Services
CAO Approval by:	Nikki Gilmore, Chief Administrative Officer

Committee of the Whole

Appendix "A"
Application Submission Drawings

Committee of the Whole

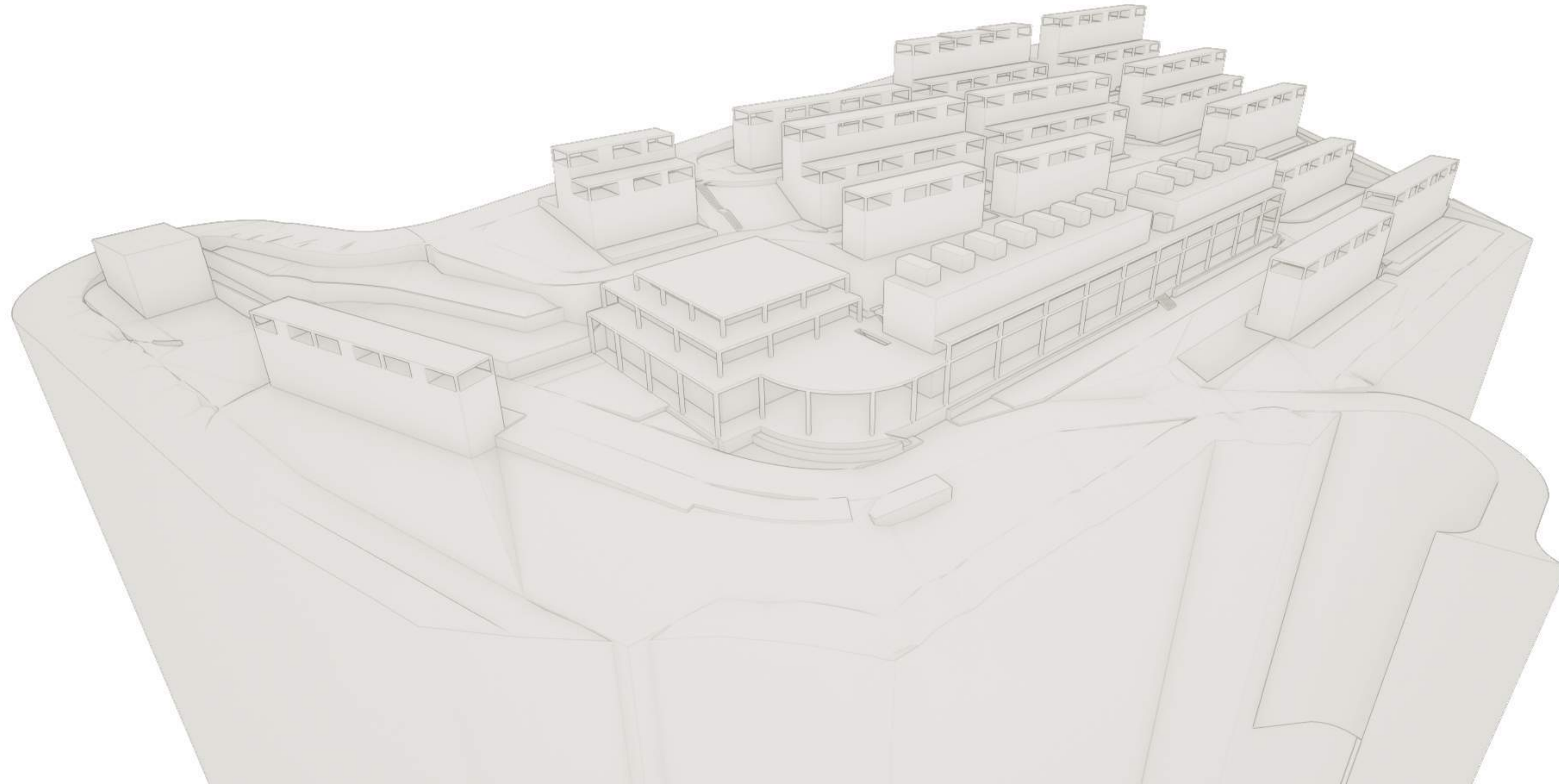
Pemberton

Issue - Issue 01 - PRELIMINARY APP.

Thursday, October 7, 2021

Civic Address:
7374 East Pemberton Farm Road, Pemberton, BC

Note: Drawings only to scale when printed on 24x36 sheets



Architectural Drawing Issues

2018-04-13 Issue 1 - Preliminary Inquiry

Architectural Drawing Index

A-0.000 Cover			
A-0.000	COVER		
A-0.100	DATA SHEET		
A-0.200	CONCEPT IMAGES		
A-1.000 Site			
A-1.101	SITE PLAN	1/32" =	1'-0"
A-2.000 Plans			
A-1.101	LEVEL P1 PLAN	1/16" =	1'-0"
A-1.102	LEVEL 1 FLOOR PLAN	1/16" =	1'-0"
A-1.103	LEVEL 2 FLOOR PLAN	1/16" =	1'-0"
A-1.104	LEVEL 3 FLOOR PLAN	1/16" =	1'-0"
A-1.105	LEVEL 4 FLOOR PLAN	1/16" =	1'-0"
A-5.000 Sections			
A-5.308	SITE SECTION 1 & 2		
A-5.309	SITE SECTION 3 & 4	1/16" =	1'-0"
A-5.310	SITE SECTION 5 & 6	1/32" =	1'-0", 1/16" = 1'-0"
A-8.000 Supplemental			
A-8.100	3D MASSING		



Integra
ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

COVER

[PROJECT]

21558

[SCALE]

Not To Scale

[DATE]

Thursday, October 7, 2021

[ISSUE]

Issue 01 - PRELIMINARY APP.

[DRAWING]

A-0.000



Integra

ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

Pemberton

PROJECT OWNER:	1309325 BC Ltd				
PROJECT CONTACT:	Glen Smith	Dulex	251-255 Newport Dr., Port Moody, BC V3H 5H1	T.6.4.519.0003	
PROJECT ARCHITECT:	Shamus Sachs	Integra Architecture Inc.	416 W.Pender St, Vancouver, BC V6B 1T5	T.604.688.4220	
PROJECT NUMBER:	21558				
CIVIC ADDRESS:	7374 East Pemberton Farm Road, Pemberton, BC, V0N 2L0				
LEGAL DESCRIPTION:	LOT 5 DISTRICT LOT 211 LILLOOET DISTRICT PLAN EPP21848				

PROJECT DESCRIPTION:

ZONING:
Existing Zoning:
Proposed Zoning:
OCP Designation
Development Permit Area

ISSUE: 1 - Preliminary Design

DATE: 2021-10-07

SITE AREA

Total Site Area			
Total Gross Site Area	8.112 Acres	353,364 SF	32,828.34 m ²

FLOOR AREA RATIO (FAR)

Maximum FAR			
Maximum Floor Area	1.00	353,364.3 SF	32,828.3 m ²

Proposed FAR

Proposed Floor Area	0.47	167,720.00 SF	15,581.6 m ²
---------------------	------	---------------	-------------------------

GROSS FLOOR AREA (GFA)

Townhouse Unit Areas	Floor Areas			Number of Units	Parking							% of Units
	SF	m ²	Total C/W Garage		Parking In Garage	Parking On Site	Parking on Driveway	Visitor Parking On Site	Parkade 1	Parkade 2	Commercial Parking On Site	
STUDIOS												
Buildina 12S 1 Studio	3087.00	286.79	3087.00	6	0	6						7%
Buildina 13S 1 Studio	3087.00	286.79	3087.00	6	0	6						
1 BEDS												
Buildina 14 E Lower 1 Bed	5198.00	482.91	5198.00	11	0				11			15%
Buildina 15 E Lower 1 Bed	7088.00	658.49	7088.00	15	0				15			
3 BED TOWNHOUSES												
Buildina 1A 3 Bed Townhouse	6474.00	601.45	9411.00	6	12		12		2			78%
Buildina 1B 3 Bed Townhouse	6474.00	601.45	9411.00	6	12							
Buildina 2A 3 Bed Townhouse	6474.00	601.45	9411.00	6	12		12		2			
Buildina 2B 3 Bed Townhouse	6474.00	601.45	9411.00	6	12				1			
Buildina 3B 3 Bed Townhouse	6474.00	601.45	9411.00	6	12				1			
Buildina 4A 3 Bed Townhouse	2158.00	200.48	3137.00	2	4		4		2			
Buildina 4B 3 Bed Townhouse	2158.00	200.48	3137.00	2	4		4		2			
Buildina 4D 3 Bed Townhouse	2158.00	200.48	3137.00	2	4		4					
Buildina 5A 3 Bed Townhouse	6474.00	601.45	9411.00	6	12		12		4			
Buildina 5B 3 Bed Townhouse	6474.00	601.45	9411.00	6	12							
Buildina 6A 3 Bed Townhouse	6474.00	601.45	9411.00	6	12				1			
Buildina 6B 3 Bed Townhouse	6474.00	601.45	9411.00	6	12				1			
Buildina 7A 3 Bed Townhouse	6474.00	601.45	9411.00	6	12				1			
Buildina 7B 3 Bed Townhouse	6474.00	601.45	9411.00	6	12				1			
Buildina 8D 3 Bed Townhouse	6474.00	601.45	9411.00	6	12				3			
Buildina 9D 3 Bed Townhouse	4316.00	400.97	6274.00	4	8				1			
Buildina 10D 3 Bed Townhouse	4316.00	400.97	6274.00	4	8				1			
Buildina 11B 3 Bed Townhouse	6474.00	601.45	9411.00	6	12		12					
Buildina 12D 3 Bed Townhouse	6474.00	601.45	9411.00	6	12		12					
Buildina 13D 3 Bed Townhouse	6474.00	601.45	9411.00	6	12							
Buildina 14 Stack Higher 3 Bed Townhouse	10395.00	965.72	10395.00	11	0			16				
Buildina 15 Stack Higher 3 Bed Townhouse	14175.00	1316.89	14175.00	15	0			22	8			
Buildina 16D 3 Bed Townhouse	6474.00	601.45	9411.00	6	12				1			
Buildina 17 3 Bed Townhouse	6000.00	557.41	6000.00	2	4				5			
COMMERCIAL										15	93	
Total	167,720.00	15,581.57	221,565.00	176	224	12	72	29	64	23	93	100%

OFF-STREET PARKING

Residential Parking	Required	Provided
Studio Parking	12 Spaces Required	12 Spaces Provided
1 Bed Parking	26 Spaces Required	26 Spaces Provided
2 Bed Parking	52 Spaces Required	52 Spaces Provided
3 Bed Parking	224 Spaces Required	224 Spaces Provided
Visitor Parking	44 Spaces Required	2 Spaces Provided
Total	348 Spaces Required	34 Spaces Provided
EV	23 Spaces	23 Spaces
Max. Small Cars	0.2 of Provided Spaces	76 Spaces Max.
Disabled Parking	22 Spaces Required	13 Spaces Provided

Commercial Parking

Provided	SM	Stall / SM	Required Stalls	Provided Stalls
Financial Institution	159 sq.m.	1 Spaces Per 20 sq.m.	8 Spaces Required	8 Spaces Provided
Personal Service	159 sq.m.	1 Spaces Per 28 sq.m.	6 Spaces Required	5 Spaces Provided
Neighbourhood Commercial	159 sq.m.	0.25 Spaces Per 100 sq.m.	0 Spaces Required	0 Spaces Provided
Fitness Centre	159 sq.m.	1 Spaces Per 20 sq.m. + 1 / employee	9 Spaces Required	9 Spaces Provided
Restaurant, Food, Liquor	159 sq.m.	1 Spaces Per 4 seats	15 Spaces Required	15 Spaces Provided
Daycare	159 sq.m.	1 Spaces Per 1 employee	6 Spaces Required	6 Spaces Provided
Office, Retail, Sales, Rental	1797 sq.m.	1 Spaces Per 28 sq.m.	64 Spaces Required	64 Spaces Provided
Total	2751 sq.m.		108 Spaces Required	108 Spaces Provided

Grand Total	46 Spaces Required	45 Spaces Provided
--------------------	---------------------------	---------------------------

Parking Space Dimensions

	Required (Width x Length x Height)	Provided (Width x Length x Height)
Standard Space	3.05m (10 FT) x 6.10m (20 FT)	3.05m (10 FT) x 6.10m (20 FT)
Small Cars	3.05m (10 FT) x 4.60m (15'-1" FT)	3.05m (10 FT) x 4.60m (15'-1" FT)

Min. Distance to Continuous Wall	0.3m (0.98 FT) (1'-0")	0.3m (0.98 FT) (1'-0")
Min. Drive Aisle Width	6.40m (21.0 FT) (21'-0")	6.40m (21.0 FT) (21'-0")

BICYCLE STALLS

Bicycle	Required	Provided
Townhouses without	20% of the Parkinn	23 Stalls
Commercial	20% of the Parkinn	22 Stalls
Total		45 Stalls

BUILDING SITE COVERAGE

<small>Note: See Sheet A-8-420 for Overlays</small>			
Maximum Building Site Coverage	40.0%	141,345.71 SF	13,131.34 m ²
Proposed Building Site Coverage	5.26%	18,587.47 SF	1,726.82 m ²

** Note: Building Site Coverage does not include: bay windows, roof overhangs, & floor overhangs

USEABLE OPEN SPACE COVERAGE

<small>Note: See Sheet A-8-430 for Overlays</small>			
Minimum Useable Open Space Coverage	30.0%	106,009.28 SF	9848.6 m ²
Proposed Useable Open Space Coverage	1.6%	5,681.90 SF	527.9 m ²

Notes:

Note 1: Unit areas are measured to the CL of Party Walls, Exterior of sheathing for Exterior Walls, Exterior of Exterior Concrete Walls, Exterior of Stud / Sheathing of Shaft Walls; Wall Furouts are not included (exterior walls with a width greater than 6")

Note 2: The proposed FAR & GFA excludes Parking Areas, Open to Below Spaces, Patios and Balconies

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

DATA SHEET

21558

[PROJECT]

Not To Scale

[SCALE]

Thursday, October 7, 2021

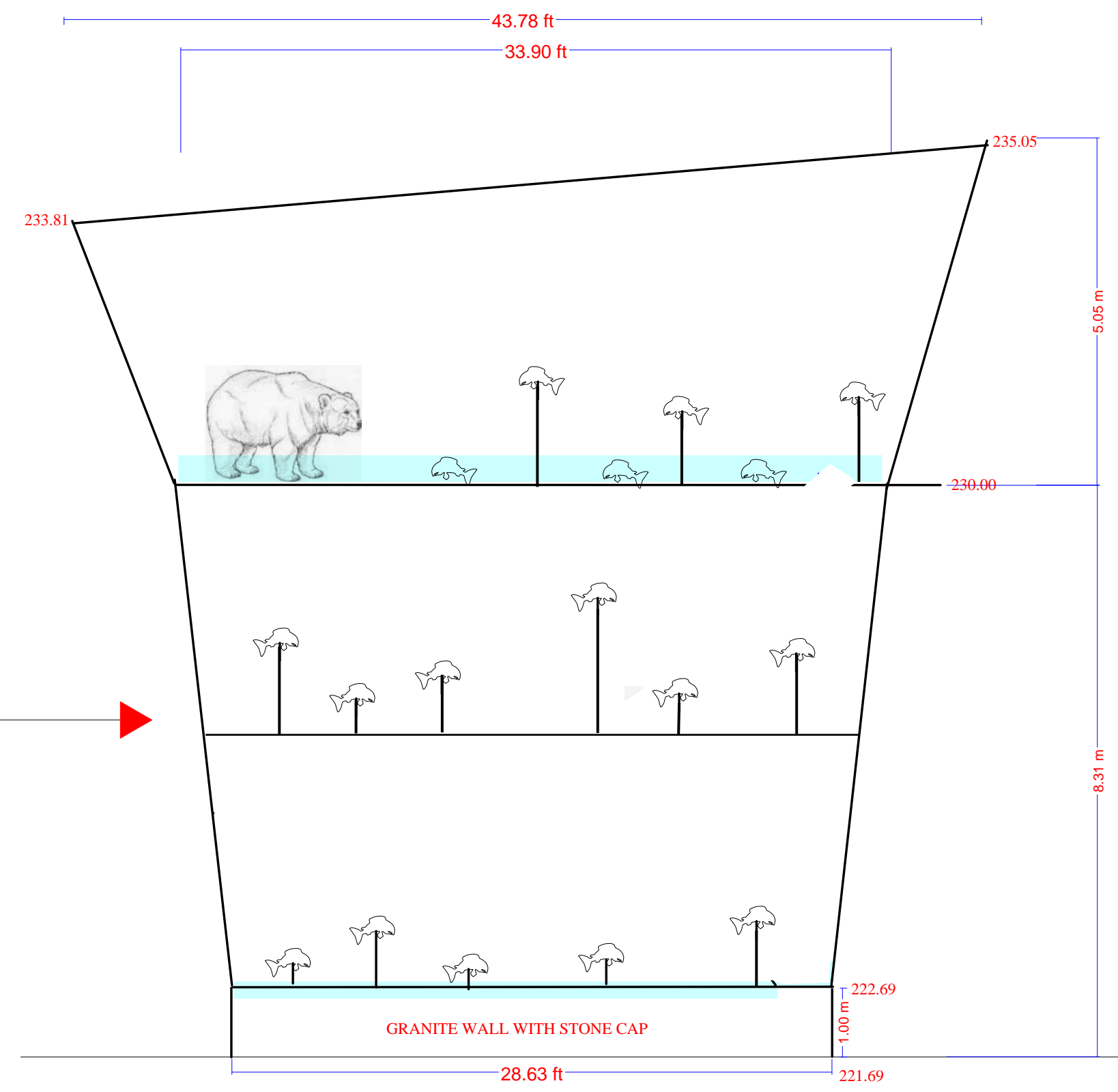
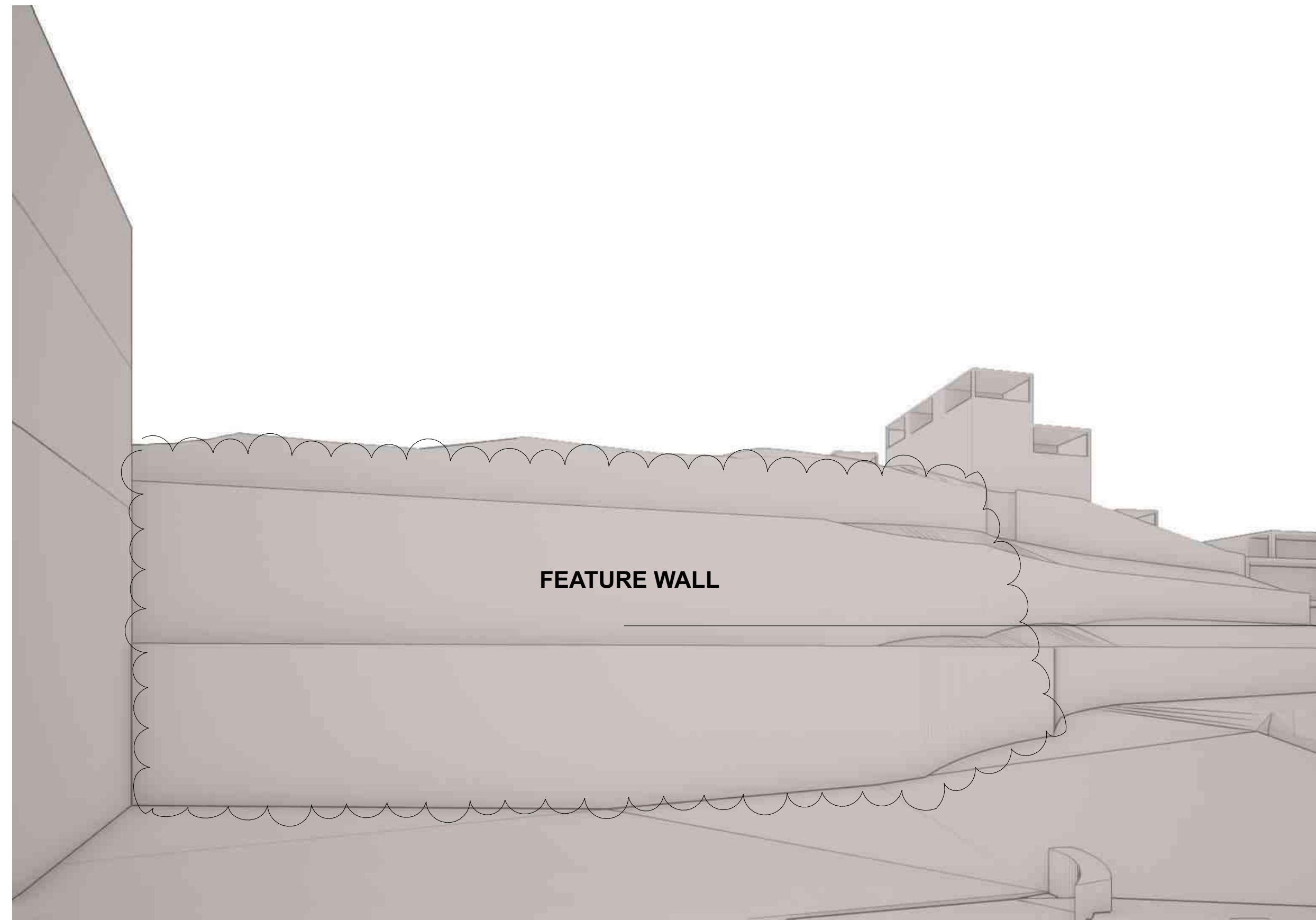
[DATE]

Issue 01 - PRELIMINARY APP.

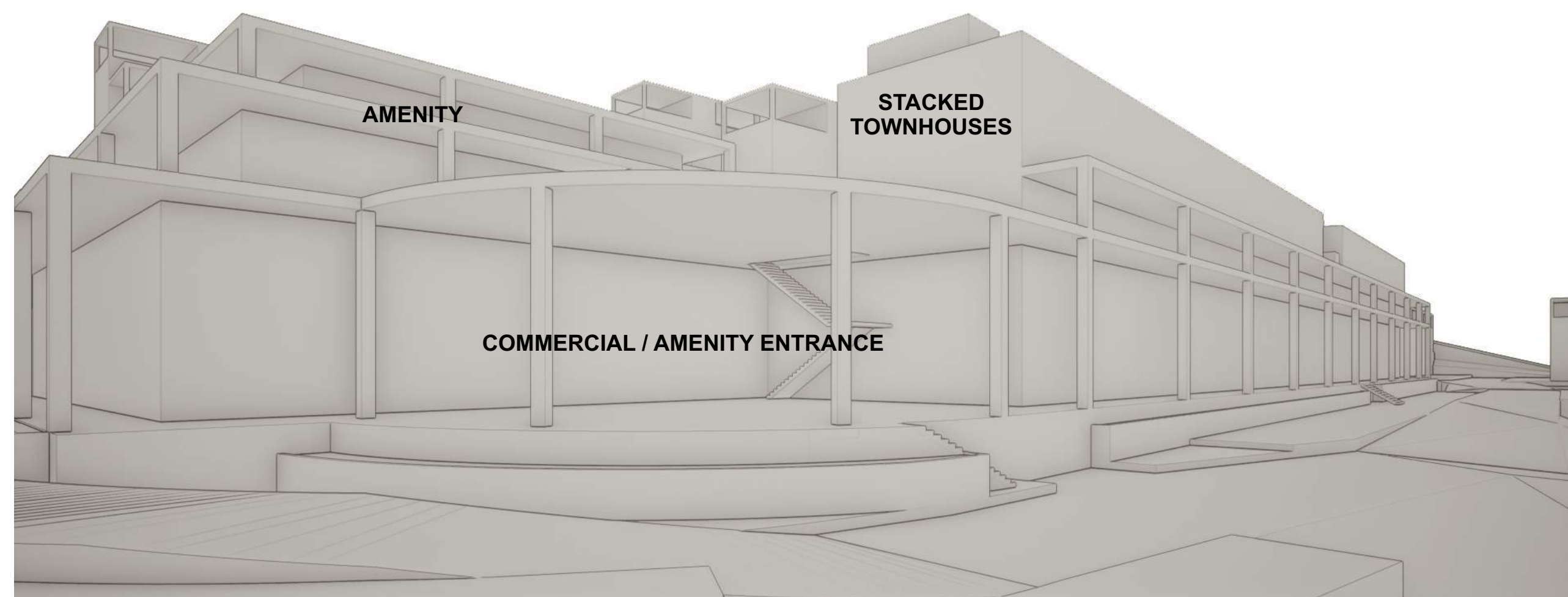
[REVISED]

[DRAWING]

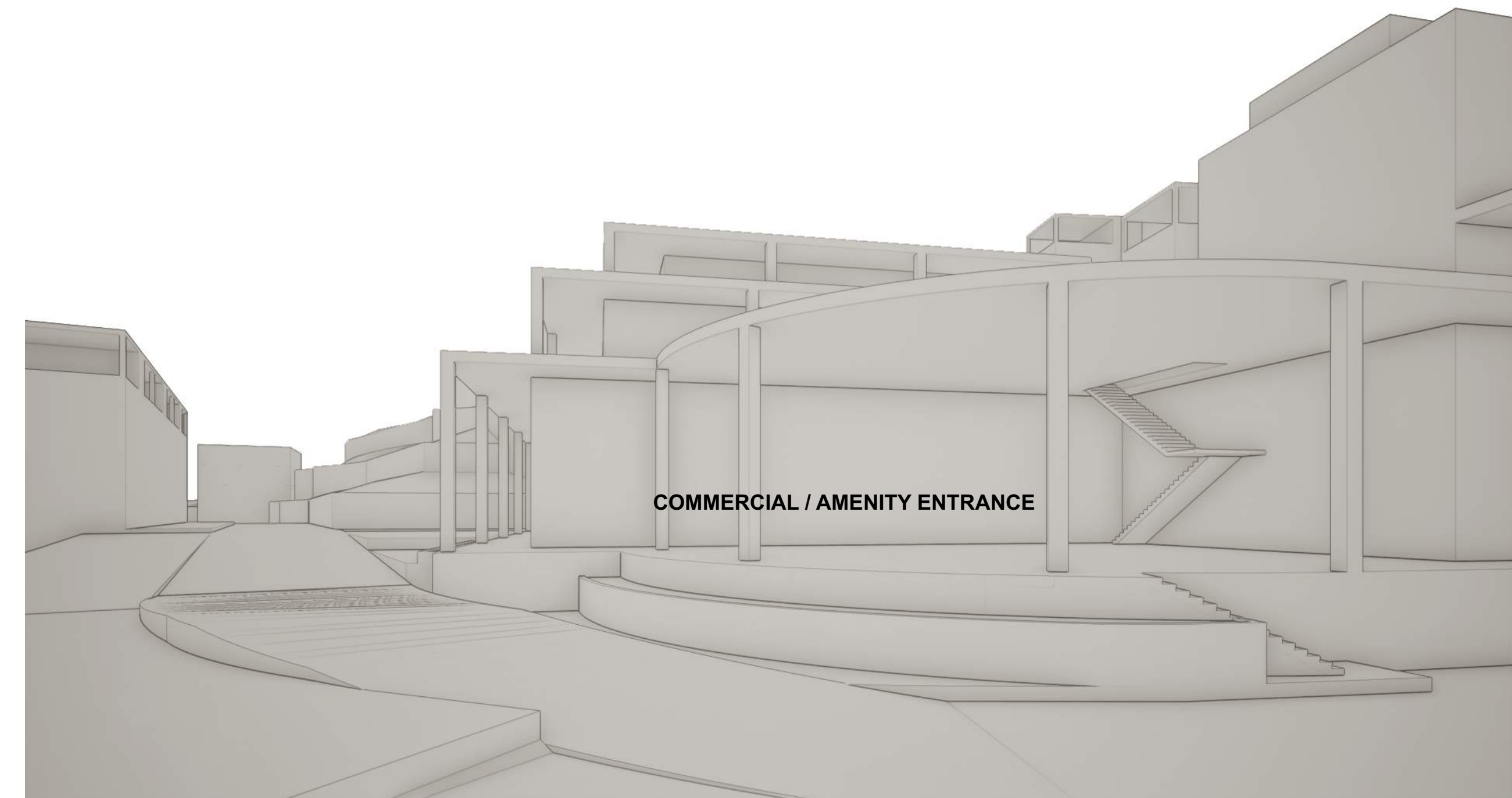
A-0.100



2 FEATURE WALL AT ENTRY
SCALE: 1:1.667



3 COMMERCIAL PERSPECTIVE 01
SCALE: 6" = 1'-0"



1 COMMERCIAL PERSPECTIVE 02
SCALE: 6" = 1'-0"



Integra
ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

**CONCEPT
IMAGES**

[PROJECT]

21558

[SCALE]

Not To Scale

[DATE]

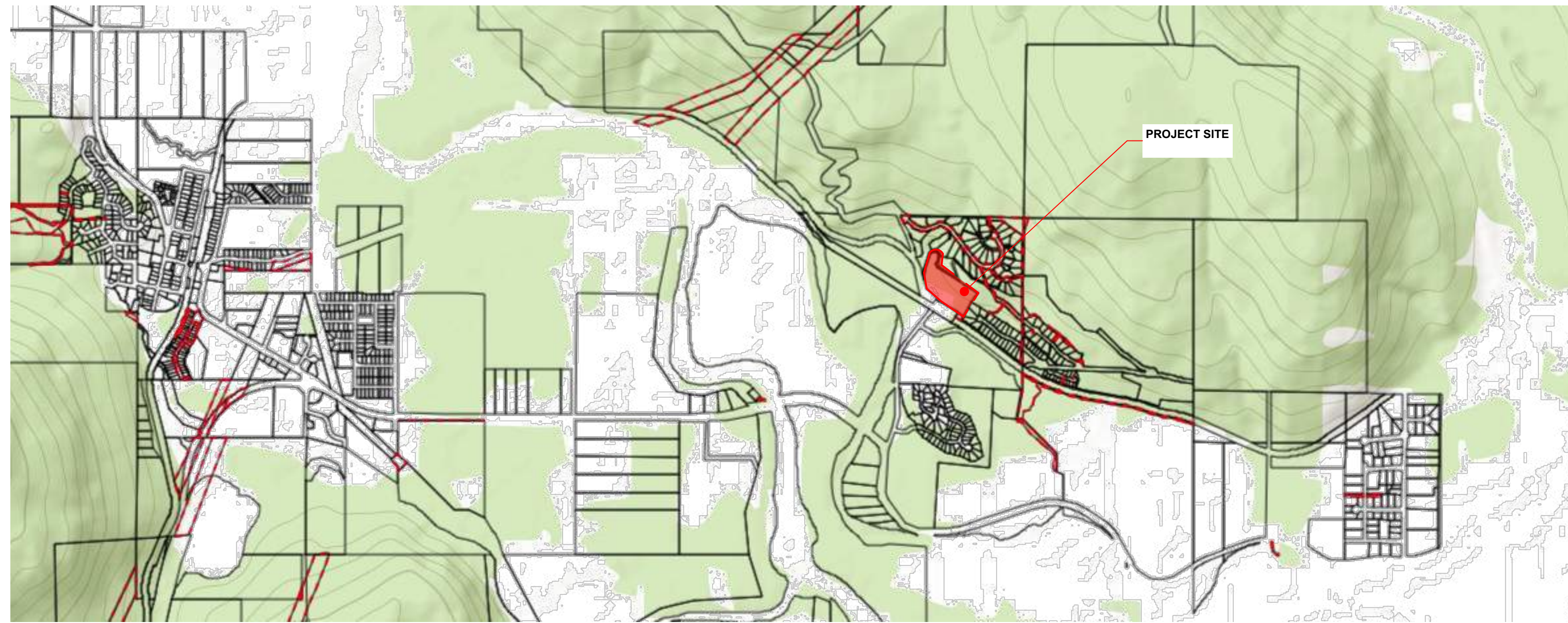
Thursday, October 7, 2021

[ISSUE]

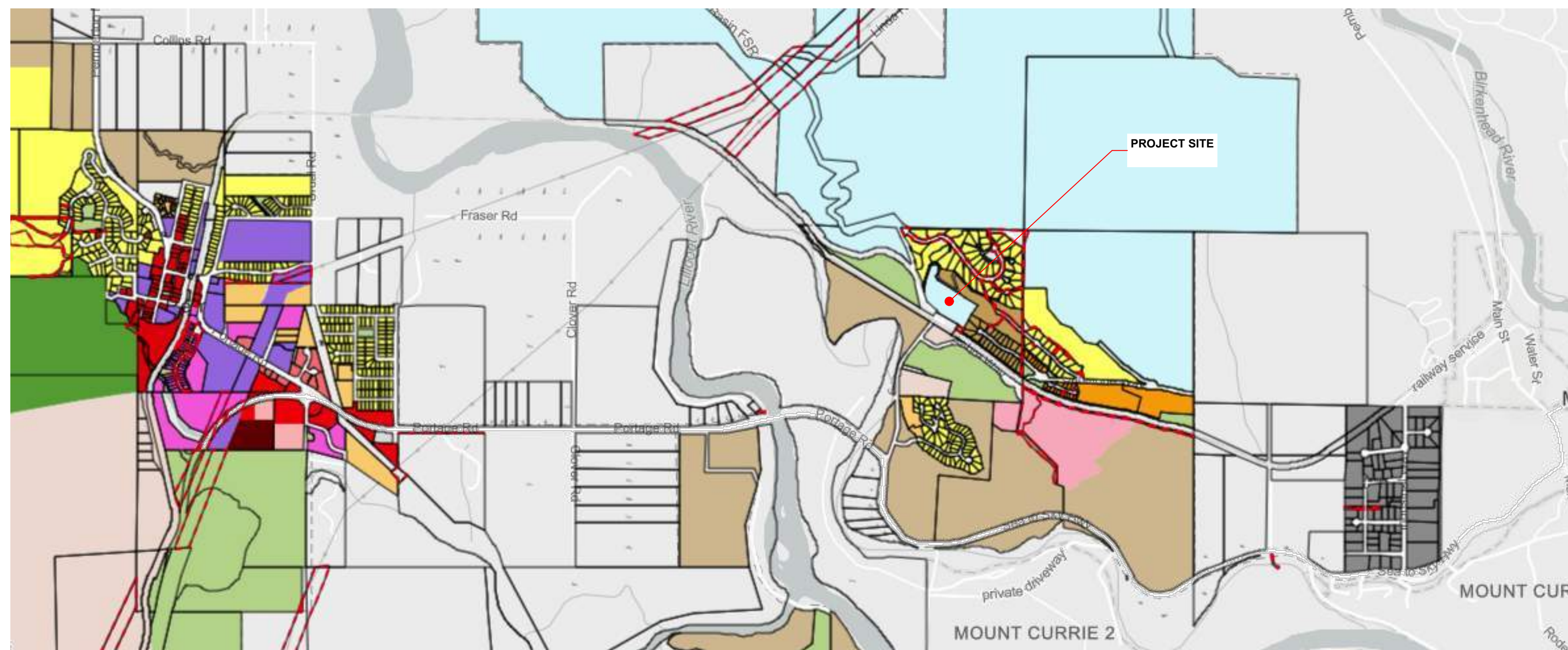
Issue 01 - PRELIMINARY APP.

[DRAWING]

A-0.200



VILLAGE OF PEMBERTON - LAND USE - TOPOGRAPHY



VILLAGE OF PEMBERTON - LAND USE - ZONING



VILLAGE OF PEMBERTON - LAND USE - AERIAL



Integra

ARCHITECTURE INC.

2330-200 Granville Street
 Vancouver, BC, V6C 1S4
 www.integra-arch.com
 Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
 Pemberton, BC

[TITLE]

Context - Zoning

[PROJECT]

21558

[SCALE]

Tuesday, October 12, 2021

[DATE]

Issue 01 - PRELIMINARY APP.

[DRAFT]

A-0.340



Integra ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

SITE PLAN

21558

[PROJECT]

1/32" = 1'-0"

[SCALE]

Thursday, October 7, 2021

[DATE]

Issue 01 - PRELIMINARY APP.

[REVISED]

[DRAWING]

A-1.101



1 Site Plan
SCALE: 1/32" = 1'-0"

HYDRO TEL AND FIBRE SERVICE - FINAL LOCATION FOR 120 TOWNHOUSE UNITS

000mm WM - FINAL LOCATION FOR 120 TOWNHOUSE UNITS

000mm SAN - FINAL LOCATION FOR 120 TOWNHOUSE UNITS

000mm STM - FINAL LOCATION FOR 120 TOWNHOUSE UNITS

CONSTRUCT 6m ACCESS ROAD TO SUBGRADE FOR INTERIM ACCESS TO 3 BLDGS. SHOW FINAL GRADE FOR ULTIMATE CONSTRUCTION FOR DETAILS.



Integra
ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220
COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS
AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY
OF INTEGRARCHITECTURE INC. AND CANNOT BE
USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

LEVEL P1 PLAN

[PROJECT]

21558

[SCALE]

1/16" = 1'-0"

[DATE]

Thursday, October 7, 2021

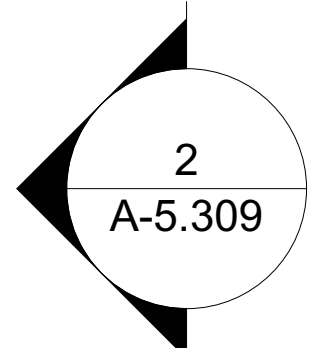
[REVISION]

Issue 01 - PRELIMINARY APP.

[DRAWING]

A-1.101

Village of Pemberton
Committee of the Whole Meeting No 222
Tuesday, January 18, 2022
109 of 117



CNR R.O.W. →

SETBACK

EXISTING PROPERTY L

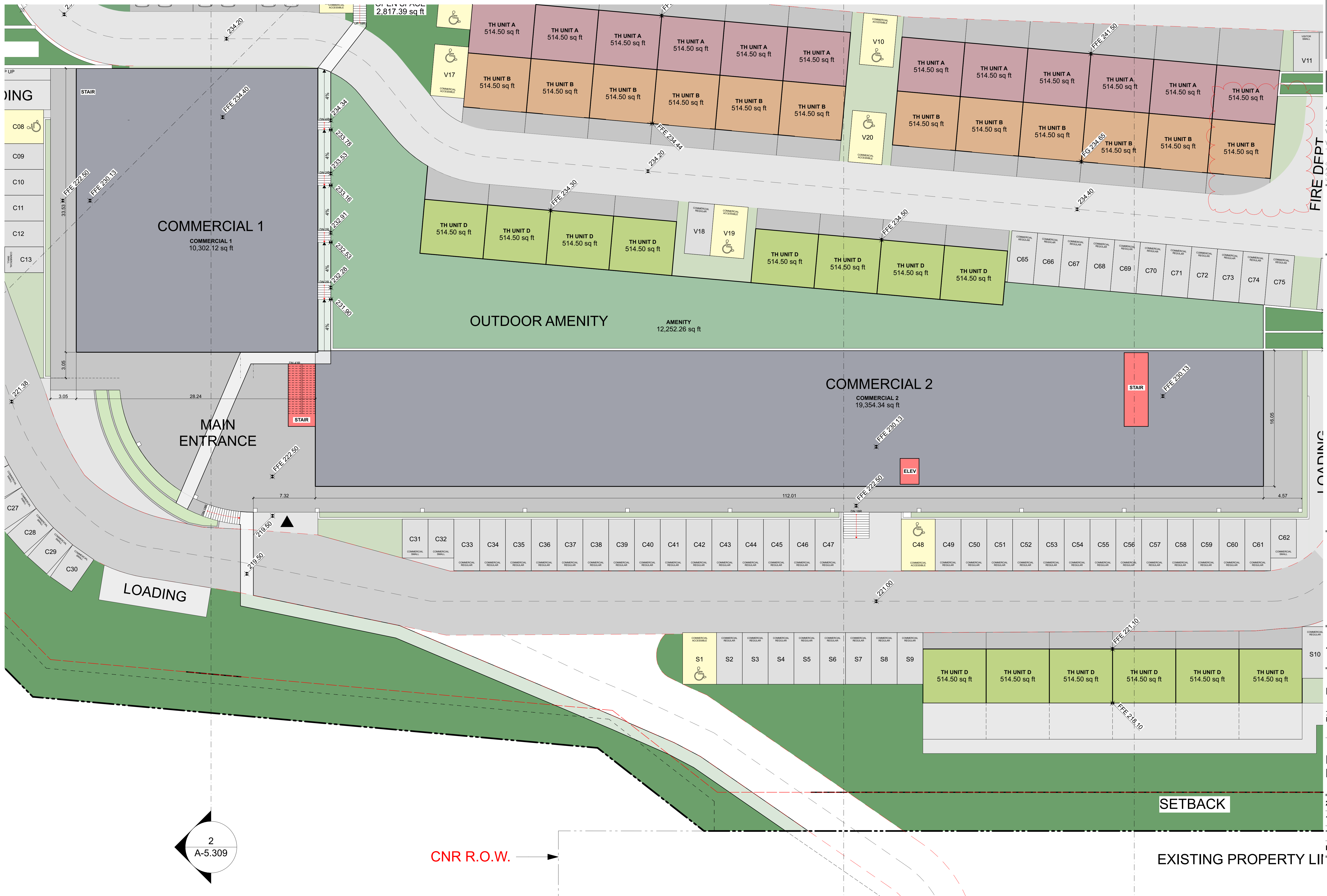


Integra

ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.



FIRE DEPT

LOADING

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

LEVEL 1 FLOOR PLAN

[PROJECT]

21558

[SCALE]

1/16" = 1'-0"

[DATE]

Thursday, October 7, 2021

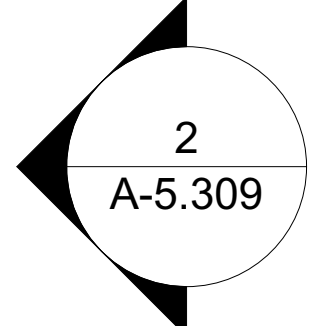
[REVISION]

Issue 01 - PRELIMINARY APP.

[DRAWING]

A-1.102

Village of Pemberton
Committee of the Whole Meeting No 222
Tuesday, January 18, 2022
110 of 117



CNR R.O.W. →

SETBACK

EXISTING PROPERTY LII



Integra

ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

LEVEL 2 FLOOR PLAN

21558 [PROJECT]

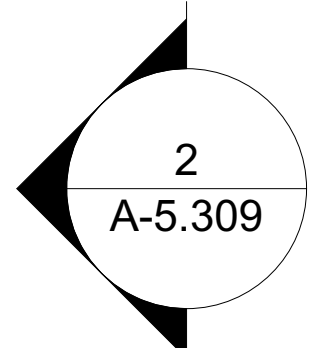
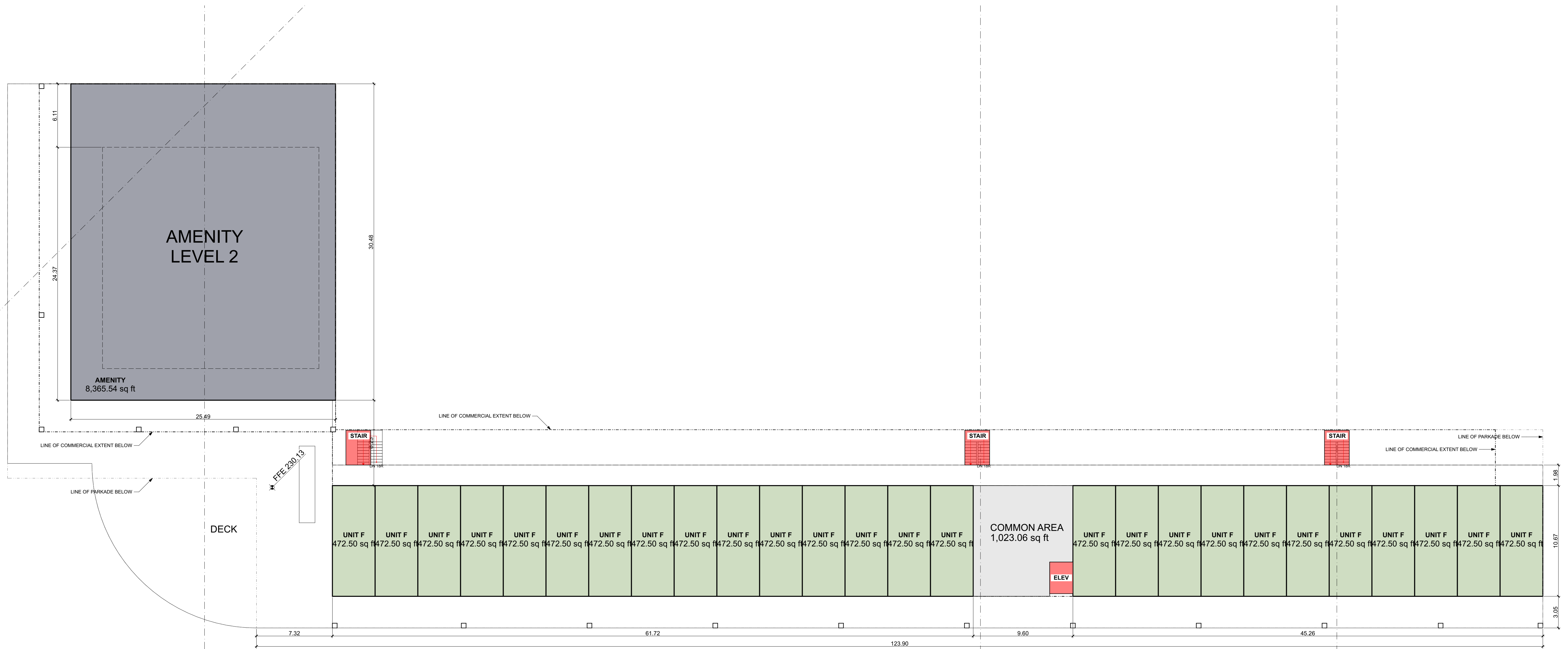
1/16" = 1'-0" [SCALE]

Thursday, October 7, 2021 [DATE]

Issue 01 - PRELIMINARY APP. [REVISION]

[DRAWING]

A-1.103





Integra

ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

LEVEL 3 FLOOR PLAN

[PROJECT]

21558

[SCALE]

1/16" = 1'-0"

[DATE]

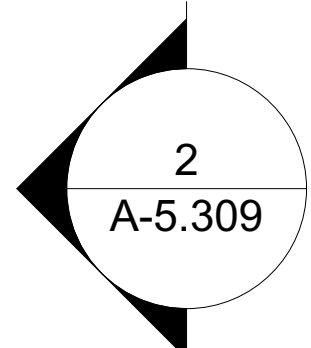
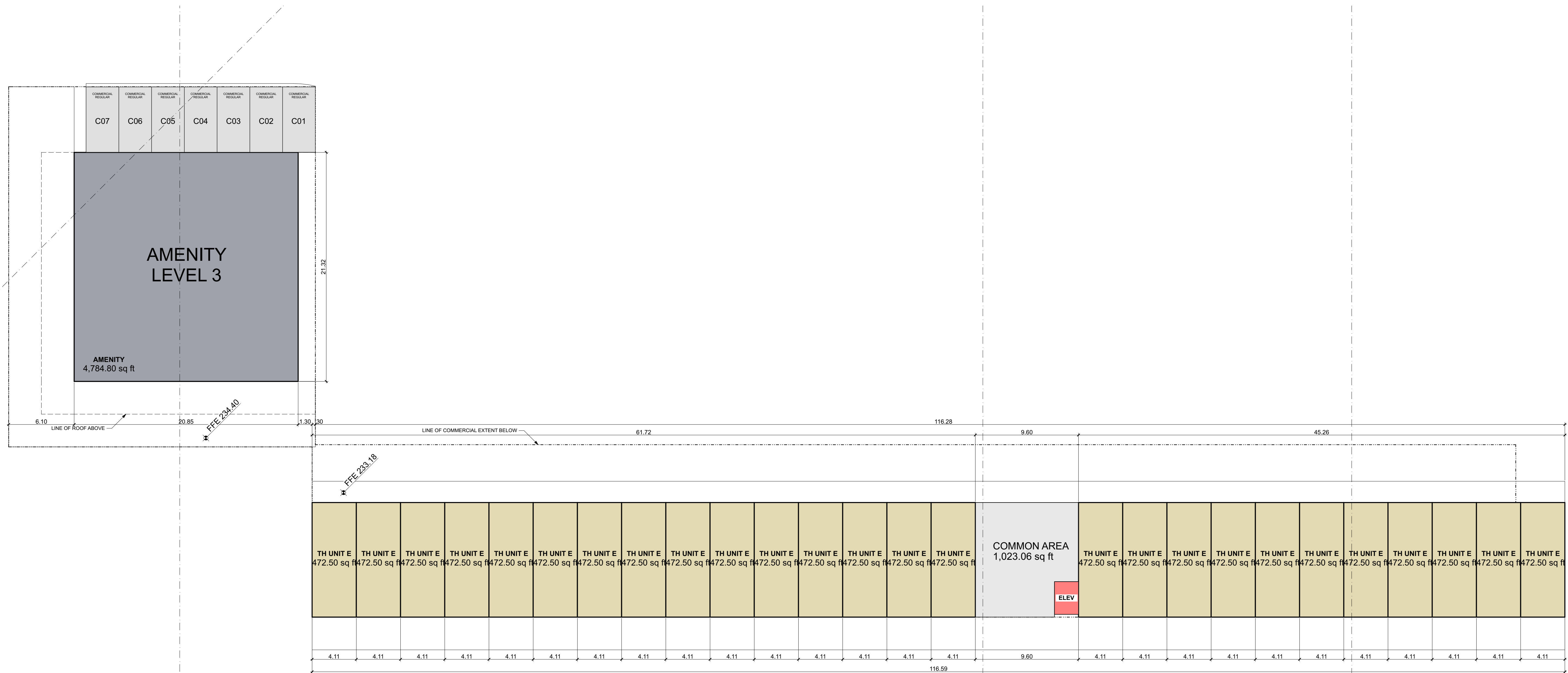
Thursday, October 7, 2021

[REVISION]

Issue 01 - PRELIMINARY APP.

[DRAWING]

A-1.104





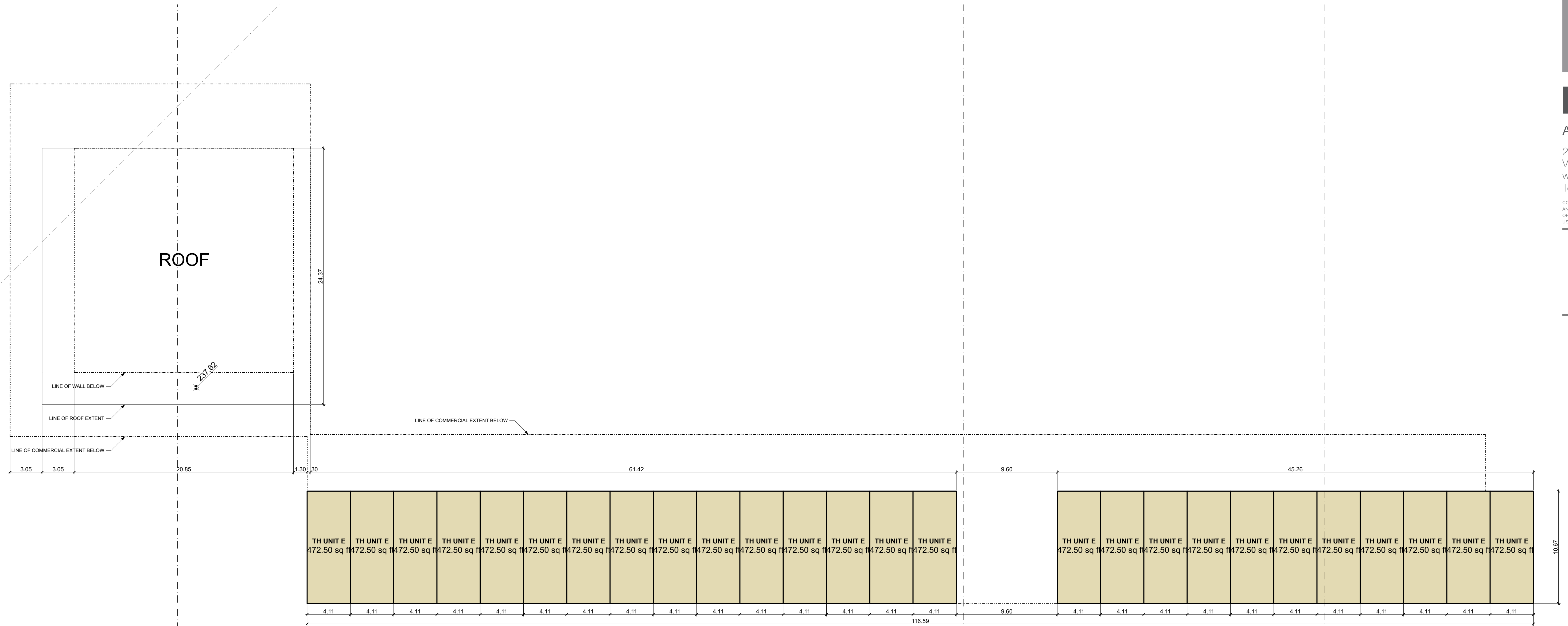
Integra

ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]



[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

LEVEL 4 FLOOR PLAN

21558 [PROJECT]

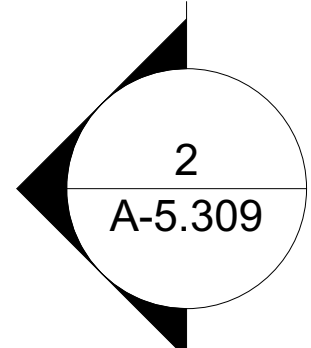
1/16" = 1'-0" [SCALE]

Thursday, October 7, 2021 [DATE]

Issue 01 - PRELIMINARY APP. [REVISION]

[DRAWING]

A-1.105





Integra

ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

SITE SECTION 1 & 2

21558

[PROJECT]

[SCALE]

Thursday, October 7, 2021

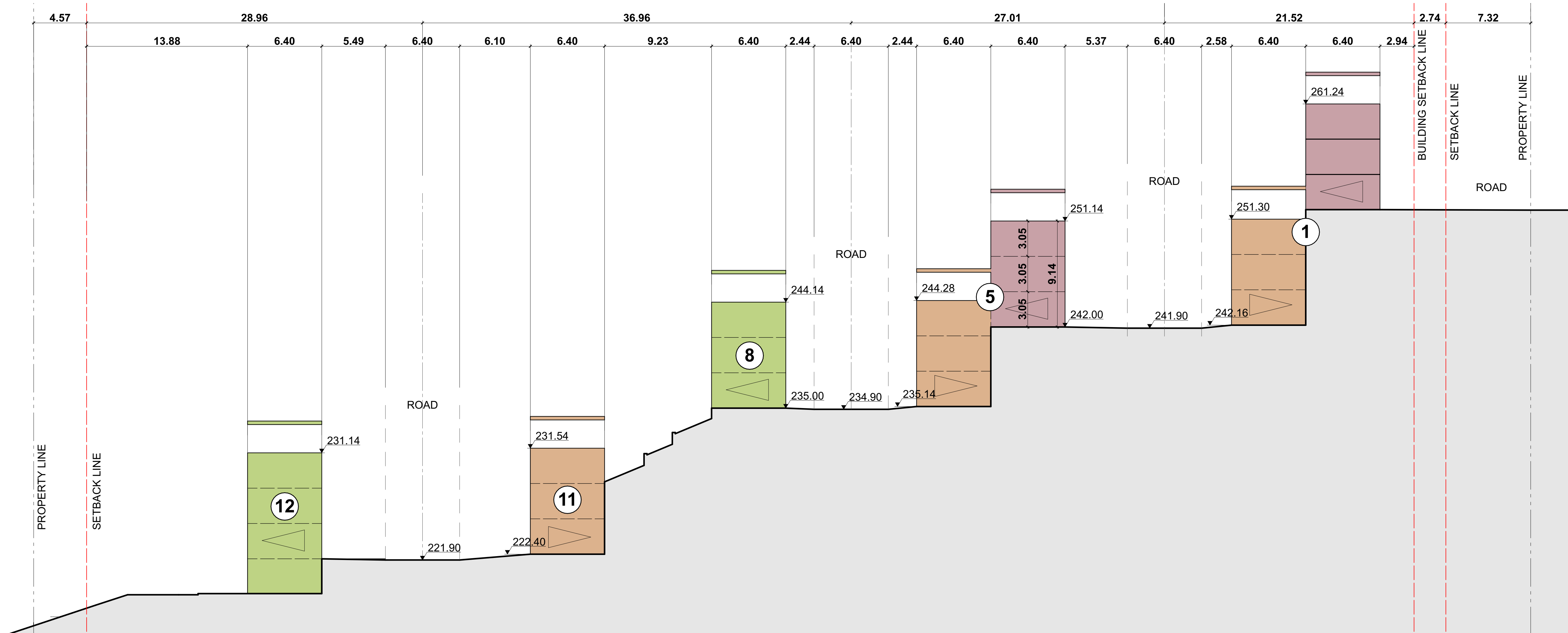
[DATE]

Issue 01 - PRELIMINARY APP.

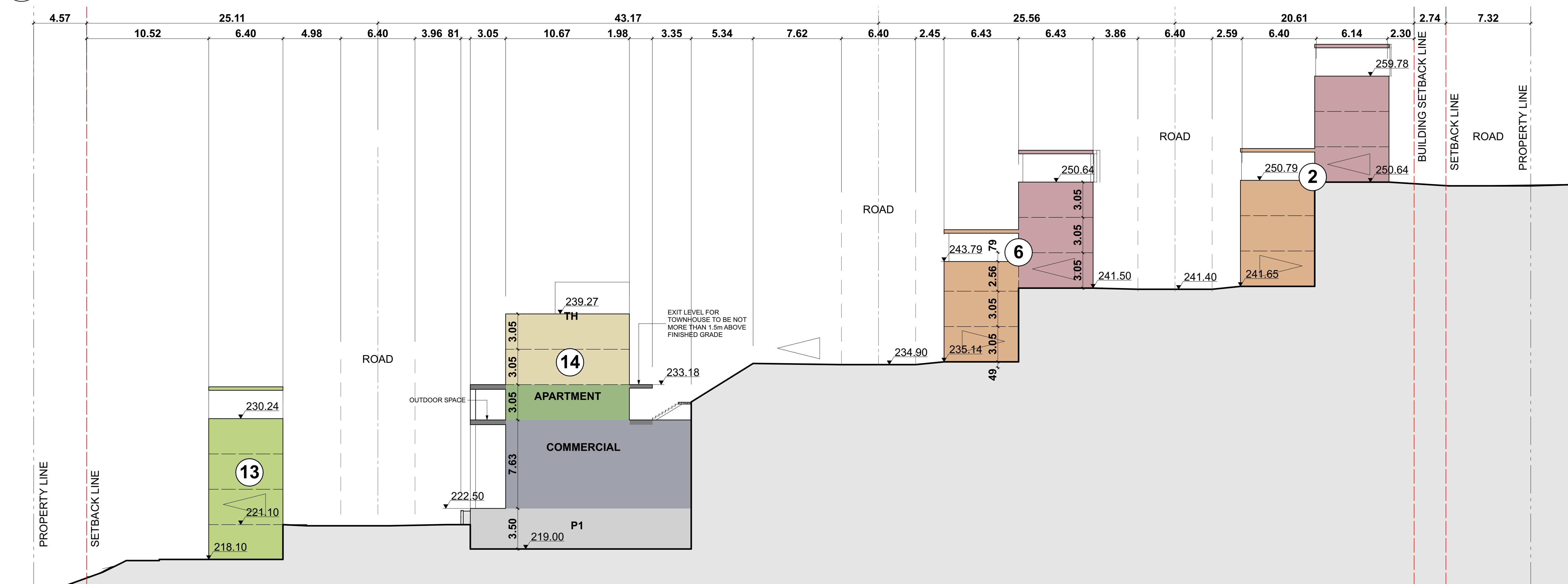
[REVUE]

[DRAWING]

A-5.308



1 SECTION 01
SCALE: 1/16" = 1'-0"



2 SECTION 02
SCALE: 1/16" = 1'-0"



Integra

ARCHITECTURE INC.

2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

SITE SECTION 3 & 4

[PROJECT]

21558 [SCALE]

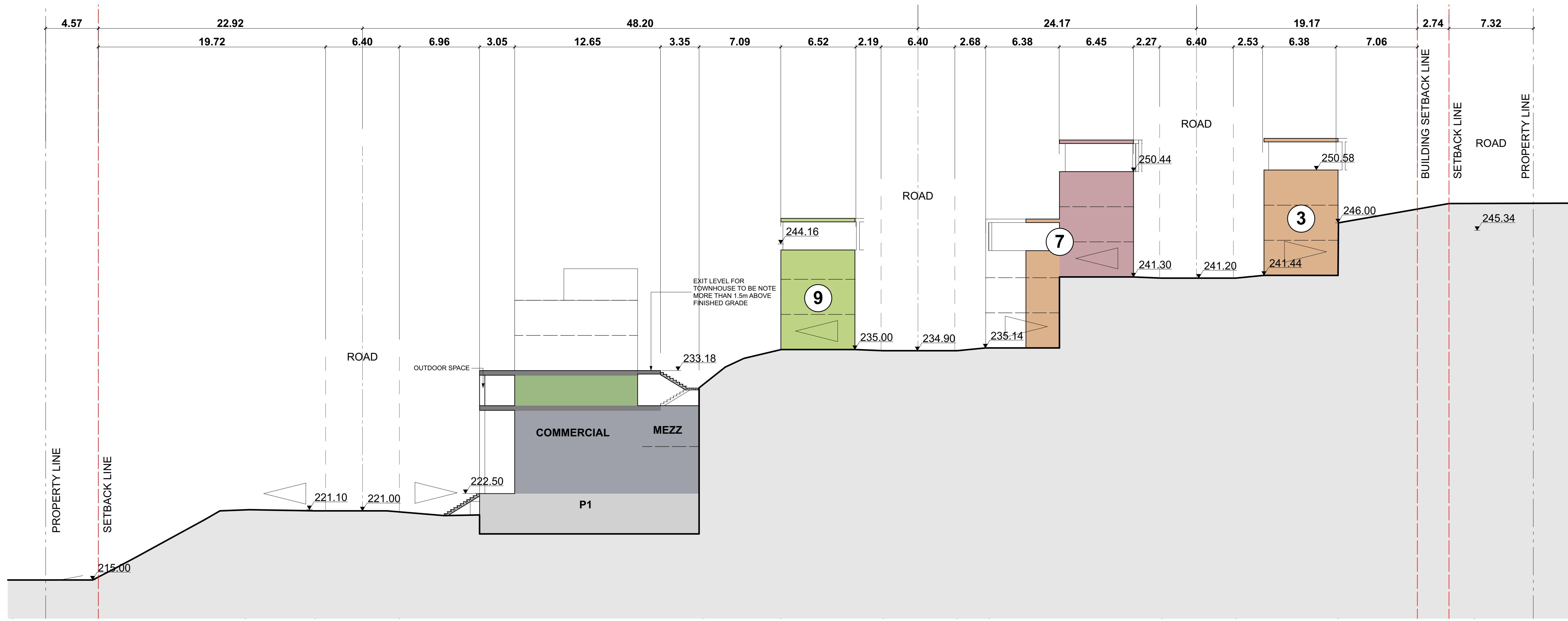
1/16" = 1'-0" [DATE]

Thursday, October 7, 2021 [DATE]

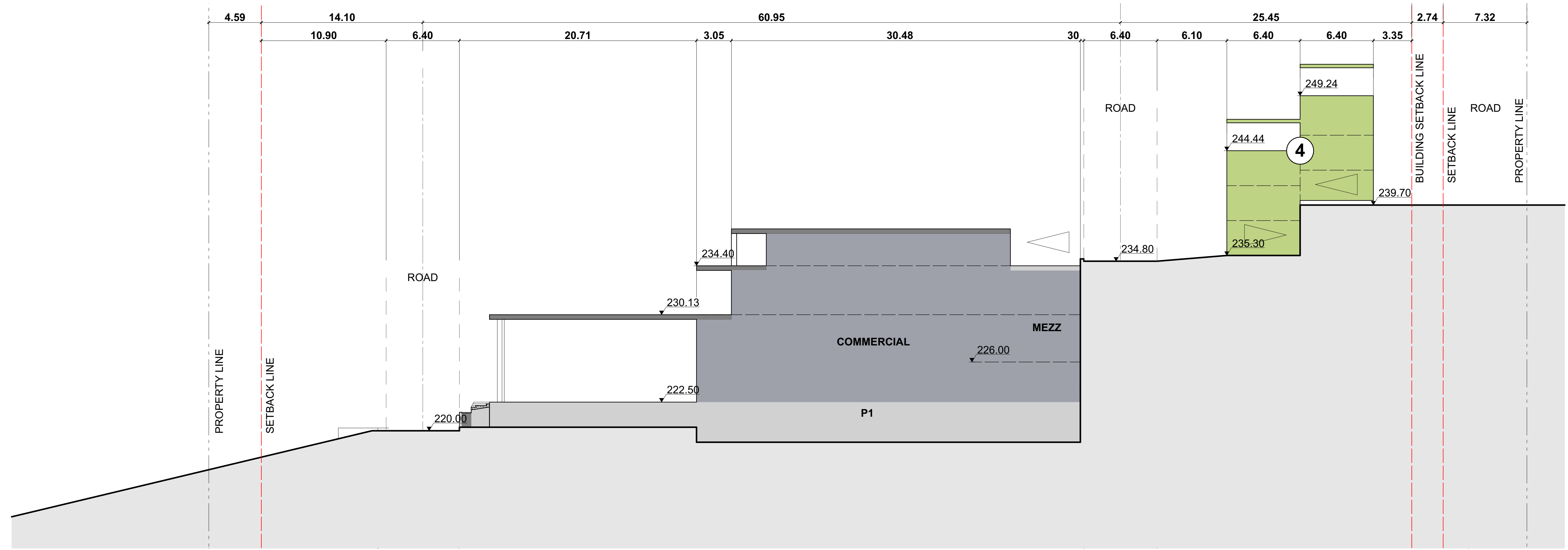
Issue 01 - PRELIMINARY APP. [REVISION]

[DRAWING]

A-5.309



1 SECTION 03
SCALE: 1/16" = 1'-0"



2 SECTION 04
SCALE: 1/16" = 1'-0"



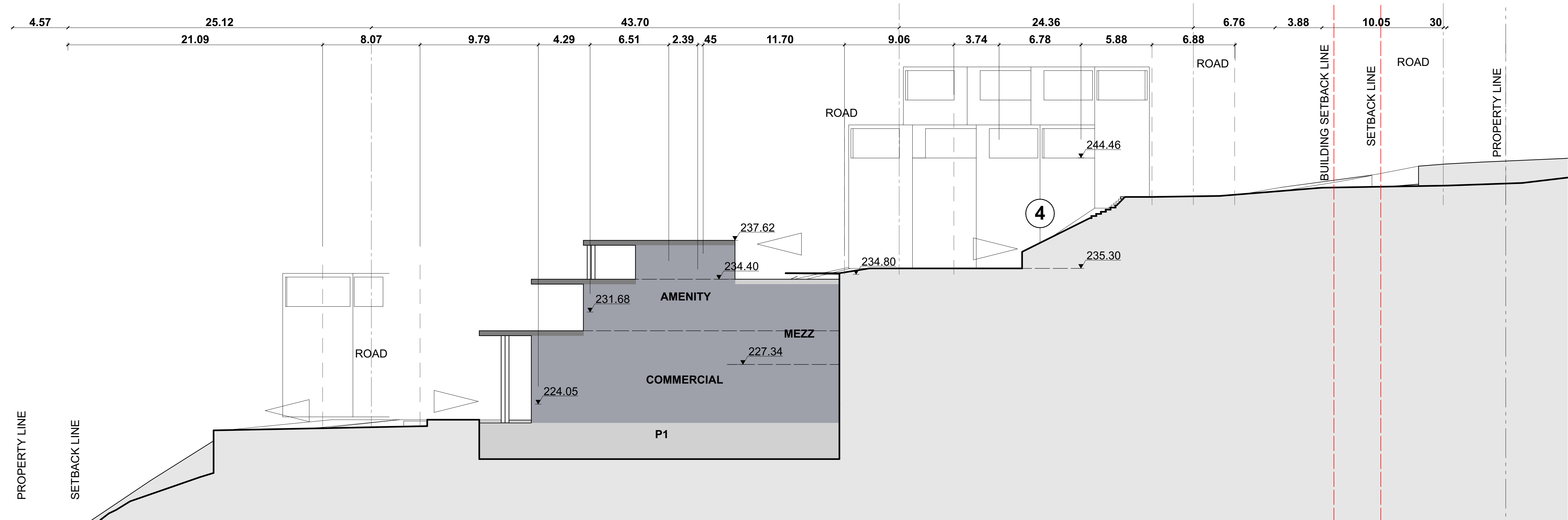
Integra

ARCHITECTURE INC.

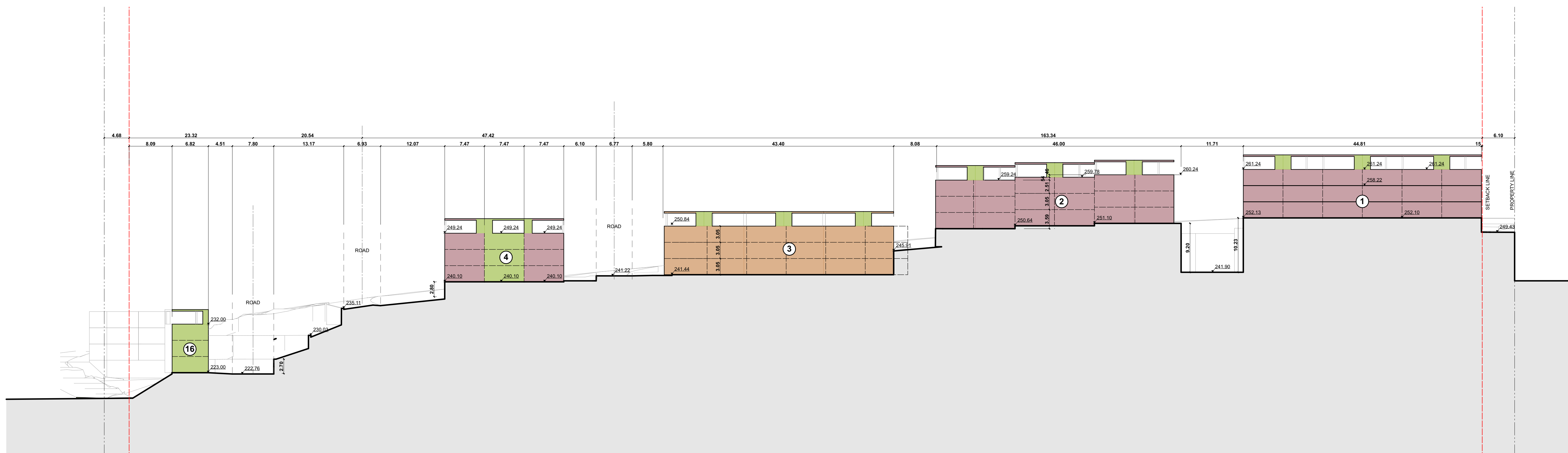
2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

[PROJECT TEAM]



2 SECTION 05
SCALE: 1/16" = 1'-0"



1 SECTION 06
SCALE: 1/32" = 1'-0"

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

SITE SECTION 5
& 6

[PROJECT]

21558

[SCALE]

As Noted

[DATE]

Thursday, October 7, 2021

[ISSUE]

Issue 01 - PRELIMINARY APP.

[DRAWING]

A-5.310



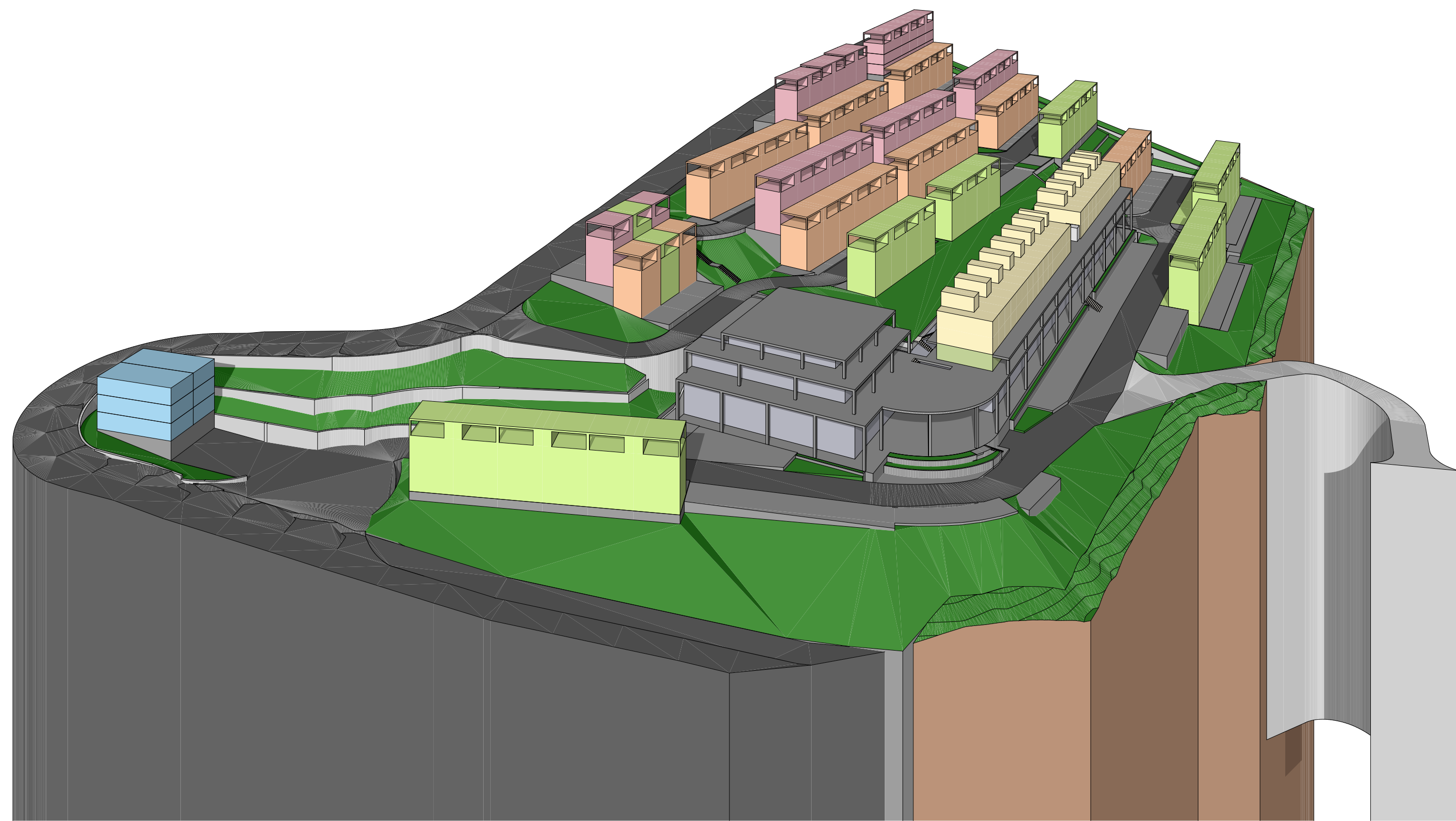
Integra

ARCHITECTURE INC.

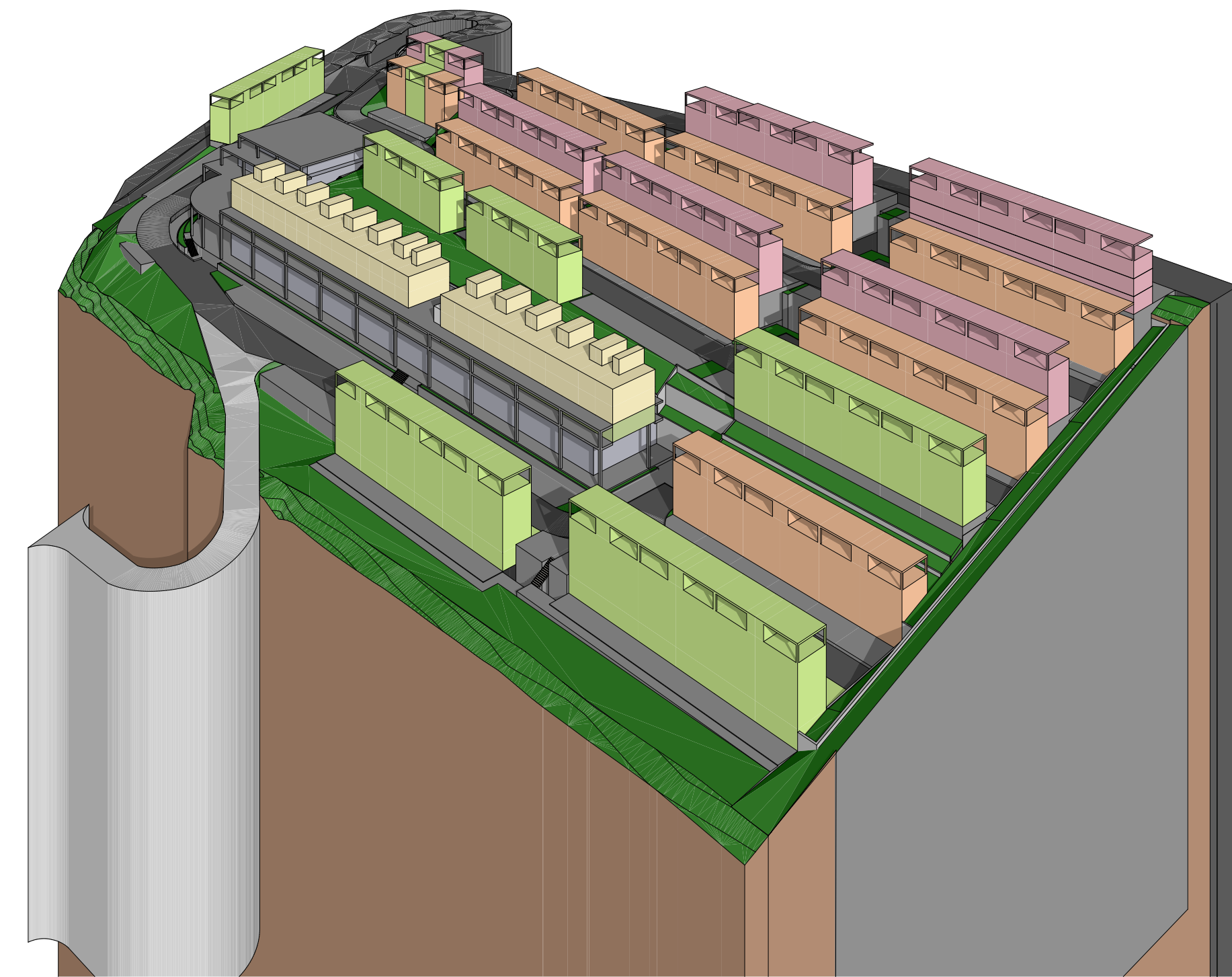
2330-200 Granville Street
Vancouver, BC, V6C 1S4
www.integra-arch.com
Telephone: 604 688 4220

COPYRIGHT RESERVED. THIS DRAWING AND DESIGN IS AND AT ALL TIMES REMAINS THE EXCLUSIVE PROPERTY OF INTEGRARCHITECTURE INC. AND CANNOT BE USED WITHOUT THE ARCHITECT'S CONSENT.

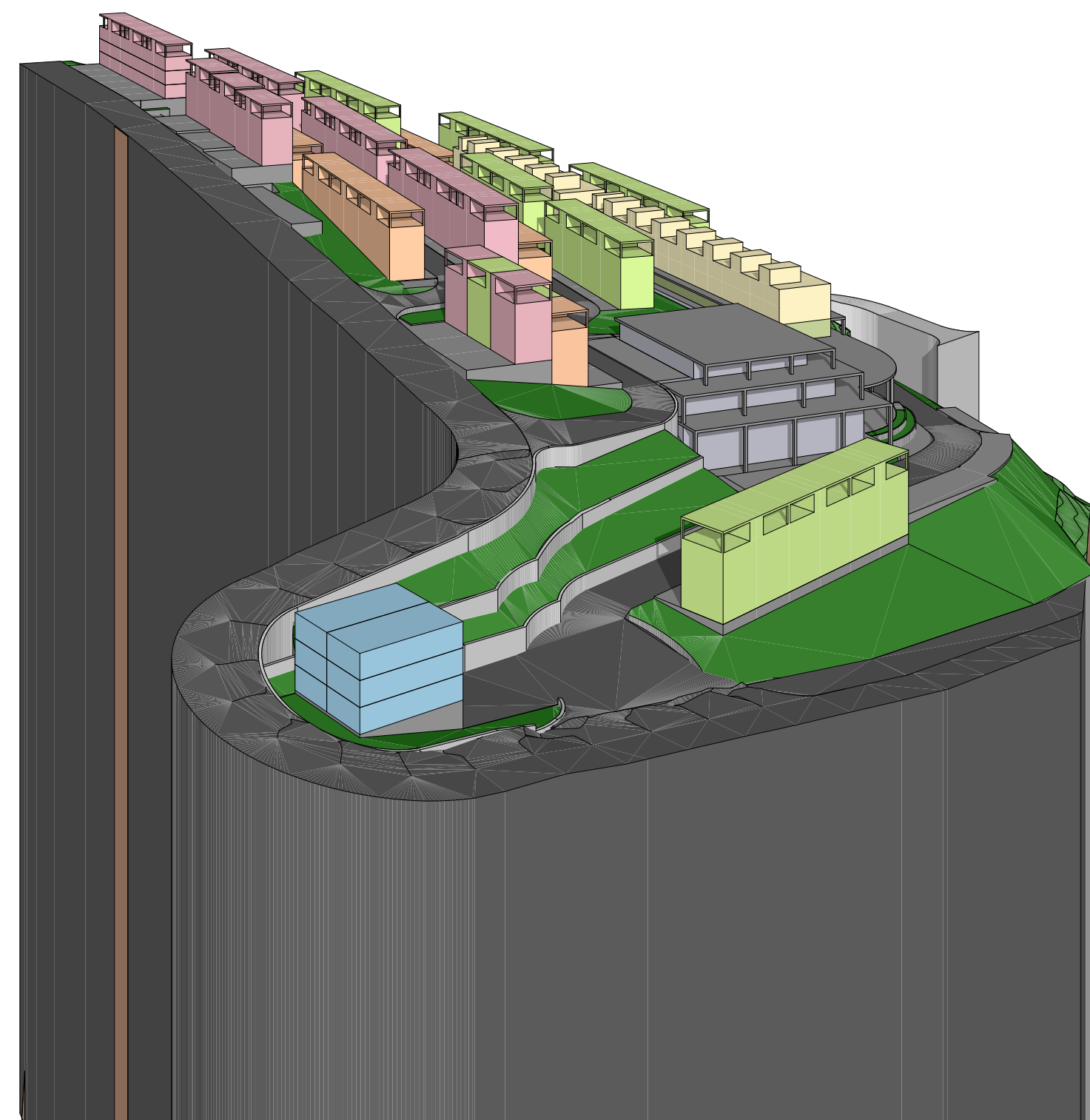
[PROJECT TEAM]



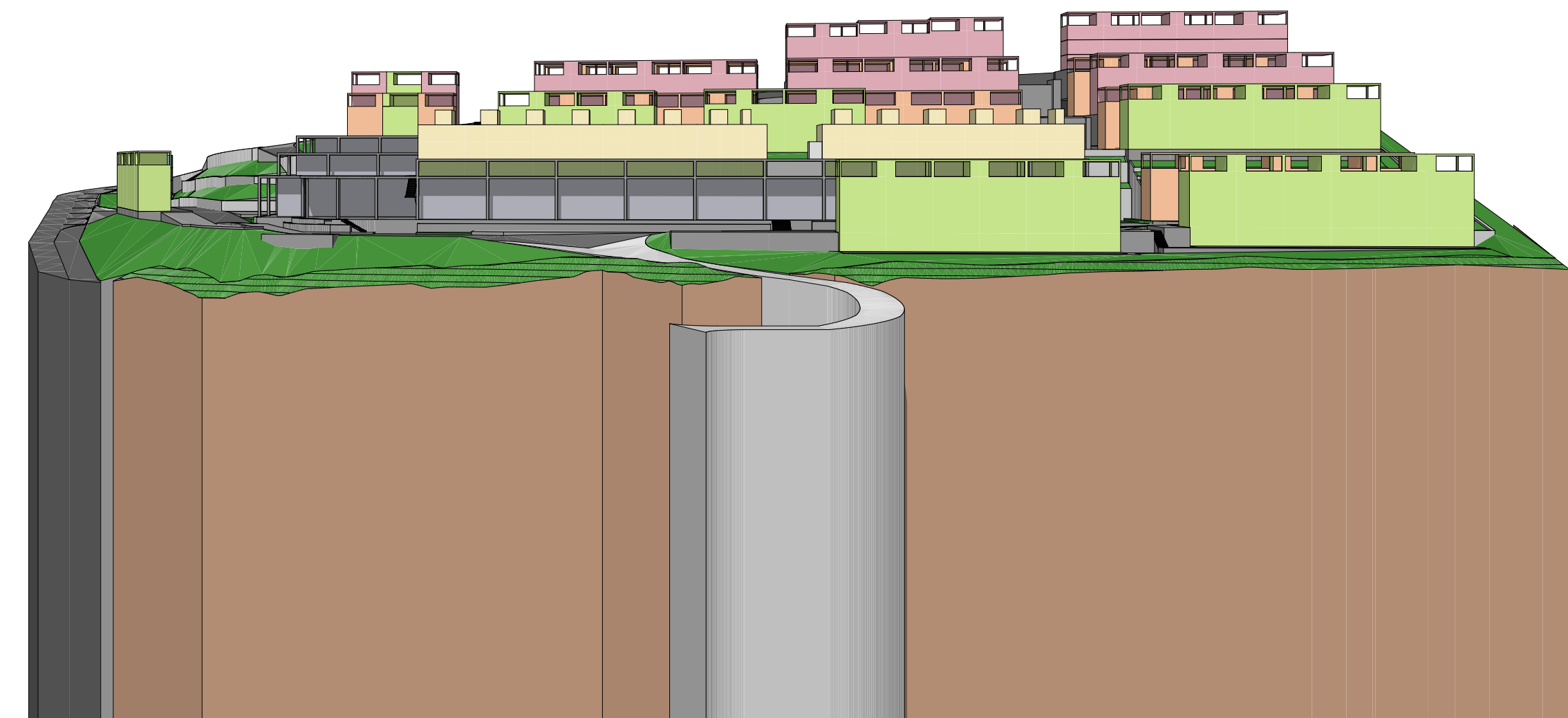
1 Perspective - South West Corner
SCALE: 1/16" = 1'-0"



2 Perspective - South East Corner
SCALE: 1/16" = 1'-0"



3 Perspective - North West Corner
SCALE: 1/16" = 1'-0"



4 Perspective - South - View Uphill
SCALE: 1/16" = 1'-0"

[ARCHITECT SEAL]

[CLIENT]

1309325 BC Ltd

[PROJECT]

Pemberton

7374 East Pemberton Farm Road
Pemberton, BC

[TITLE]

3D MASSING

[PROJECT]

21558

[SCALE]

Tuesday, October 12, 2021

[DATE]

Issue 01 - PRELIMINARY APP.

[REVISION]

[DRAWING]

A-8.100