HARROW ROAD AFFORDABLE HOUSING

COVER SHEET

0.0

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE
JOB NO. 20123

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

Village of Pemberton
Development Services
7400 Prospect Street
Pemberton, BC V0N2L0

Re: Harrow Road Affordable Housing –Rezoning and Development Permit – Lot 2 District Lot 203 Lillooet District Plan KAP 56640 rezoning application for Sea to Sky Community Services Affordable Housing Project at Harrow Rd. and Pemberton Portage Rd.

Introduction
This letter is to support the Rezoning, and Development Permit Applications for a new five-storey mixed-use affordable housing building, located at Lot 2 District Lot 203 Lillooet District Plan KAP56640. The property is currently zoned as Tourism Commercial (C-2) and has a Gateway land use designation within the OCP.

This affordable housing project is owned and operated by Sea To Sky Community Services (SSCS). SSCS is a charitable organization established in 1978 whose mission is to provide high quality programs throughout the Sea To Sky Corridor that enhance the lives of residents at every age and stage of life. The organization offers early childcare development and education, social supports, mental health services, and affordable housing for low to moderate earners. The organization is looking to expand its housing services to Pemberton and is pleased to present an application for a new 5-storey, 63-unit affordable rental building on the corner of Harrow Rd. and Highway 99.

The proposed building includes 9,000 square feet of commercial space on the 1st floor with residential on floors 2-5. The ground floor commercial space will consist of two market commercial units and approximately 7,000 square feet of community service space to be programmed by SSCS. The project is being funded by BC Housing's Community Housing Fund and will offer units at affordable rates that are geared to seniors, people with disabilities, and low-income individuals and families.

SSCS believes that it is critically important to involve the Pemberton community in the proposed project. In advance of this submission, the organization underwent a community engagement process which consisted of an online survey and two virtual public information sessions to solicit feedback on the draft design (see What We Heard Report attached). Specific areas of focus in the engagement included opportunities for outdoor space and amenities, ground floor commercial space uses, and overall pros and cons of the project. In total, 684 people participated in the process and the submission package outlines the ways in which their feedback has been incorporated into the design.

Height Rationale
The project is requesting an increase in height to allow for a 5-storey building and a change of permissible uses to allow for mixed-use affordable rental housing with commercial and community service space on the ground floor. The subject site is currently zoned as Commercial, Tourism (C-2) which allows for tourism related uses such as a hotel, gas station, or drive through business, with a maximum height of 10.5 metres (3-storeys) and FSR of 1.5. The primary driver for the proposed height increase is a Flood Construction Level (FCL) of 209.25 metres and the inability to provide residential space below the FCL. The project team explored a 4-storey option with residential on the ground floor that would provide the same number of units, however due to the FCL constraints, the site would require 2.75 metres of fill to meet the FCL, resulting in a 4-storey building that differs in height from a 5-storey building by less than 5 feet (1.5 metres). A 5-storey option allows the project to deliver 63 units of housing plus commercial and community service space with only a nominal difference in height from a 4-storey option.

Inclusion of Ground Floor Commercial Space
The Ground Floor Commercial Space is critical to the project and the agency's success, and will support the needs of the community. Currently SSCS Pemberton office and programming space is running over capacity; the agency has new service opportunities that are limited due to facility space. A long-term relationship with the agency's current landlord has ended and SSCS no longer receives donations or funds to cover the operating costs, which has created a future risk to programming; the proposed project provides a timely opportunity to relocate SSCS offices, services, and programs. SSCS serves a large proportion of the Pemberton population: they have served over 40% of the population of Pemberton and the numbers are increasing on average by 8% year or year – SSCS is a critical front-line function and needs to keep pace with demand for social services. The proposed project both allows the agency to meet these critical social needs and establish a secure home of supports for those who need SSCS the most.

Supporting Analysis
Pemberton's Age-Friendly Housing Needs Assessment conducted in 2019 identified housing gaps in the Village for vulnerable residents (Village of Pemberton, Age-Friendly Housing Needs Assessment, 2019). The report concluded that there is a need in the Village for more accessible housing to enable independent living for seniors and persons with disabilities. The Report also identified a need for market rental housing based on feedback from stakeholders that many households are struggling to secure affordable and suitable rental accommodation in the Village.
In addition to the Needs Assessment, the Village conducted the Affordable Housing Options Survey in January 2021 to gauge community perceptions about changes to housing form, density, and neighbourhood character that could enhance the ability to deliver affordable housing in Pemberton (Village of Pemberton, Affordable Housing Options Survey, 2021). The results of the survey showed that 93% of respondents believe that there is either a *significant* or *very significant* lack of affordable housing in Pemberton. 72% either *definitely agree* or *somewhat agree* that the Village should consider allowing an increase from 2-storeys to 3-storeys or higher for projects that are non-market. Furthermore, 81% of respondents either *definitely agree* or *somewhat agree* that an apartment building housing type are a good fit for Pemberton to provide more housing options.

The Age-Friendly Housing Needs Assessment and the Housing Options Survey demonstrate the need for affordable Housing in the Village and, based on the survey, present general community support for introducing new forms of housing to address this demand.

Supporting Policy

Based on the identified need for housing, the Village developed the Age-Friendly Affordable Housing Action Plan (Village of Pemberton, Age-Friendly Affordable Housing Action Plan, 2019). The proposed project aims to address the undersupply of affordable housing as identified in the Plan and supports the Plan's four goals as outlined below.

VILLAGE OF PEMBERTON AGE-FRIENDLY AFFORDABLE HOUSING ACTION PLAN GOALS	PROJECT ALIGNMENT
1. Prioritize affordable housing	The Village is accepting and prioritizing the application for a rezoning and DP.
2. Encourage housing design to meet changing household needs and allow seniors to age-in-place.	The Project includes a diverse array of unit types to meet different household needs. This includes, 31 one-bedroom units, 24 two-bedroom units, and 8 three-bedroom units. 87% of the units are adaptable and 13% are accessible.
3. Focus on addressing housing needs for low to moderate income households	Units will be set at affordable rates set by BC Housing and eligibility will be based on household income.
4. Foster collaborative partnerships to address housing issues and related social infrastructures	SSCS is partnering with BC Housing through the Community Housing Fund and with the Village of Pemberton to make the project viable.

The Plan also identifies the housing gaps in Pemberton and outlines six population groups who are particularly affected by the housing issues in the village: low-income seniors, moderate-income seniors, low-income households, moderate-income households, persons will disabilities, and persons experiencing homelessness or at-risk of homelessness. The design of the proposed project and its rental model can accommodate the needs of all six of these vulnerable groups through the provision of fully accessible units and rental rates that target low to moderate income individuals and which are secured by covenant to ensure long-term affordability.

Design

The design of the project is influenced by the principles in Village of Pemberton's Official Community Plan, the results of the Housing Options Survey, and SSCS's pre-application community engagement. The site features a green buffer of trees living around the north, east, and south edges, allowing the building to blend with the surrounding nature while also shielding residents from the busy highway. The building is located on the southeast corner of the lot, providing enough space between the neighbouring houses and the building while also taking advantage of the available outdoor space for amenities and parking spaces.

With a welcoming main entrance highlighted by a large canopy, the building was designed with accessibility in mind. Tucked away on Harrow Road, the main entrance is accessible by those driving, biking, or walking. The site design also connects to the existing trail along Arn Canal and a nearby bus stop, allowing for cyclists and pedestrians to access the site from the east. The sidewalk leads to the building entrance and public spaces, allowing for visitors and residents to approach the building as pedestrians or cyclists. The building and surrounding spaces are designed to follow Crime Prevention Through Environmental Design principles, such as the addition of large windows to allowing a connection with the outside environment while also providing an opportunity for natural surveillance of the public spaces located to the west of the building.

The building's aesthetic form is simple and functional, with facades comprised of several textures and natural tones. The colours are in harmony with local area, displaying hues of white, grey, and wood tones. Exterior wall undulation reveals an inset of wood tone both at the ground level and on the balconies. These elements combined provide a greater sense of human scale. Materials are chosen to be durable for the longevity of the project and to withstand the local climate.

Land use designation is Gateway per the Official Community Plan. Situated along Highway 99, the project presents a strong sense of arrival to Pemberton. This proposed design meets the requirements and OCP designation design criteria.

The Flood Construction Level (FCL) was determined by Frontera Geotechnical to be 209.25m for the site, while the current grade is approximately 206.0m throughout the site. The project proposes Main Building Elevation (MBE) to be 207.5m, leaving the ground floor for more public spaces and storage areas, and protecting residential units, mechanical, and electrical rooms on the second floor and above. The project is therefore requesting an exemption to allow for commercial and amenity space below the FCL. This exemption is supported by Frontera Geotechnical's Flood Hazard Report, provided that the project follows the design requirements outlined in the Report. Stormwater management is a key component in the design. Retention tanks will be installed underground to allow for proper drainage on the site. The landscape buffer to the north is a rain garden, which will also filter stormwater while also providing visual separation. The surface parking lot is designed to support the residents, users, and visitors. It allows for firetruck access and a loading dock. Snow storage is placed around the site to accommodate for heavy snowfall during the winter months.

As BC Housing is one of the main partners of this development, this design aligns with the BC Housing Design Guidelines and Construction Standards 2019. Within these standards, it is required that the location of this project must meet sustainable and energy targets of Step Code 4, BCBC. The main goals of the BC Housing standards are to incorporate longevity, durability, sustainability, and cost-effective principles into housing projects.

Conclusion
The project team is pleased to propose a project that will help address the housing issues identified by the Village and that will respond to the Village's Age-Friendly Affordable Housing Plan. We are therefore requesting a Rezoning to allow for the proposed use and density which is required to make the project viable.

This proposal is cohesive with the surrounding nature, providing age-friendly outdoor amenity spaces, affordable housing, offices, and commercial spaces for the community. It demonstrates that the site and landscape consider safety of the residents, respect for neighbouring properties, and stormwater management. Additionally, it interweaves the pedestrians and cyclists with site, utilizing local trails by providing stronger connection points and creating pedestrian and cyclist friendly paths.

Thank you for taking the time to review this application. Please contact us if you have any questions. We are looking forward to further engaging with the community on the project and are committed to working with the Village of Pemberton through the process.

Regards,

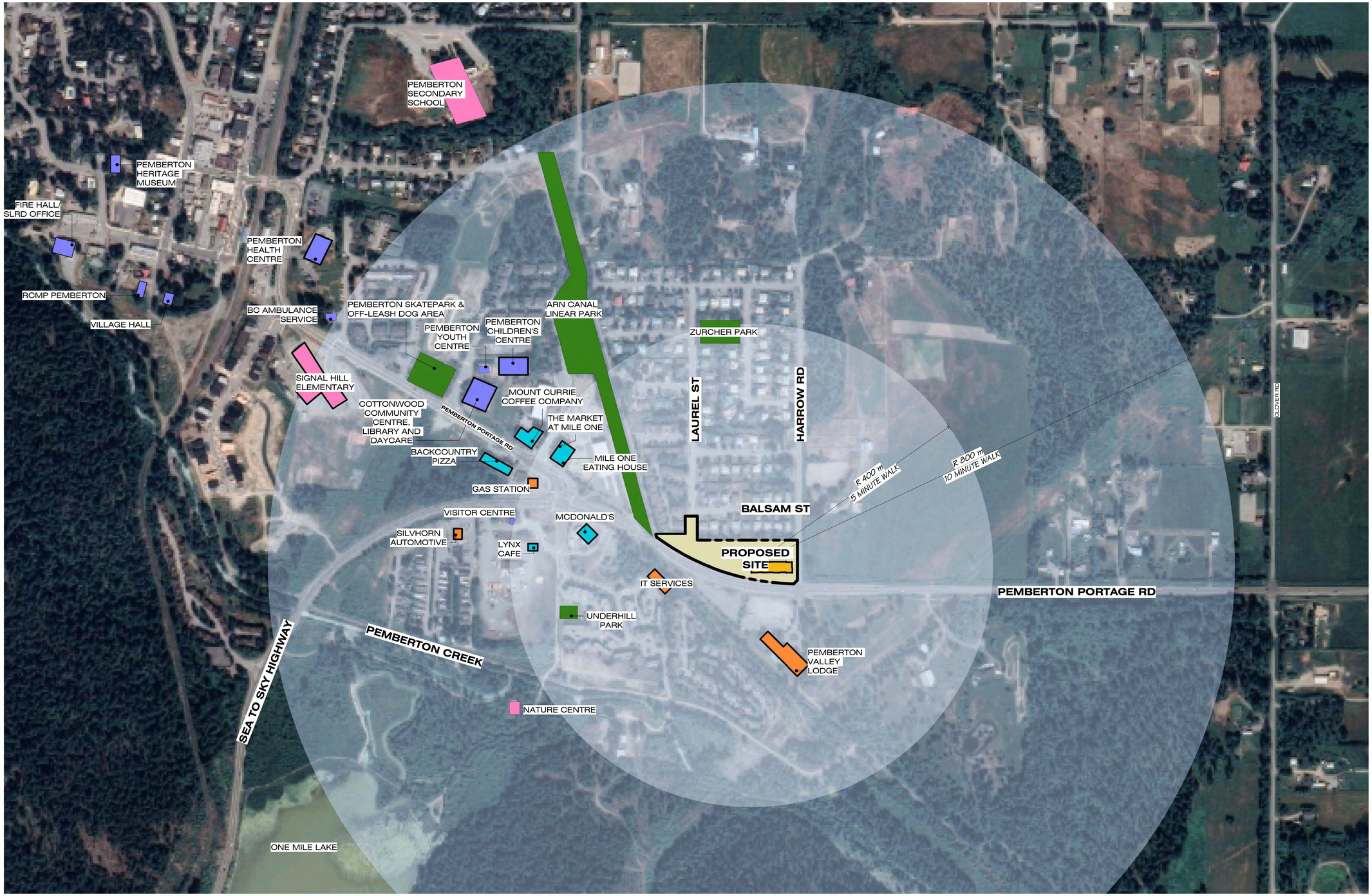
[redacted]
Station One Architects

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects



SITE CONTEXT

- FOOD (GROCERY, CAFE, RESTAURANT)
- EDUCATION (SCHOOLS, CLASSES)
- COMMUNITY USE (LIBRARY, CENTRE)
- BUSINESS
- PROPOSED BUILDING
- VILLAGE PARK

NORTH

SITE CONTEXT PLAN

0.2

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE As indicated
JOB NO. 20123

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

PROJECT DATA

CIVIC ADDRESS:
LEGAL DESCRIPTION: LOT 2 DISTRICT LOT 203 LILLOOET DISTRICT PLAN KAP56640

STANDARD: VILLAGE OF PEMBERTON

SITE AREA GROSS: 12,326M2 (132,678 SQFT / 1,23 HA)

ZONING BYLAW REVIEW

NEW ZONE: SPECIAL ZONE

15.2) ZONE INTENT
SPECIAL ZONE

15.2.5) LOT SIZE REGULATIONS

PROPOSED: **12,326M² (132,678 SQFT)**

15.2.6) BUILDING REGULATIONS:
PROPOSED: **9.5%**

MINIMUM SETBACKS:
FLL PROPOSED: **7.5M**
ELL PROPOSED: **4.5M**
ILL PROPOSED: **41M**
RLL PROPOSED: **N/A**

PROPOSED BUILDING HEIGHT: **19 M**

OFF-STREET PARKING BYLAW REVIEW - SECTION 8 - PARKING REQUIREMENTS:

STANDARD STALLS:

TOTAL PROPOSED: .75 STALLS PER 1BED AFFORDABLE MARKET RENTAL DU X 9 DU = 7 STALLS
1.4 STALLS PER 2BED AFFORDABLE MARKET RENTAL DU X 7 DU = 10 STALLS
1.75 STALLS PER 3BED AFFODABLE MARKET RENTAL DU X 2 DU = 4 STALLS

.5 STALLS PER 1BED RENT GEARED TO INCOME DU X 16 DU = 8 STALLS
1.1 STALLS PER 2BED RENT GEARED TO INCOME DU X 12 DU = 13 STALLS
1.2 STALLS PER 3BED RENT GEARED TO INCOME DU X 4 DU = 5 STALLS

0 STALLS PER 1BED DEEP SUBSIDY/SHELTER DU X 16 DU = 0 STALLS
0 STALLS PER 2BED DEEP SUBSIDY/SHELTER DU X 16 DU = 0 STALLS
0 STALLS PER 3BED DEEP SUBSIDY/SHELTER DU X 16 DU = 0 STALLS

TOTAL PROPOSED: 47 STALLS
TOTAL PROVIDED: **51 STALLS**

VISITOR PARKING STALLS:

TOTAL PROPOSED: 0.06 STALLS PER DU X 63 DU = 4 STALLS
TOTAL PROVIDED: **4 STALLS (TO BE SHARED WITH COMMERCIAL)**

NEIGHBOURHOOD COMMERCIAL USE PARKING STALLS:

TOTAL PROPOSED: 0.027 STALLS PER 1M2 X 714 M2 OF SSCS PROGRAMMING SPACE = 19 STALLS
0.0357 STALLS PER 1M2 X 129 M2 OF MARKET COMMERCIAL RETAIL = 5 STALLS
TOTAL PROVIDED: **24 STALLS**

TOTAL PARKING PROVIDED: **79 STALLS**

DISABILITY PARKING STALLS REQUIRED:

TOTAL REQUIRED: 51-80 REQUIRED PARKING STALLS: 3 PARKING STALLS
TOTAL PROVIDED: **6 STALLS**

PARKING SPACE SIZE:
REQUIRED WIDTH: **3.05M**
REQUIRED WIDTH (ACC): **4.0M**
REQUIRED LENGTH: **6.10M**
REQUIRED SMALL VEHICLE LENGTH: **4.6M**
DRIVE AISLE WIDTH: **6.4M**

8.11) SMALL VEHICLE PARKING:
(b) 33% OF REQUIRED PARKING REDUCED TO 4.6M IN LENGTH

8.7)
(a) WHERE A MULTIPLE FAMILY BUILDING IS SUBJECT TO A HOUSING AGREEMENT FOR THE PROVISION OF AFFORDABLE PURCHASED OR RENTAL HOUSING, THE PARKING RATIOS MAY BE REDUCED BY 0.25 STALLS PER UNIT

8.1)
(g) ALL MULTIPLE UNIT RESIDENTIAL AND MIXED-USE RESIDENTIAL AND COMMERCIAL DEVELOPMENT SHALL PROVIDE BICYCLE PARKING AT A RATE OF 20% OF THE REQUIRED VEHICLE PARKING.
75 STALLS X 20% = **15 BICYCLE PARKING 60 INDOOR AND 6 OUTDOOR BICYCLE STALLS PROVIDED.**

UNIT SYNOPSIS

UNIT TYPE	BEDROOMS	2nd FLOOR	3rd FLOOR	4th FLOOR	5th FLOOR	TOTAL	AREA	
A	1 BED (ADAP)	4	4	4	4	16	538 SF	50 m²
B	1 BED (ADAP)	0	1	1	1	3	552 SF	51 m²
C	1 BED (ADAP)	1	1	1	1	4	569 SF	53 m²
D	1 BED (ACC)	2	2	2	2	8	581 SF	54 m²
E	2 BED (ADAP)	2	2	2	2	8	757 SF	70 m²
F	2 BED (ADAP)	1	1	1	1	4	760 SF	71 m²
G	2 BED (ADAP)	2	2	2	2	8	755 SF	70 m²
H	2 BED (ADAP)	1	1	1	1	4	752 SF	67 m²
K	3 BED (ADAP)	2	2	2	2	8	914 SF	85 m²
TOTAL						63		

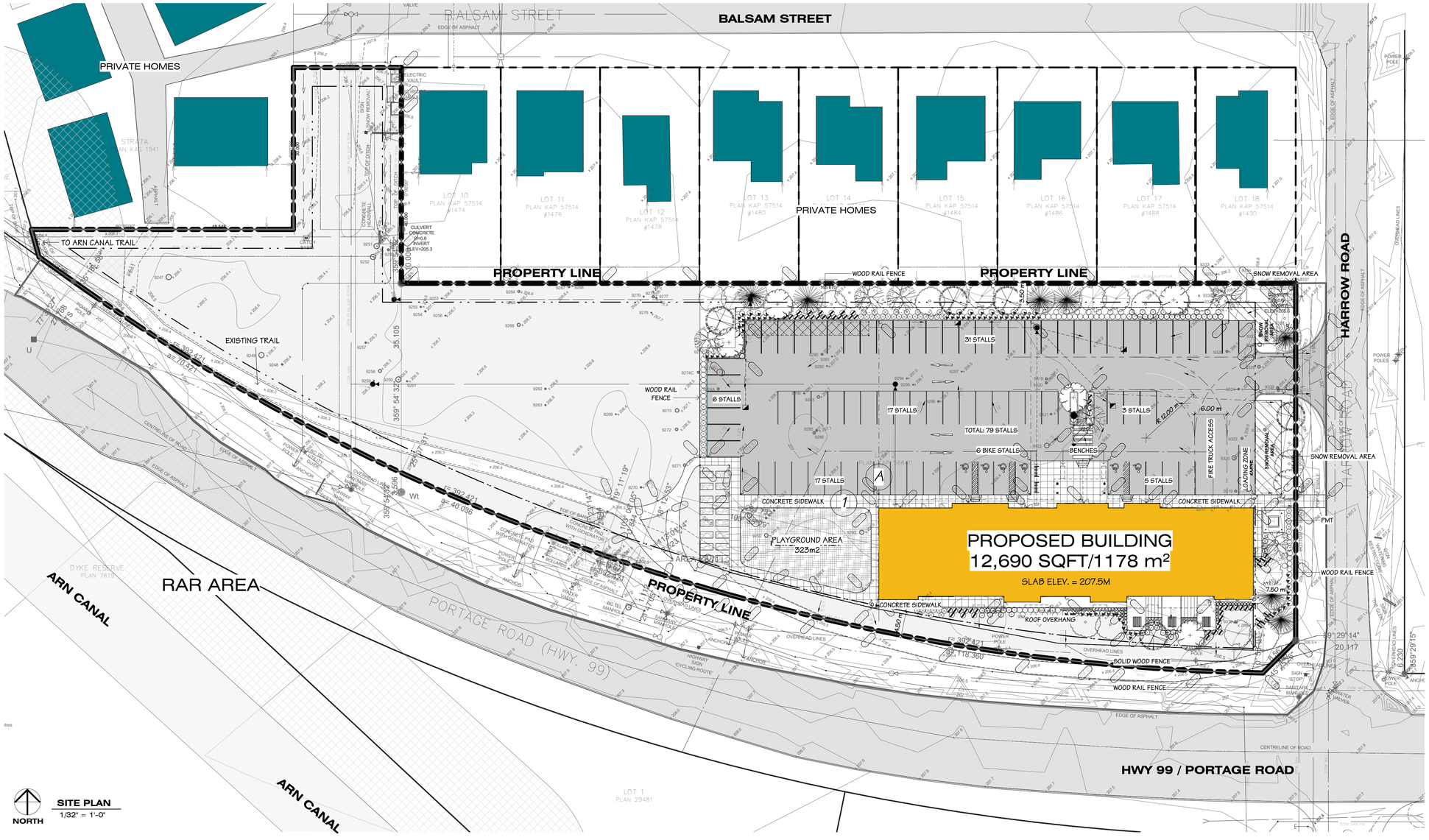
ADAP = ADAPTABLE UNITS % OF TOTAL ADAPTABLE UNITS = 87%

ACC = ACCESSIBLE UNITS % OF TOTAL ACCESSIBLE UNITS = 13%

SITE SYMBOL LEGEND

- 1 — GRID REFERENCE
- Room name / 101 — ROOM MARKER (ROOM NAME / ROOM NUMBER)
- 10 / A101 — SECTION MARKER (SECTION NUMBER / SHEET NUMBER)
- 00 SIM / A101 — DETAIL MARKER (DETAIL NUMBER / SHEET NUMBER)
- PROPERTY LINE
- SETBACK LINE

MISC. SYMBOLS
- HB — HOSE BIB
- RWL — RAIN WATER LEADER
- GB — GAS BIB
- C.B. — CATCH BASIN. SEE CIVIL
- L.D. — LAWN DRAIN. SEE CIVIL
- LT — LIGHT FIXTURE. SEE ELECTRICAL
- FENCE



NORTH

SITE PLAN
1/32" = 1'-0"

SITE PLAN

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE As indicated
JOB NO. 20123

1.0

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

SUMMARY - WHAT WE HEARD

WHAT WE HEARD	RESPONSE	REF. PAGE
Concerns about there being sufficient parking for future residents and visitors and the possibility of overflow parking in the neighourhood.	An independent traffic engineer has provided a parking recommendation specific to the building use and tenure. The recommendation takes into consideration the proximity of the building to amenities and the target population for the units. The project is providing 4 more stalls than the engineer's recommendation. SSCS also offers the Better at Home program for seniors and those with disabilities who cannot drive. The program provides transportation to attend appointments, pick up meds and groceries. Additionally, commercial stalls will be shared with visitors in an effort to keep parked cars off the streets.	2.3
Concerns about visual overlook from the building to the single-family homes on Balsam.	The building and parking lot have been shifted to the south and the landscaped buffer along the north edge of the site has been expanded.	2.2
Concerns around stormwater mitigation and the risk of flooding in the Glen posed by the building.	The civil engineer has recommended a stormwater retention design which will capture stormwater on site and help redirect runoff from entering neighbouring properties or into an overwhelmed city drainage system in a heavy rain event.	2.5
Concerns about the safety of pedestrians in accessing the town centre from the building as there are not extensive transit options in Pemberton.	The project is proposing an off-site path along Hwy 99 for pedestrians and cyclists that aligns with the Village's future transportation infrastructure plans.	1.0 SITE PLAN
Concerns about the safety of children due to proximity to the Highway.	A fence will be installed around the building to provide a barrier from the building to the Highway.	2.2
Concerns about fire truck access.	The parking lot is designed to accomodate fire truck access and exit as per BC Building Code.	2.4
Pemberton's tallest building is 4 storeys, why does this building have to be 5 storeys?	A residential building with 4 storeys would have to be built up higher with 2.75 metres of soil in order to meet the flood construction level. By incorporating commercial space on the ground floor, it acts as a flood buffer, and the residential portion can be elevated above the flood construction level without large amounts of soil. This means that a 5 storey mixed-use building is only 4'-9" (1.4m) taller than a 4storey residential building.	2.1
The building footprint should be spread out so that it's shorter in height.	By building up instead of wide, we will provide ample outdoor space for residents and ensure construction and operating costs are manageable and sustainable. Building up also means we can maximize the number of affordable housing units we are proposing; this is a unique opportunity for a small community to add much needed affordable rentals. Currently there are only 30 non-market rental units in all of Pemberton, this project will more than triple the number of affordable rentals available to families, seniors and people with disabilities.	1.0 SITE PLAN 2.2 3.0-3.2 FLOOR PLANS
This location is so far from the town centre, why build it here?	SSCS and the Village of Pemberton worked hard to find a site that is convenient and financially and operationally feasible. Due to a lack of municipal land, the partners worked together to assess private properties for sale. The property was chosen based on lot size, location, and cost. The proposed site is within a 10 minute walk (800 metres) of the elementary school, community centre, and commercial and retail services, and will be well connected by a multi-use path. SSCS programs offer some transportation services and as a social service agency will advocate for local and regional transit services	0.2 CONTEXT MAP
Buildings in the flood plain have to mitigate against flood hazards. Why is commercial allowed on the ground floor?	A flood hazard assessment has been conducted by a qualified professional recommending that commercial (non-habitable) space on the ground floor will be safe if proper design measures are taken, including: all mechanical and electrical systems are located on the second or higher storey and foundation construction meets the minimum required level, among others. The building design has incorporated all recommendations and will be applying for an exemption for the commercial space based on this professional report.	2.1 3.0-3.2 FLOOR PLANS
Why is it important for SSCS to relocate their space here?	SSCS's relationship with a long-term landlord and donor ended in 2021, and the future of the agency's existing lease is insecure. In addition, Pemberton and Area is rapidly growing and demand for social services is increasing by over 8% year over year. There is a need to expand our existing service space in order to meet the community's growing demand.	3.0-3.2 FLOOR PLANS
Desire for a community garden on the site. (53% of survey respondents identified a Community Garden as a moderate to high priority for the development).	The project is providing a community garden for residents to the west of the building.	2.2
Desire for green space (74% of survey respondents indicated that green space is a high priority or very high priority for the development).	The landscape design includes a green buffer on the north edge of the site and a green space to the south of the building to soften the edge between the highway and the residences.	2.2
Desire for child care space (60% of survey respondents identified child care as a high priority or very high priority for the development.	While the program for the ground floor community space has not yet been determined, the project is requesting child care as a permitted use in the rezoning.	1.0 SITE PLAN 3.0 LEVEL 1 FLOOR PLAN
Desire for a Playground (43% of survey respondents identified a playground as a high priority or very high priority for the development).	The design includes a children's playground to the west of the building.	2.2

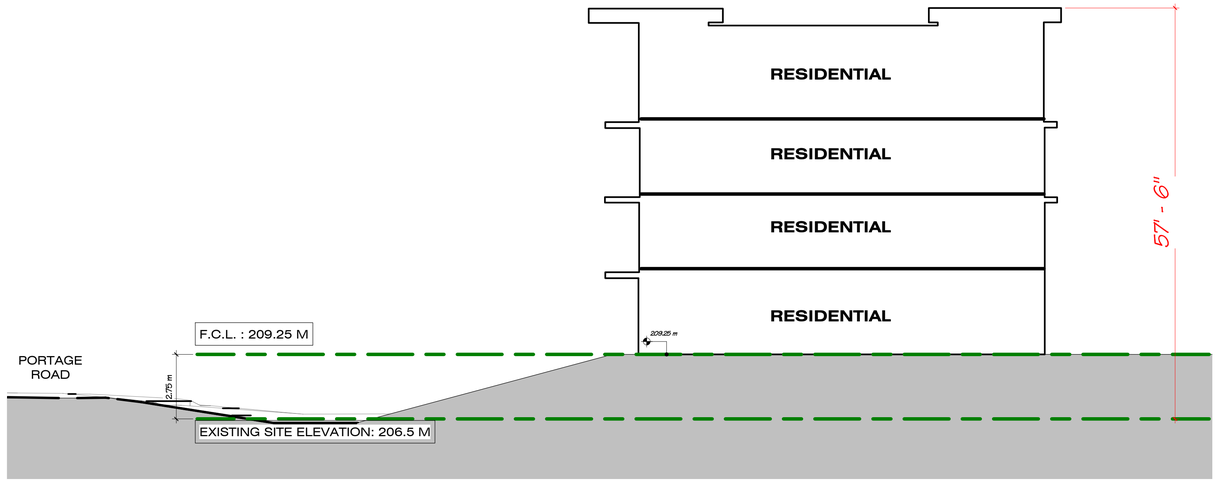
604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

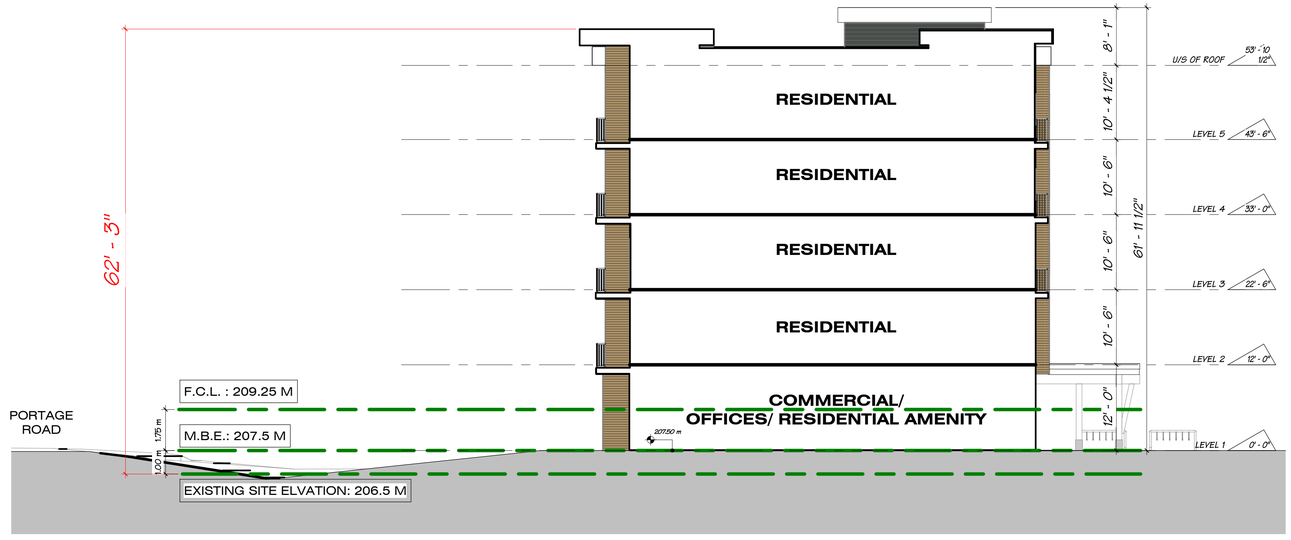
Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

WHAT WE HEARD: WHY NOT A 4-STOREY BUILDING?
DIFFERENCE BETWEEN TOTAL BUILDING HEIGHT IS 4'-9".



4 STOREYS
1" = 10'-0"



5 STOREYS
1" = 10'-0"

BUILDING HEIGHT

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE 1" = 10'-0"
JOB NO. 20123

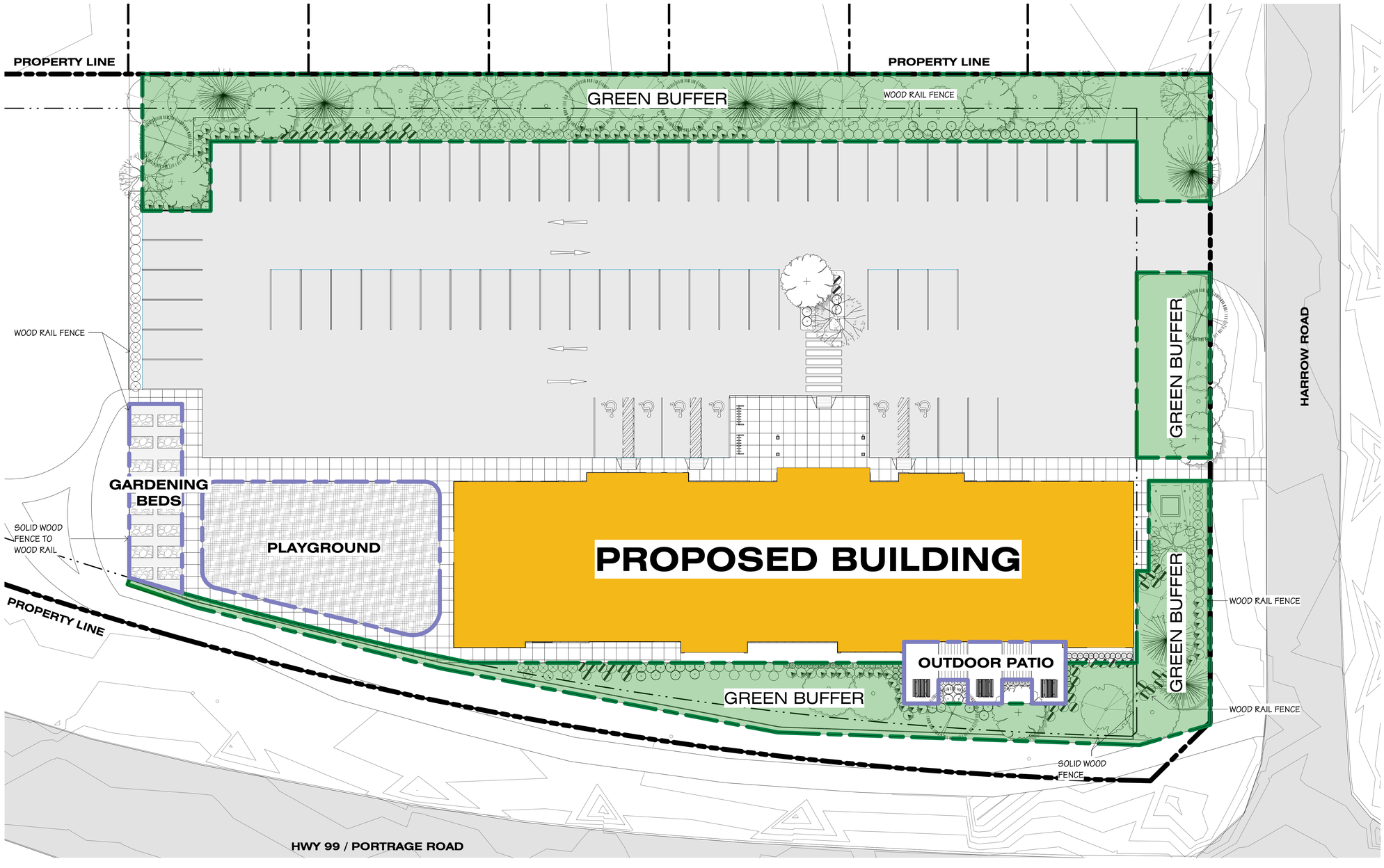
604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

WHAT WE HEARD: CONCERNS REGARDING SEPARATION BETWEEN NEIGHBOURHOOD, HWY, AND SITE



GREEN BUFFER & PUBLIC SPACE

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE As indicated
JOB NO. 20123

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

WHAT WE HEARD: CONCERNS REGARDING PARKING

AN INDEPENDENT TRAFFIC ENGINEER HAS PROVIDED A PARKING RECOMMENDATION SPECIFIC TO THE BUILDING USE AND TENURE. THE RECOMMENDATION TAKES INTO CONSIDERATION THE PROXIMITY OF THE BUILDING TO AMENITIES AND THE TARGET POPULATION FOR THE UNITS. THE PROJECT IS PROVIDING 3 MORE STALLS THAN THE ENGINEER'S RECOMMENDATION.

SSCS ALSO OFFERS THE BETTER AT HOME PROGRAM FOR SENIORS AND THOSE WITH DISABILITIES WHO CANNOT DRIVE. THE PROGRAM PROVIDES TRANSPORTATION TO ATTEND APPOINTMENTS, PICK UP MEDS AND GROCERIES.

THE FOLLOWING IS A BREAKDOWN OF PARKING STALLS:

OFF-STREET PARKING BYLAW REVIEW - SECTION 8 - PARKING REQUIREMENTS:

STANDARD STALLS:

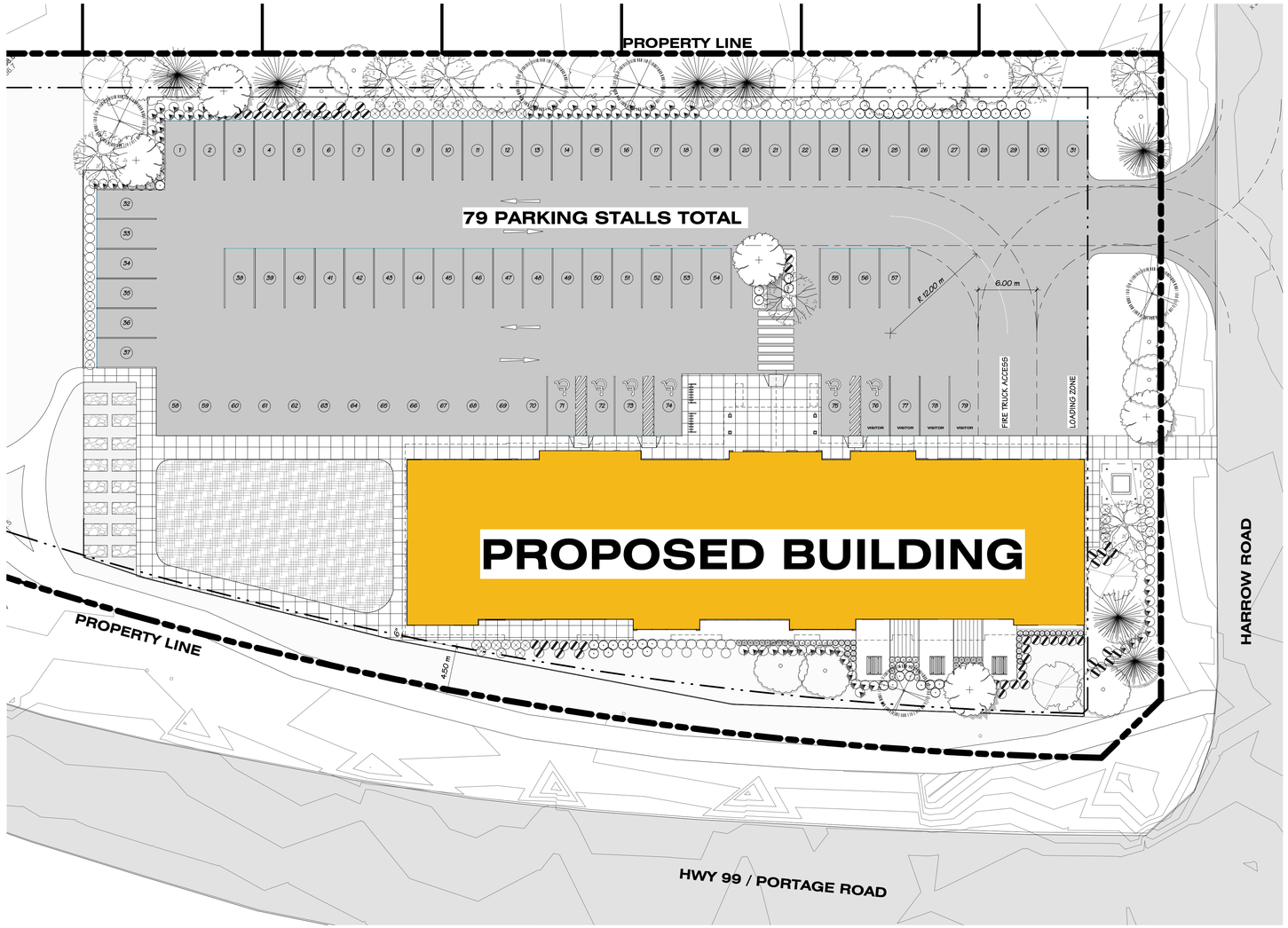
TOTAL PROPOSED:	.75 STALLS PER 1BED AFFORDABLE MARKET RENTAL DU X 9 DU = 7 STALLS 1.4 STALLS PER 2BED AFFORDABLE MARKET RENTAL DU X 7 DU = 10 STALLS 1.75 STALLS PER 3BED AFFODABLE MARKET RENTAL DU X 2 DU = 4 STALLS .5 STALLS PER 1BED RENT GEARED TO INCOME DU X 16 DU = 8 STALLS 1.1 STALLS PER 2BED RENT GEARED TO INCOME DU X 12 DU = 13 STALLS 1.2 STALLS PER 3BED RENT GEARED TO INCOME DU X 4 DU = 5 STALLS 0 STALLS PER 1BED DEEP SUBSIDY/SHELTER DU X 16 DU = 0 STALLS 0 STALLS PER 2BED DEEP SUBSIDY/SHELTER DU X 16 DU = 0 STALLS 0 STALLS PER 3BED DEEP SUBSIDY/SHELTER DU X 16 DU = 0 STALLS
TOTAL PROPOSED:	47 STALLS
TOTAL PROVIDED:	**51 STALLS**

VISITOR PARKING STALLS:

TOTAL PROPOSED:	0.06 STALLS PER DU X 63 DU = 4 STALLS
TOTAL PROVIDED:	**4 STALLS (TO BE SHARED WITH COMMERCIAL)**

NEIGHBOURHOOD COMMERCIAL USE PARKING STALLS:

TOTAL PROPOSED:	0.027 STALLS PER 1M2 X 714 M2 OF SSCS PROGRAMMING SPACE = 19 STALLS 0.0357 STALLS PER 1M2 X 129 M2 OF MARKET COMMERCIAL RETAIL = 5 STALLS
TOTAL PROVIDED:	**24 STALLS**
TOTAL PARKING PROVIDED:	**79 STALLS**



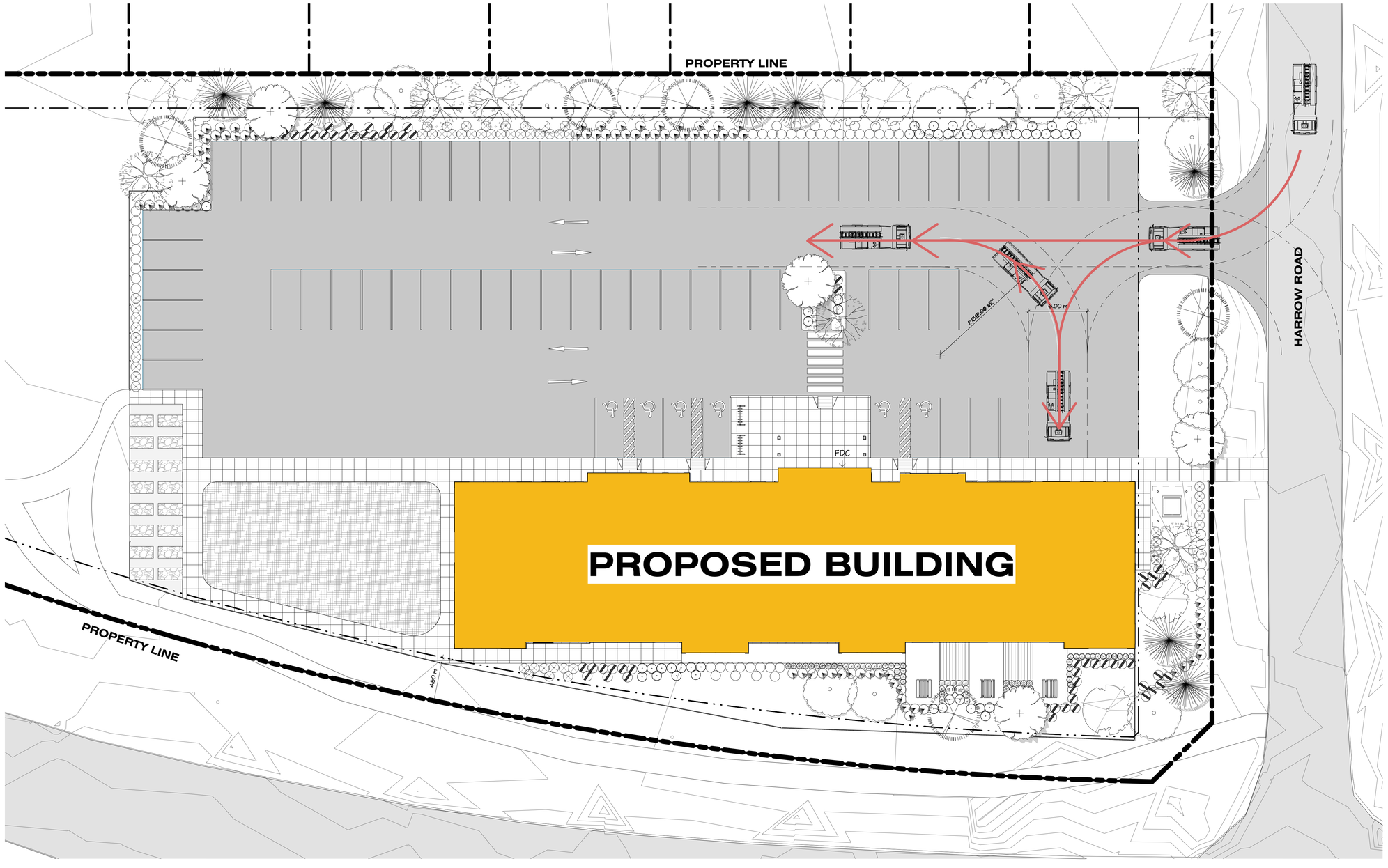
604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

WHAT WE HEARD: WILL FIRE TRUCKS BE ABLE TO ACCESS THE BUILDING?



THE FOLLOWING DEMONSTRATES THAT PARKING LOT DESIGN IS SUFFICIENT FOR FIRE TRUCK ACCESS.

FIRE TRUCK ACCESS

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE 1 : 200
JOB NO. 20123

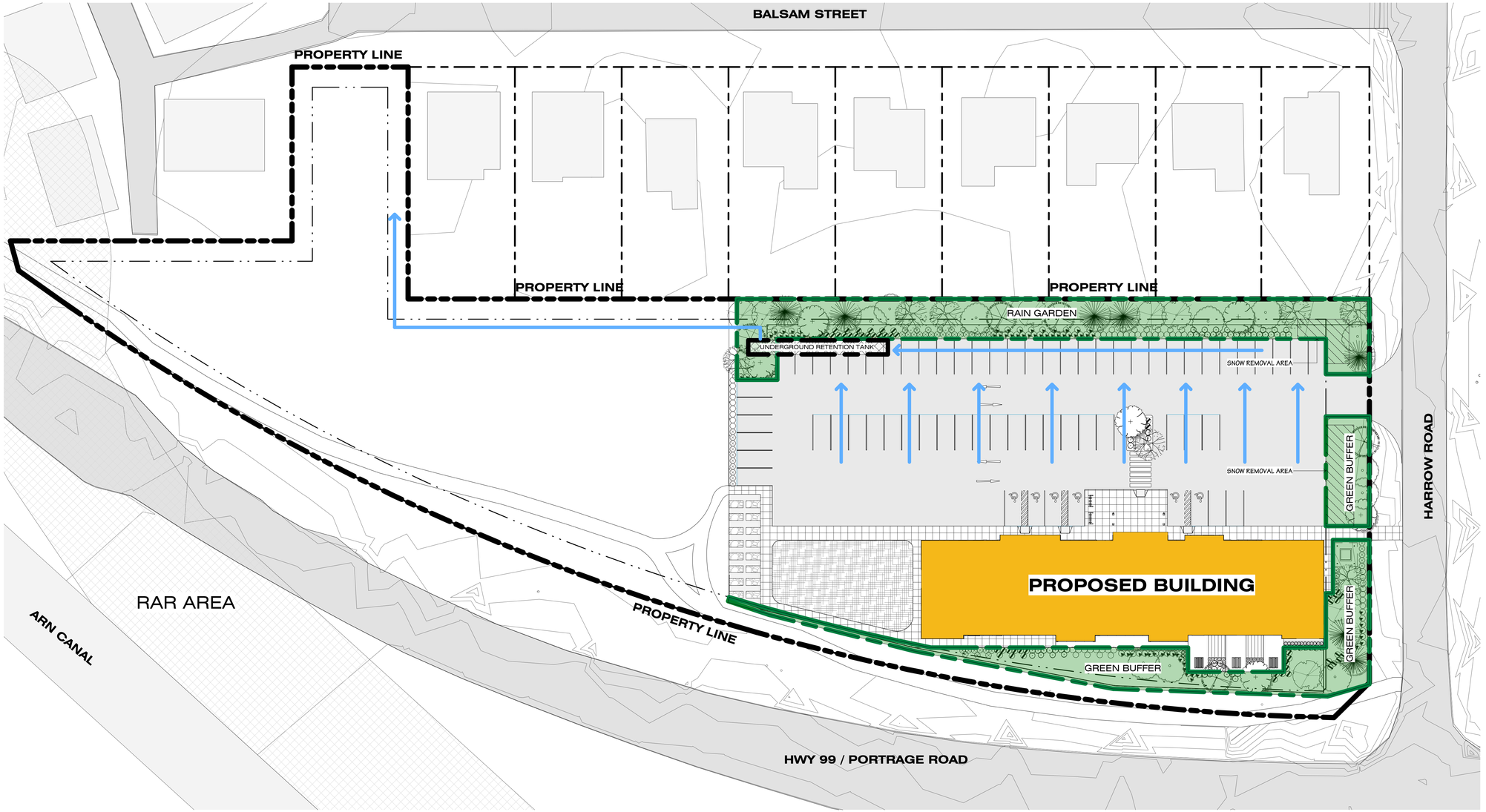
604 793 9445
soarchitects.com

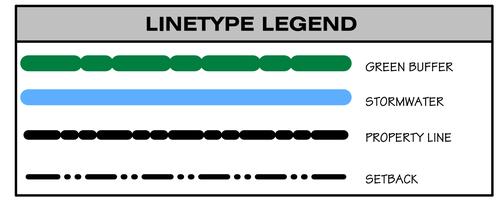
Chilliwack
9355 Young Rd
V2P 4S3

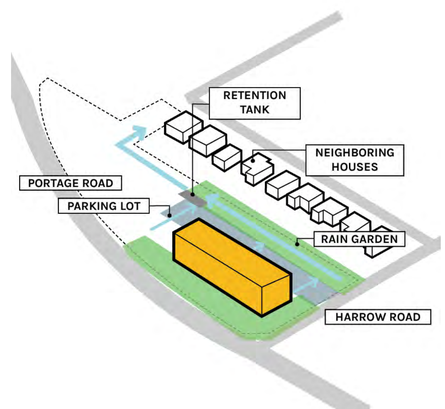
Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

WHAT WE HEARD: STORMWATER MANAGEMENT







STORMWATER MANAGEMENT

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE As indicated
JOB NO. 20123

2.5

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

SYMBOL LEGEND

GRID REFERENCE

ROOM MARKER
Room name — ROOM NAME
101 — ROOM NUMBER

SECTION MARKER
10 / A101 (SIM) — SECTION NUMBER / SHEET NUMBER

DETAIL MARKER
00 / A101 (SIM) — DETAIL NUMBER / SHEET NUMBER

EXTERIOR ELEVATION MARKER
10 / A101 (Ref) — ELEVATION NUMBER / SHEET NUMBER

INTERIOR ELEVATION MARKER
100 / A3.02 / 100 (Ref) — ELEVATION NUMBER / SHEET NUMBER

NOTE: FOR FIRE RATING, SEE A0.3 LEGEND

SYMBOL INDICATES ADDITIONAL SPRINKLERHEADS REQUIRED BY CODE ALTERNATIVE SOLUTIONS. REFER TO CODE CONSULTANT DRAWINGS.

DOOR MARKER
324-1 — ELEVATION NUMBER / SHEET NUMBER

WINDOW MARKERS
1t — ALUMINUM WINDOW
1t — STEEL WINDOW

WALL MARKERS
W18a — WALL TYPE

MISC. SYMBOLS

HB	HOSE BIB
R-FE	RECESSED FIRE EXTINGUISHER
S-FE	SEMI-RECESSED FIRE EXTINGUISHER
FD	FLOOR DRAIN
FE	WALL-MOUNTED FIRE EXTINGUISHER
HD	HAND DRYER
CG	CORNER GUARD
RWL	RAIN WATER LEADER
CB	CATCH BASIN
FD	FLOOR DRAIN

USE LEGEND

- ADMINISTRATION
- AMENITY
- CIRCULATION
- CRU SPACE
- SERVICES

NORTH

LEVEL 1
1/8" = 1'-0"

LEVEL 1 FLOOR PLAN

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

3.0

SCALE As indicated
JOB NO. 20123

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

SYMBOL LEGEND

GRID REFERENCE

ROOM MARKER
Room name — ROOM NAME
101 — ROOM NUMBER

SECTION MARKER
10 / A101 — SECTION NUMBER / SHEET NUMBER

DETAIL MARKER
00 / A101 — DETAIL NUMBER / SHEET NUMBER

EXTERIOR ELEVATION MARKER
10 / A101 — ELEVATION NUMBER / SHEET NUMBER

INTERIOR ELEVATION MARKER
A3.02 — ELEVATION NUMBER / SHEET NUMBER

NOTE: FOR FIRE RATING, SEE A0.3 LEGEND

SYMBOL INDICATES ADDITIONAL SPRINKLERHEADS REQUIRED BY CODE ALTERNATIVE SOLUTIONS. REFER TO CODE CONSULTANT DRAWINGS.

DOOR MARKER
324-1 — ELEVATION NUMBER / SHEET NUMBER

WINDOW MARKERS
ALUMINUM WINDOW
STEEL WINDOW

WALL MARKERS
WALL TYPE

MISC. SYMBOLS

HB	HOSE BIB
R-FE	RECESSED FIRE EXTINGUISHER
S-FE	SEMI-RECESSED FIRE EXTINGUISHER
FD	FLOOR DRAIN
FE	WALL-MOUNTED FIRE EXTINGUISHER
HD	HAND DRYER
CG	CORNER GUARD
RWL	RAIN WATER LEADER
CB	CATCH BASIN
FD	FLOOR DRAIN

USE LEGEND

- 1-BEDROOM
- 1-BEDROOM ACC.
- 2-BEDROOM
- 3-BEDROOM
- AMENITY
- CIRCULATION
- SERVICES

NORTH

LEVEL 2
1/8" = 1'-0"

LEVEL 2 FLOOR PLAN

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

3.1

SCALE As indicated
JOB NO. 20123

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

SYMBOL LEGEND

GRID REFERENCE

ROOM MARKER
Room name — ROOM NAME
101 — ROOM NUMBER

SECTION MARKER
10 / A101 — SECTION NUMBER / SHEET NUMBER

DETAIL MARKER
00 / A101 — DETAIL NUMBER / SHEET NUMBER

EXTERIOR ELEVATION MARKER
10 / A101 — ELEVATION NUMBER / SHEET NUMBER

INTERIOR ELEVATION MARKER
A3.02 — ELEVATION NUMBER / SHEET NUMBER

NOTE: FOR FIRE RATING, SEE A0.3 LEGEND

SYMBOL INDICATES ADDITIONAL SPRINKLERHEADS REQUIRED BY CODE ALTERNATIVE SOLUTIONS. REFER TO CODE CONSULTANT DRAWINGS.

DOOR MARKER
324-1 — ELEVATION NUMBER / SHEET NUMBER

WINDOW MARKERS
1t — ALUMINUM WINDOW
1t — STEEL WINDOW

WALL MARKERS
W18a — WALL TYPE

MISC. SYMBOLS

HB	HOSE BIB
R-FE	RECESSED FIRE EXTINGUISHER
S-FE	SEMI-RECESSED FIRE EXTINGUISHER
FD	FLOOR DRAIN
FE	WALL-MOUNTED FIRE EXTINGUISHER
HD	HAND DRYER
CG	CORNER GUARD
RWL	RAIN WATER LEADER
CB	CATCH BASIN
FD	FLOOR DRAIN

USE LEGEND

- 1-BEDROOM
- 1-BEDROOM ACC.
- 2-BEDROOM
- 3-BEDROOM
- AMENITY
- CIRCULATION
- SERVICES

NORTH

LEVEL 3
1/8" = 1'-0"

LEVEL 3-5 FLOOR PLAN

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE As indicated
JOB NO. 20123

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

EAST ELEVATION
1/8" = 1'-0"

NORTH ELEVATION
1/8" = 1'-0"

SIGNAGE
(NAME TBC)

EXTERIOR FINISH SCHEDULE

1 BRICK, MUTUAL MATERIALS, COAL CREEK
2 FIBER CEMENT PANEL SMOOTH FINISH, JAMES HARDIE, WHITE
3 FIBRE CEMENT PANEL SMOOTH FINISH, JAMES HARDIE, CHARCOAL
4 FIBER CEMENT LAP SIDING, JAMES HARDIE, DARK GRAY
5 FIBER CEMENT LAP SIDING, JAMES HARDIE, GRAY
6 FIBRE CEMENT BOARD AND BATTEN, JAMES HARDIE, WHITE
7 FIBRE CEMENT BOARD AND BATTEN, JAMES HARDIE, GRAY
8 FIBER CEMENT LAP SIDING, JAMES HARDIE CEDAR MILL FINISH, WOOD LOOK
9 GLULAM STAINED
10 ARCHITECTURAL CONCRETE, PAINTED

EXTERIOR ELEVATIONS

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

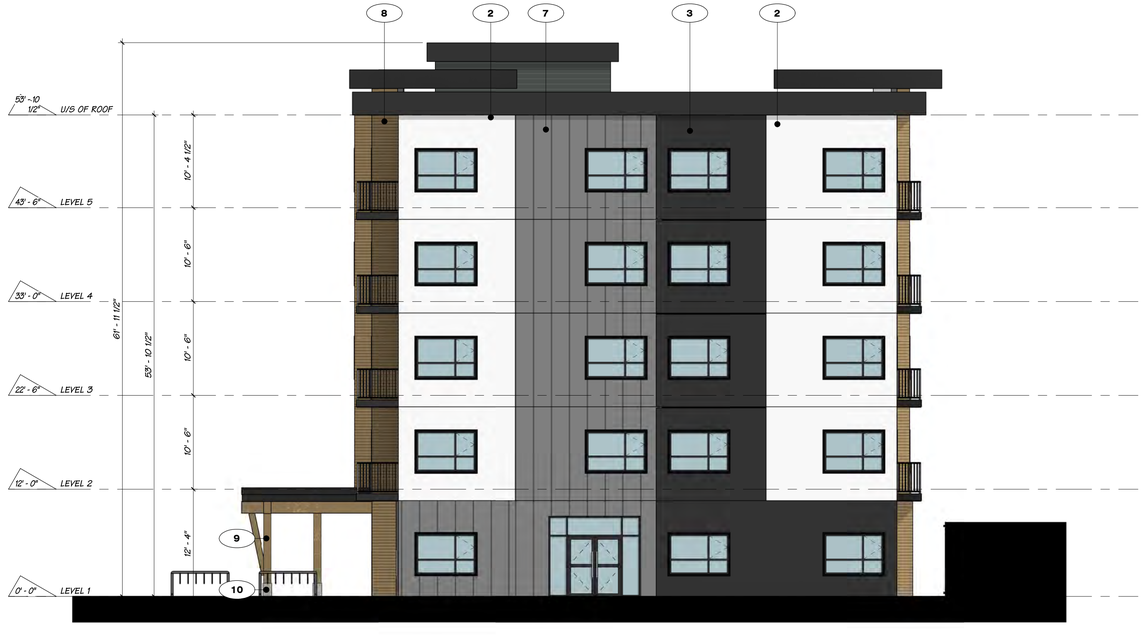
SCALE 1/8" = 1'-0"
JOB NO. 20123

604 793 9445
soarchitects.com

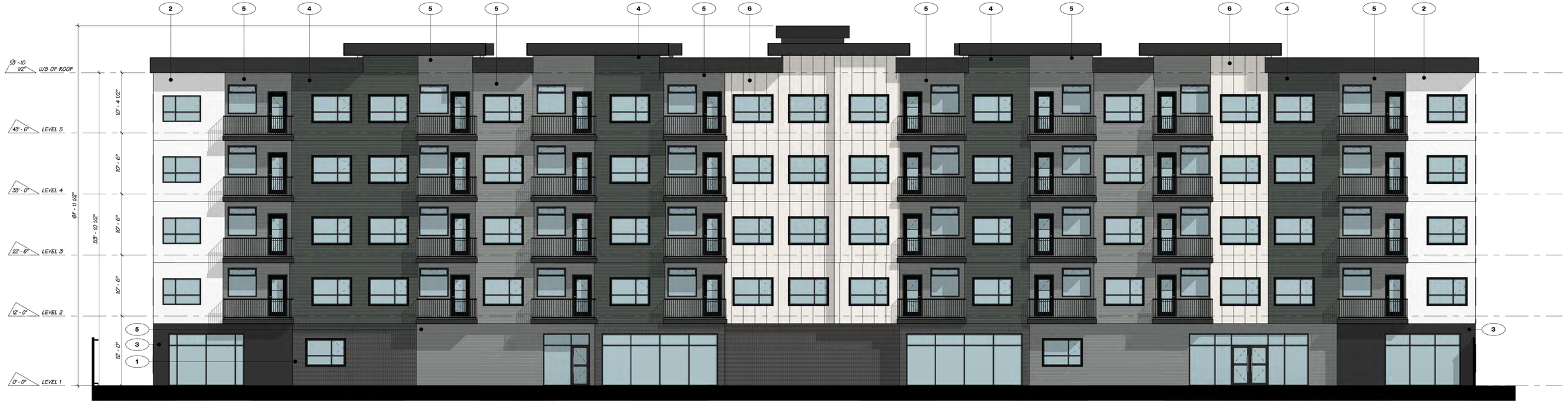
Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects



WEST ELEVATION
1/8" = 1'-0"



SOUTH ELEVATION
1/8" = 1'-0"

EXTERIOR FINISH SCHEDULE

1 BRICK, MUTUAL MATERIALS, COAL CREEK
2 FIBER CEMENT PANEL SMOOTH FINISH, JAMES HARDIE, WHITE
3 FIBRE CEMENT PANEL SMOOTH FINISH, JAMES HARDIE, CHARCOAL
4 FIBER CEMENT LAP SIDING, JAMES HARDIE, DARK GRAY
5 FIBER CEMENT LAP SIDING, JAMES HARDIE, GRAY
6 FIBRE CEMENT BOARD AND BATTEN, JAMES HARDIE, WHITE
7 FIBRE CEMENT BOARD AND BATTEN, JAMES HARDIE, GRAY
8 FIBER CEMENT LAP SIDING, JAMES HARDIE CEDAR MILL FINISH, WOOD LOOK
9 GLULAM STAINED
10 ARCHITECTURAL CONCRETE, PAINTED

EXTERIOR ELEVATIONS

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE 1/8" = 1'-0"
JOB NO. 20123

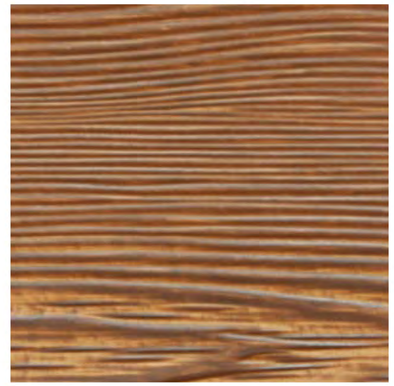
604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

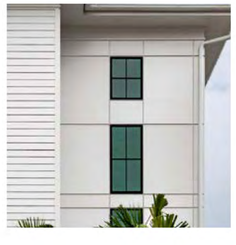
1 BRICK | MUTUAL MATERIALS | COAL CREEK



2 LAP SIDING | JAMES HARDIE WOODTONE | SUMMER WHEAT

ARCTIC WHITE | SMOOTH FINISH

IRON GREY | SMOOTH FINISH



3 FIBER CEMENT PANEL SMOOTH FINISH | JAMES HARDIE | ARCTIC WHITE, IRON GREY

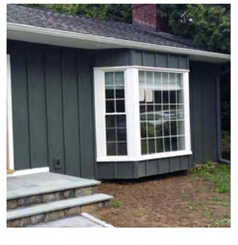
PEARL GREY | SELECT CEDAR MILL

IRON GREY | SELECT CEDAR MILL

4 LAP SIDING | JAMES HARDIE | PEARL GREY, IRON GREY

IRON GREY | SMOOTH FINISH

ARCTIC WHITE | SMOOTH FINISH



5 BOARD AND BATTEN | JAMES HARDIE | ARCTIC WHITE, IRON GREY

EXTERIOR MATERIAL

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE

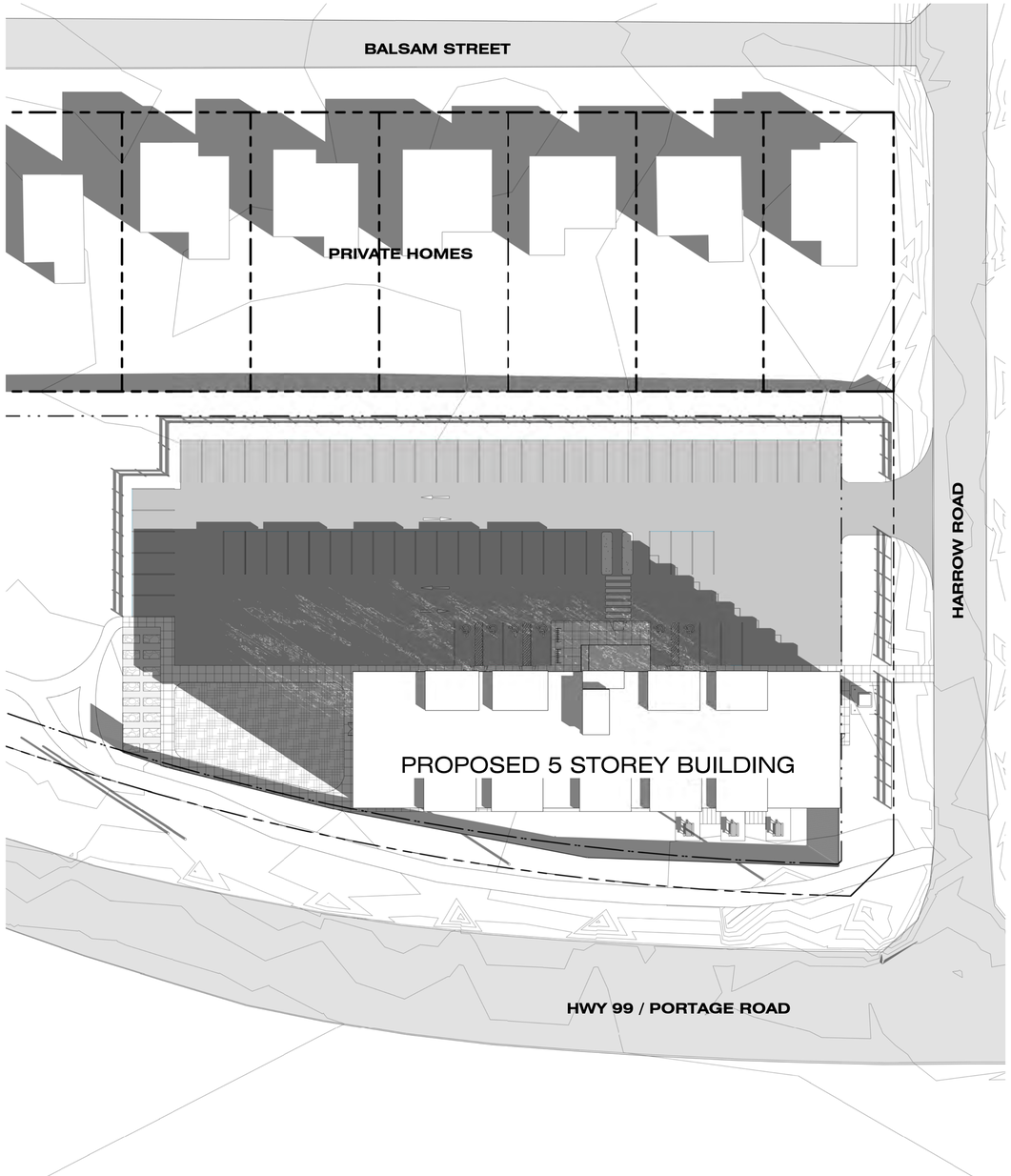
JOB NO. 20123

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

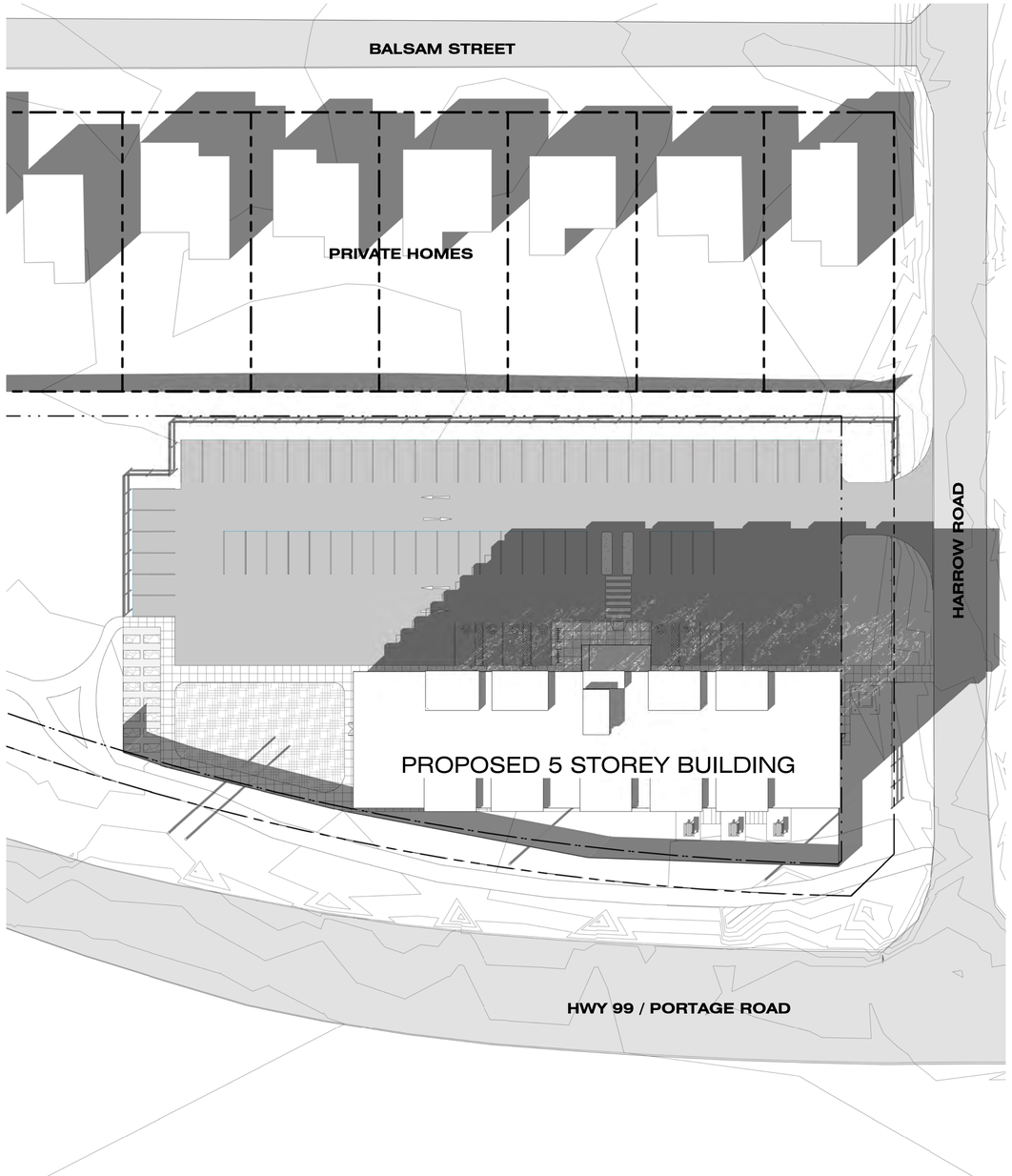
station one architects



NORTH

SHADOW STUDY, 9AM MARCH 21 / SEPTEMBER 21

1/32" = 1'-0"



NORTH

SHADOW STUDY, 3PM MARCH 21 / SEPTEMBER 21

1/32" = 1'-0"

SHADOW STUDY

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

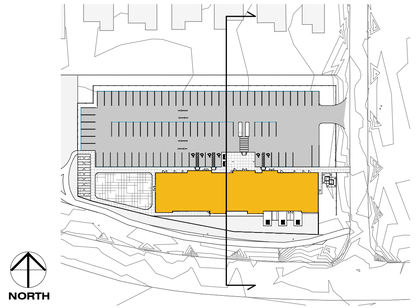
SCALE 1/32" = 1'-0"
JOB NO. 20123

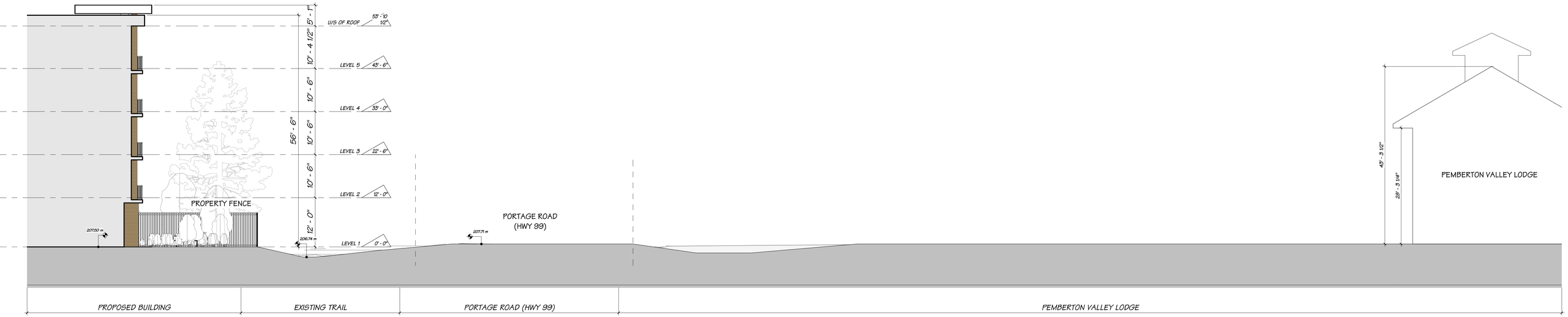
604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects





SITE SECTION 01
3/32" = 1'-0"

SITE SECTION

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

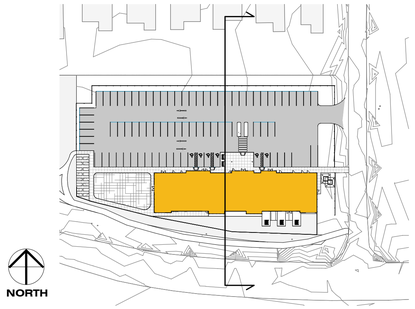
SCALE As indicated
JOB NO. 20123

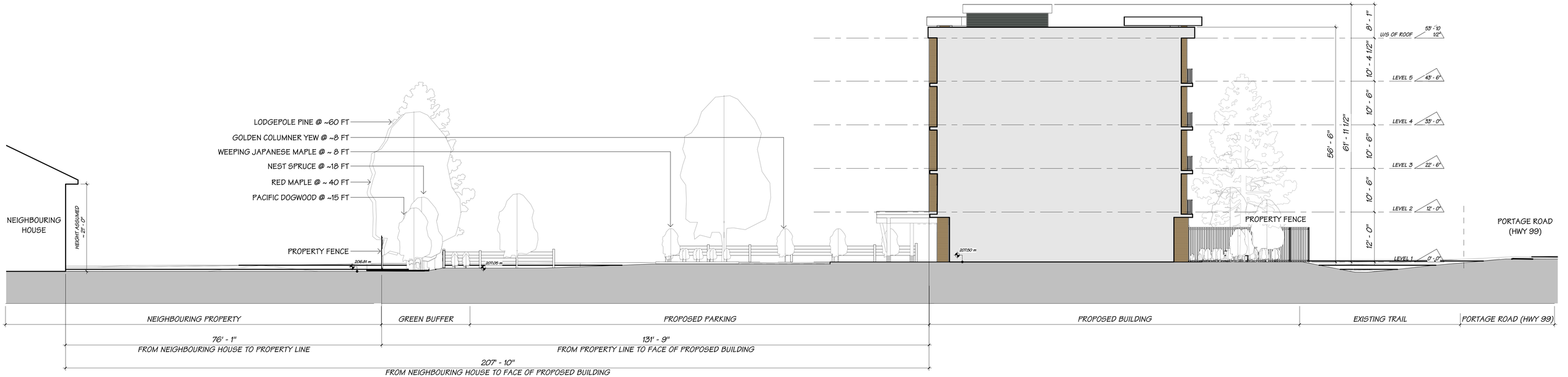
604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects





SITE SECTION 02
3/32" = 1'-0"

SITE SECTION

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE As indicated
JOB NO. 20123

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

EXTERIOR ELEVATION LOOKING FROM PROPERTY TO THE NORTH

VIEW FROM HARROW ROAD

VIEW FROM PORTAGE ROAD

VIEW OF FRONT ENTRANCE

RENDERINGS

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

SCALE

JOB NO. 20123

604 793 9445
soarchitects.com

Chilliwack
9355 Young Rd
V2P 4S3

Abbotsford
203-2190 W. Railway St
V2S 2E2

station one architects

TREE MANAGEMENT PLAN

LOT 2 HARROW RD.
PEMBERTON, BC

CPA DEVELOPMENT CONSULTANTS

Submitted by:

Andrew Hooper
ISA Certified Arborist PN# 6307A
TRAQ# 372
Silverback Treeworks Ltd.
PO Box 3028
Garibaldi Highlands,
Squamish, B.C. V0N 1T0
604-312-7399
info@silverbacktreeworks.com

SILVERBACK
TREEWORKS LTD

Version 2.0

March 19, 2022

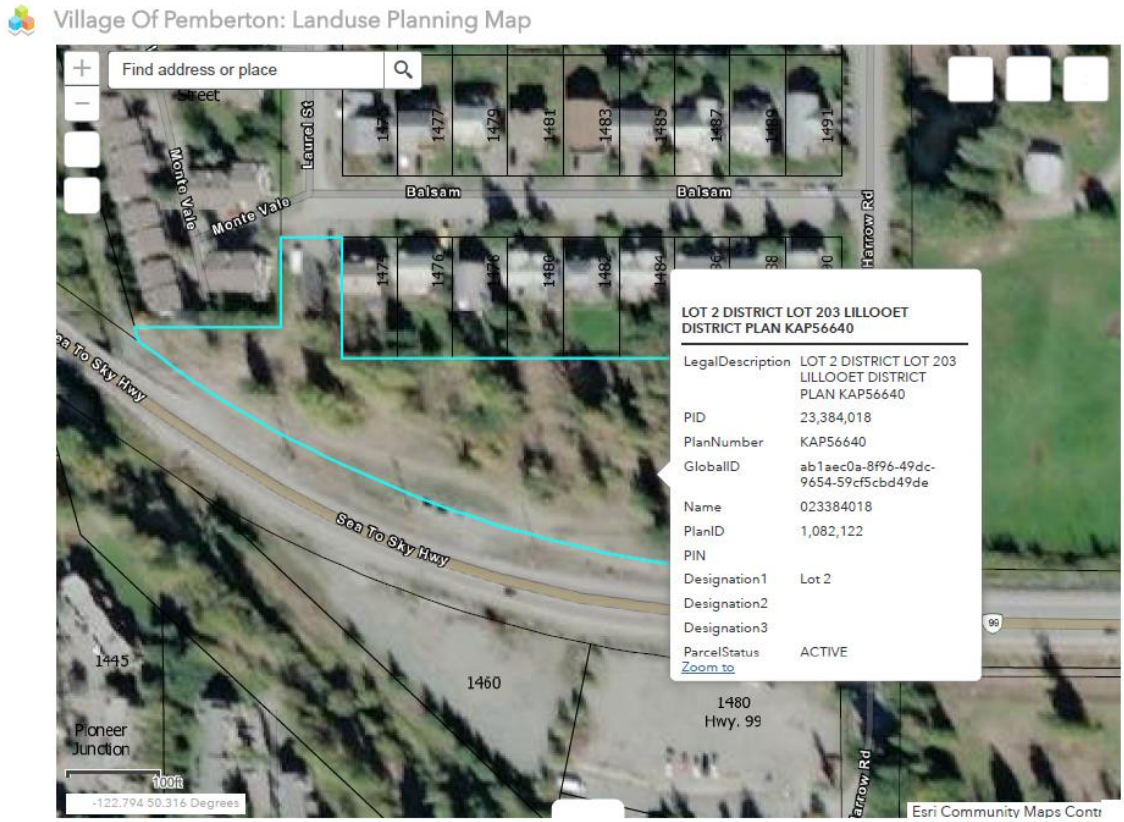
Table of Contents

Table of Figures

1. Property Location

One lot comprises the property Lot 2, Harrow Rd., Pemberton, B.C.as presented in Figure 1.

Figure 1. An aerial image of the site.



2. Scope and Purpose

This report is provided to you as a means of addressing the Village of Pemberton requirements for tree inventory and management plan in the permit application process associated with the proposed development at Lot 2 Harrow Rd. The purpose of this report is to provide a tree inventory for all trees on the property and in close proximity to the proposed development (Table 1). Tree management recommendations for the development will be described. This information is intended to assist permitting officers, landscape architects, engineers and project managers during the planning and implementation of this project.

The site survey is described in Figure 2 that includes identified trees highlighted in green. The proposed development will have 63 housing units for community members and ground floor commercial space and community services. Associated parking and playground area are also proposed (Figure 3).

Figure 2. Site survey at Lot 2 Harrow Rd., Pemberton B.C.

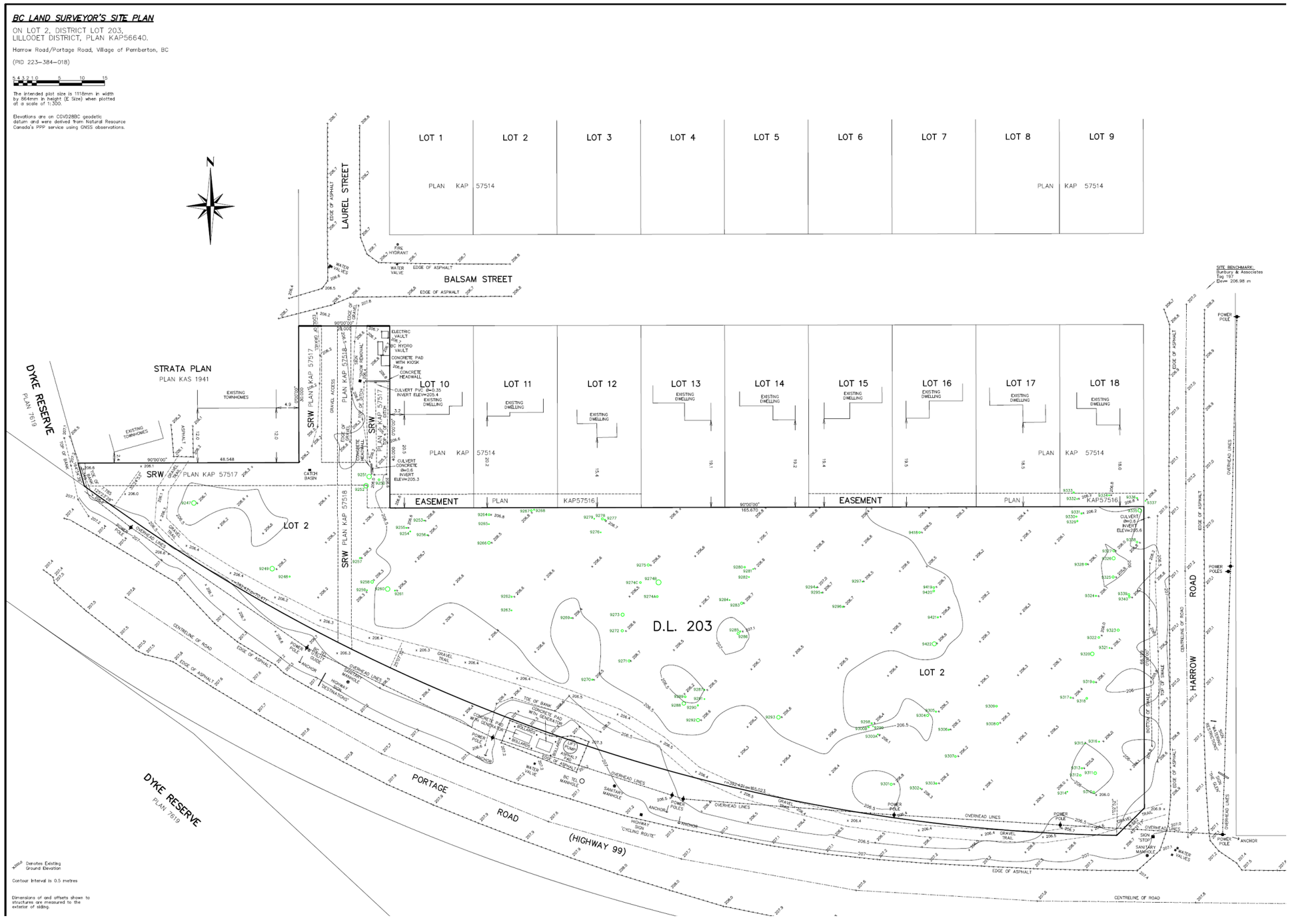
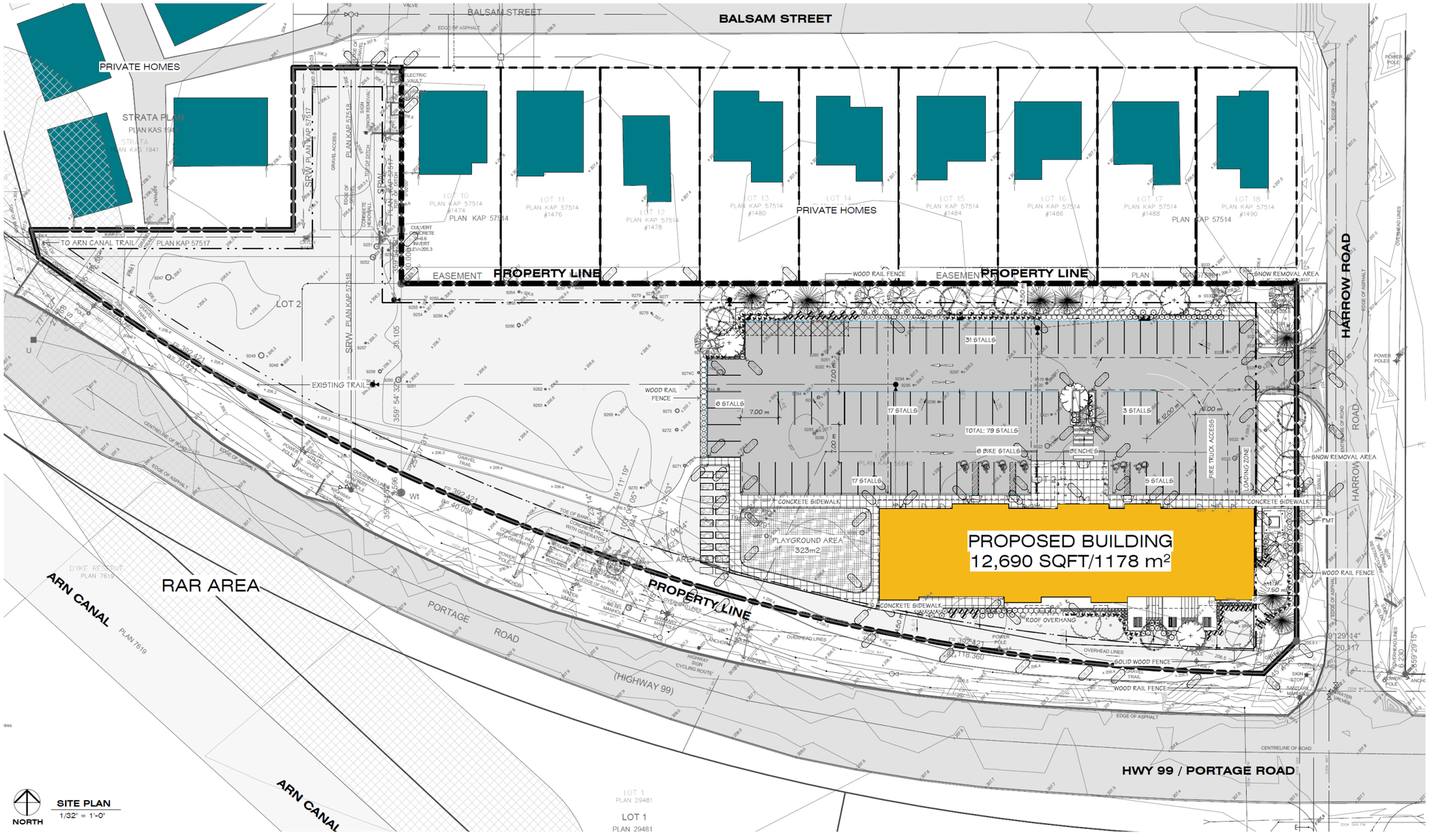


Figure 3. Proposed development at Lot 2 Harrow Rd., Pemberton B.C.



3. Site Assessment and Tree Inventory

A site visit was completed on February 28, 2022. Highway 99 borders the property, to the south. Harrow Road borders the west and private residential properties border the north of the subject property. The lot was undeveloped at time of survey.

The property is generally level and sparsely forested with juvenile mixed species forest composed of 40% Black cottonwood (*Populus trichocarpa*), 35% Pine (*Pinus spp*.) and 25% Douglas fir (*Pseudotsuga menziesii*). At time of site visit, snow was present on the ground, such that observations of tree bases and surface roots was not always possible.

In accordance with the Village of Pemberton Site Alteration Bylaw No. 822, 2017, trees with 10cm diameter at breast height (DBH) measured 1.4m above ground, were identified. In total, 102 trees were identified during the survey. Four trees were identified on neighbouring northwestern property, 1490 Balsam Street. One street tree was identified between Harrow Road and the subject property. Ninety-seven trees were located on the subject property, Lot 2 Harrow Road. Table 1 provides a description of all identified trees.

A tree protection zone (TPZ) is an arborist defined area around each tree intended to protect roots and soil within the critical root zone during development in order to ensure the health and stability for long term retention. The actual TPZ may be defined using many factors including the health and age of a tree, species and any existing factors that may have restricted root and / or canopy development.

Condition classifications included in Table 1 adhere to the following overall health and structure rating:

- Good - Tree is in good condition with no significant structural weakness or health concerns, considering the location, site conditions and species.
- Fair - Tree has noted health and / or minor structural weaknesses. Management strategies such as pruning, and modifications are reasonable to improve the health and / or condition of the tree.
- Poor - Tree is in serious decline and has multiple very definable health and / or structural weaknesses.
- Dead / Dying - Tree was found to be dead and/or dying and/or has sever defects

Table 1. Tree inventory and description of all trees on and in close proximity to the development.

Tree Number	Species	DBH (cm)	Height (m)	Condition	Comments	Treatment
9247	Cottonwood *(Populus trichocarpa)*	100	12	poor	extensive stem damage/rot	Remove due to poor condition
9248	Cottonwood *(Populus trichocarpa)*	30	11	poor	numerous cankers, extensive restoration	Remove due to poor condition
9249	Douglas fir *(Pseudotsuga menziesii) x2*	100	13	fair	numerous cankers, extensive restoration	Retain
9250	Cottonwood *(Populus trichocarpa)*	40	12	fair	numerous cankers, extensive restoration	Retain
9251	Cottonwood *(Populus trichocarpa) x3*	100	14	fair	numerous cankers, extensive restoration	Retain
9252	Cottonwood *(Populus trichocarpa) x3*	100	12	fair	numerous cankers, extensive restoration	Retain
9253	Cottonwood *(Populus trichocarpa)*	20	10	fair	some cankers on lower stem	Retain
9254	Cottonwood *(Populus trichocarpa)*	25	12	fair	some cankers on lower stem	Retain
9255	Cottonwood *(Populus trichocarpa)*	25	12	fair	some cankers on lower stem	Retain
9256	Cottonwood *(Populus trichocarpa)*	20	10	fair	some cankers on lower stem	Retain
9257	Cottonwood *(Populus trichocarpa)*	30	13	fair	some cankers on lower stem	Retain
9258	Cottonwood *(Populus trichocarpa) x2*	60	13	fair	some cankers on lower stem	Retain
9259	Cottonwood *(Populus trichocarpa)*	20	>	fair	some cankers on lower stem	Retain
9260	Cottonwood *(Populus trichocarpa)*	100	21	fair	no cankers present	Retain
9261	Pine *(Pinus spp)*	25	8	fair		Retain
9262	Cottonwood *(Populus trichocarpa)*	30	12	fair	some cankers on lower stem	Retain
9263	Cottonwood *(Populus trichocarpa)*	20	>	fair	some cankers on lower stem	Retain
9264	Douglas fir (Pseudotsuga menziesii) x2	40	15	fair	some cankers on lower stem	Retain
9265	Cottonwood *(Populus trichocarpa)*	20	14	fair	some cankers on lower stem	Retain
9266	Cottonwood *(Populus trichocarpa) x4*	60	14	fair	some cankers on lower stem	Retain
9267	Pine *(Pinus spp) x2*	40	8	fair	some cankers on lower stem	Retain
9268	Pine *(Pinus spp)*	25	8	fair	some cankers on lower stem	Retain
9269	Cottonwood *(Populus trichocarpa)*	20	7	fair	some cankers on lower stem	Retain
9270	Cottonwood *(Populus trichocarpa) x3*	30	6	fair	some cankers on lower stem	Retain
9271	Cottonwood *(Populus trichocarpa)*	50	11	poor	large cankers and stem swelling	Within development footprint, recommended for removal
9272	Cottonwood *(Populus trichocarpa)*	50	9	poor	canker and stem swelling and dead top	Remove due to poor condition
9273	Douglas fir (Pseudotsuga menziesii)	70	20	fair		Retain

Tree Number	Species	DBH (cm)	Height (m)	Condition	Comments	Treatment
9274A	Douglas fir (Pseudotsuga menziesii)	40	16	fair		Within development footprint, recommended for removal
9274B	Cottonwood *(Populus trichocarpa)*	110	17	poor	stem damage and badly attached top	Within development footprint, recommended for removal
9274C	Cottonwood *(Populus trichocarpa)*	40	16	poor	large wounds/swelling	Within development footprint, recommended for removal
9275	Cottonwood *(Populus trichocarpa)*	50	16	fair	some cankers/swelling	Within development footprint, recommended for removal
9276	Cottonwood *(Populus trichocarpa)*	20	9	fair	some cankers/swelling	Retain
9277	Cottonwood *(Populus trichocarpa)*	30	16	fair	some cankers/swelling	Retain
9278	Cottonwood *(Populus trichocarpa)*	45	17	fair	some cankers/swelling	Retain
9279	Douglas fir (Pseudotsuga menziesii)	20	5	fair	some cankers present	Retain
9280	Cottonwood *(Populus trichocarpa)*	35	12	fair	some cankers present	Within development footprint, recommended for removal
9281	Cottonwood *(Populus trichocarpa)*	20	10	fair	some cankers present	Within development footprint, recommended for removal
9282	Pine *(Pinus spp)*	20	9	fair	some cankers present	Within development footprint, recommended for removal
9283	Cottonwood *(Populus trichocarpa)*	50	10	poor	2 large tops badly attached	Within development footprint, recommended for removal
9284	Cottonwood *(Populus trichocarpa)*	20	8	fair	some cankers present	Within development footprint, recommended for removal
9285	Cottonwood *(Populus trichocarpa)*	30	9	poor	dead, significant rot	Within development footprint, recommended for removal
9286	Cottonwood *(Populus trichocarpa)*	50	10	poor	numerous large dead limbs, stem damage, badly attached	Within development footprint, recommended for removal
9287	Cottonwood *(Populus trichocarpa)*	30	9	poor	extensive swelling - poorly attached top	Within development footprint,

Tree Number	Species	DBH (cm)	Height (m)	Condition	Comments	Treatment
						recommended for removal
9288	Cottonwood *(Populus trichocarpa) x2*	80	8	poor	extensive swelling - poorly attached top	Within development footprint, recommended for removal
9289	Cottonwood *(Populus trichocarpa)*	40	5	poor	stem damage, swelling and rot	Within development footprint, recommended for removal
9290	Cottonwood *(Populus trichocarpa)*	30	8	poor	stem damage, swelling and rot	Within development footprint, recommended for removal
9291	Pine *(Pinus spp)*	20	6	fair		Within development footprint, recommended for removal
9292	Cottonwood *(Populus trichocarpa) x2*	70	12	fair	some cankers/swelling present	Within development footprint, recommended for removal
9293	Cottonwood *(Populus trichocarpa) x2*	80	12	fair	some cankers/swelling present	Within development footprint, recommended for removal
9294	Pine *(Pinus spp)*	20	9	fair		Within development footprint, recommended for removal
9295	Pine *(Pinus spp)*	20	8	fair		Within development footprint, recommended for removal
9296	Pine *(Pinus spp)*	20	8	fair		Within development footprint, recommended for removal
9297	Cottonwood *(Populus trichocarpa)*	30	10	fair		Within development footprint, recommended for removal
9298	Pine *(Pinus spp)*	20	11	fair		Within development footprint, recommended for removal
9299	Pine *(Pinus spp)*	20	11	fair		Within development footprint, recommended for removal
9300A	Pine *(Pinus spp)*	20	11	fair		Within development footprint, recommended

Tree Number	Species	DBH (cm)	Height (m)	Condition	Comments	Treatment
						for removal
9300B	Pine (Pinus spp)	30	10	fair		Within development footprint, recommended for removal
9301	Douglas fir (Pseudotsuga menziesii)	50	13	fair		Within development footprint, recommended for removal
9302	Douglas fir (Pseudotsuga menziesii)	20	9	fair		Within development footprint, recommended for removal
9303	Pine *(Pinus spp)*	35	9	fair		Within development footprint, recommended for removal
9304	Cottonwood *(Populus trichocarpa)*	50	14	fair		Within development footprint, recommended for removal
9305	Pine (Pinus spp)	30	13	fair		Within development footprint, recommended for removal
9306	Douglas fir (Pseudotsuga menziesii)	30	12	fair		Within development footprint, recommended for removal
9307	Pine *(Pinus spp)*	40	9	fair		Within development footprint, recommended for removal
9308	Cottonwood *(Populus trichocarpa)*	50	13	poor	extensive stem damage and rot	Within development footprint, recommended for removal
9309	Douglas fir (Pseudotsuga menziesii)	40	15	fair		Within development footprint, recommended for removal
9310	Pine *(Pinus spp)*	40	10	fair		Within development footprint, recommended for removal
9311	Pine *(Pinus spp)*	60	12	fair		Within development footprint, recommended for removal

Tree Number	Species	DBH (cm)	Height (m)	Condition	Comments	Treatment
9312	Cottonwood *(Populus trichocarpa)*	40	16	fair	some swelling and cankers	Within development footprint, recommended for removal
9313	Cottonwood *(Populus trichocarpa)*	30	15	fair	some swelling and cankers	Within development footprint, recommended for removal
9314A	Douglas fir (Pseudotsuga menziesii)	20	6	fair		Within development footprint, recommended for removal
9315	Pine *(Pinus spp)*	20	9	fair		Within development footprint, recommended for removal
9316	Pine *(Pinus spp)*	25	9	fair		Within development footprint, recommended for removal
9317	Douglas fir (Pseudotsuga menziesii)	30	12	fair		Within development footprint, recommended for removal
9318	Cottonwood *(Populus trichocarpa)*	40	12	poor	swelling/stem damage/badly attached tops	Remove due to poor condition
9319	Cottonwood *(Populus trichocarpa)*	40	10	poor	swelling/stem damage/badly attached tops	Within development footprint, recommended for removal
9320	Cottonwood *(Populus trichocarpa) x2*	80	10	poor	dead	Within development footprint, recommended for removal
9321	Pine *(Pinus spp)*	20	10	fair		Within development footprint, recommended for removal
9322	Pine *(Pinus spp)*	40	15	fair		Within development footprint, recommended for removal
9323	Cottonwood *(Populus trichocarpa)*	50	14	fair	some swelling/rot/poorly attached tops	Within development footprint, recommended for removal
9324	Pine *(Pinus spp)*	30	13	fair		Within development footprint, recommended for removal
9325	Cottonwood *(Populus trichocarpa)*	50	16	poor	swelling/cankers dead tops and large dead limbs	Remove due to poor condition

Tree Number	Species	DBH (cm)	Height (m)	Condition	Comments	Treatment
9326	Cottonwood *(Populus trichocarpa)*	70	14	poor	swelling/cankers dead tops and large dead limbs	Within development footprint, recommended for removal
9327	Cottonwood *(Populus trichocarpa)*	50	16	fair	swelling/cankers dead tops and large dead limbs	Within development footprint, recommended for removal
9328	Pine *(Pinus spp)*	40	13	fair		Within development footprint, recommended for removal
9329	Cottonwood *(Populus trichocarpa)*	30	14	fair	some cankers/swelling	Within development footprint, recommended for removal
9330	Cottonwood *(Populus trichocarpa)*	30	>	poor	dead	Within development footprint, recommended for removal
9331	Pine *(Pinus spp)*	30	12	fair		Within development footprint, recommended for removal
9332	Pine *(Pinus spp)*	20	10	poor	neighbour tree, 1490 Balsam Street, dead	Retain
9333	Pine *(Pinus spp)*	30	11	fair	neighbour tree, 1490 Balsam Street,	Retain
9334	Cottonwood *(Populus trichocarpa)*	25	10	fair	neighbour tree1490 Balsam Street,	Retain
9335	Cottonwood *(Populus trichocarpa)*	80	16	poor	significant dead tops/poorly attached and stem damage	Remove
9336	Cottonwood *(Populus trichocarpa)*	25	11	fair	neighbour tree, 1490 Balsam Street, some cankers on lower stem,	Retain
9337	Cottonwood *(Populus trichocarpa)*	20	10	fair	street tree	Retain
9338	Cottonwood *(Populus trichocarpa)*	40	12	poor	swelling/cankers/poorly attached top	Remove due to poor condition
9339	Cottonwood *(Populus trichocarpa)*	45	14	poor		Within development footprint, recommended for removal
9340	Cottonwood *(Populus trichocarpa)*	40	>	poor	dead, numerous fruiting bodies	Within development footprint, recommended for removal
9418	Pine *(Pinus spp)*	40		fair		Within development footprint, recommended for removal
9419	Pine *(Pinus spp)*	40		fair		Within development footprint, recommended for removal

Tree Number	Species	DBH (cm)	Height (m)	Condition	Comments	Treatment
9420	Pine *(Pinus spp)*	40		fair		Within development footprint, recommended for removal
9421	Pine *(Pinus spp)*	30		fair		Within development footprint, recommended for removal
9422	Pine *(Pinus spp)*	90		fair		Within development footprint, recommended for removal

4. Tree Management Plan

4.1. Street Trees

The survey (Figure 2) identified, one street tree, a Cottonwood (Tag ID 9337) present within the vicinity of the project (Table 1). The tree is in fair condition and is located in the northwest corner between Harrow Road and the neighbouring northwestern property (Figure 4). The tree is on municipal land and must not be harmed during construction.

Arborist recommendations: Retain with the following management practices:

- The TPZ must be well marked and have a tree protection barrier placed 1.2m from the base of the tree to the south, east and north. Orange plastic fencing is recommended as the barrier for its high visibility and size. No material storage or construction equipment storage should occur within the TPZ of the tree. The barrier should be at least 1.4m in height and re-enforced to last throughout the construction time frame.

4.2. Neighbour Trees

The survey (Figure 2) identified four trees located on the neighbouring northwestern property, 1490 Balsam Street (Table 1). The trees are identified as 9333, 9332, 9334, and 9336 (Figure 4). All trees with the exception of 9332 are in fair condition. The trees are adjacent to the development where the proposed carpark is to be built.

Arborist recommendations: Retain with the following management practices:

- Restrict both foot and mechanized traffic over the TPZ of trees. TPZ sizes are contained in Table 1 and Figure 4. The property line fence is sufficient to act as a barrier for the development and to avoid impacting the trees. If a fence is not present then a barrier must be constructed along the property line. Orange plastic fencing is recommended as the barrier for its high visibility and size. The barrier should be at least 1.4m in height and re-enforced to last throughout the construction time frame.

4.3. Property Trees

The survey identified a total of 97 property trees (Figure 2) on the project site. Of those, 68 trees are recommended for removal because they are within the development footprint. The remainder are outside of the development footprint. Of the remaining trees, 26 trees are recommended for retention because they are in fair condition and 3 trees are in poor condition and subsequently recommended for removal. A number of Cottonwood trees in poor condition were identified to have suffered borer infestation, possibly Cottonwood Borer (*Plectrodera scalator*). The majority of these trees were within the development footprint and are requested for removal.

Arborist recommendations: Subject to receiving permission from the Village of Pemberton, remove 68 trees because they are within the development footprint as depicted in Figure 4. Subject to receiving permission from the Village of Pemberton, remove a further 3 poorly rated trees due to being assessed in poor condition (Figure 4). A summary is provided in Table 2.

Table 2. Property tree management

Total trees on property over 20cm Dbh	Trees proposed to be removed due to being within development footprint.	Trees proposed to be removed due to being in poor condition	Trees to be retained
97	68	3	26

The following mitigation measures are to be incorporated for construction.

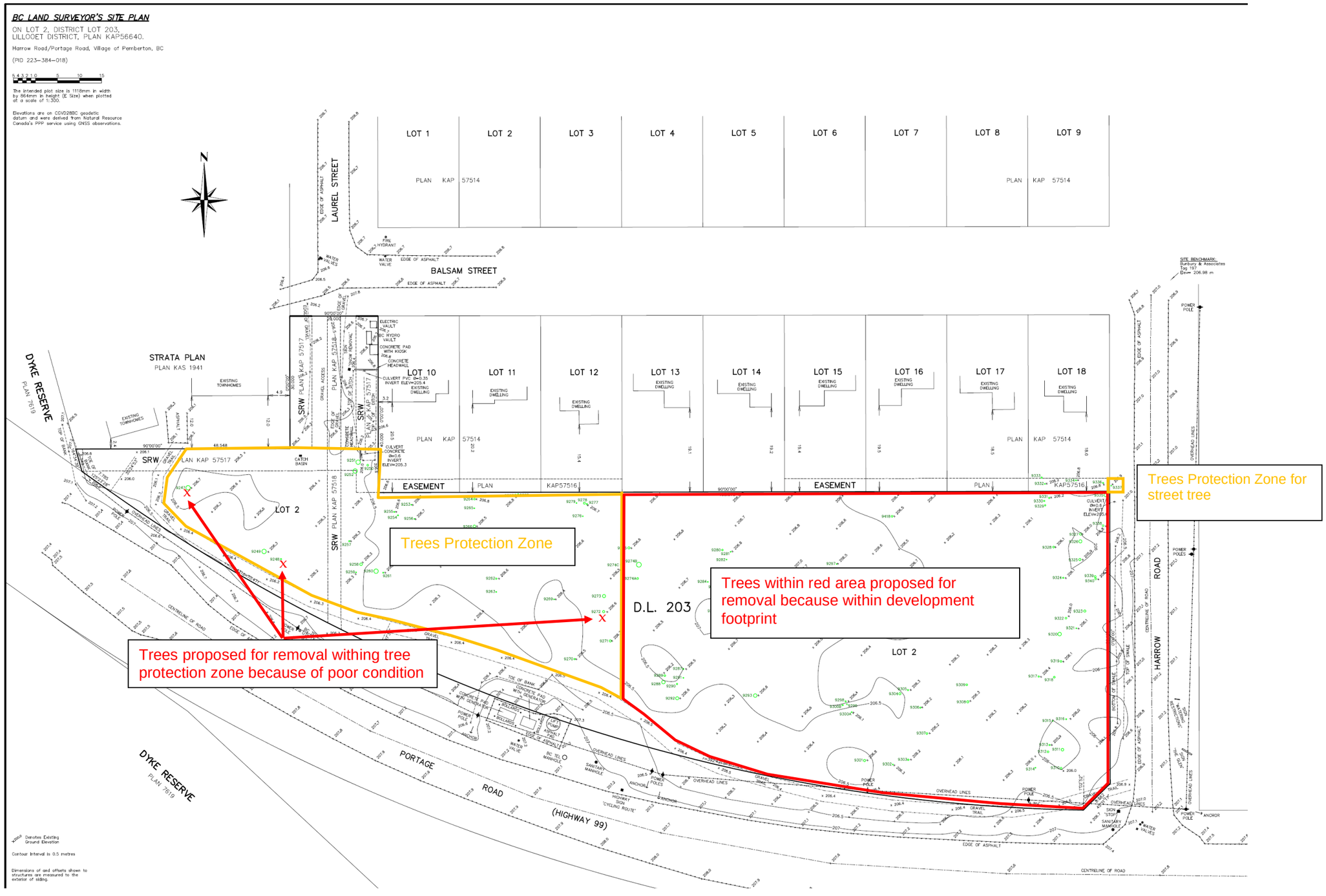
- Prior to construction, protect retained trees in the western portion of the subject property by establishing a TPZ that borders the proposed wood fence along the western carpark and urban agriculture boxes in a north to south direction as depicted in Figure 4. Restrict both foot and mechanized traffic over the TPZs of the trees by using protective fencing around the area. The TPZ must be well marked and be sufficient enough to deter all foot traffic during the entire duration of the development project. Orange plastic fencing is recommended as the barrier for its high visibility and size. No material storage or construction equipment storage should occur within the TPZ of the trees. The barrier should be at least 1.4m in height and re-enforced to last throughout the construction time frame.

- Any proposed work within the TPZ for construction of the connector trail located within the western portion of the subject property, is limited to hand excavation that is no deeper than 30cm in depth from the original ground elevation. If during hand excavation critical roots greater than 2.5cm in diameter are discovered, then the supervising arborist will direct work to be halted until appropriate mitigation is enacted.

- Where the connector trail or other landscape hardscape features are proposed through the TPZ of any retained trees identified in this section, then action should be taken to disperse the load and protect the roots where incursion occurs. Minimize soil compaction and mechanical root damage by avoiding excavation for the proposed path and use permeable or semi permeable surfacing. These should be developed in consultation with a certified arborist.

- Retained trees that require pruning for development should be pruned by a certified arborist in accordance with Best Management Practices ANSI A300.

Figure 4. Tree protection zone(s) and trees recommended for removal



5. Testing and Analysis:

The assessment completed on the trees defined within this report, consisted of a visual and physical inspection from the ground and was based upon the principals of Visual Tree Assessments. No invasive tests, such as using a resistograph or increment borer, where used during the testing for this report.

6. Assumptions and Limiting Conditions:

- The information contained in this report covers only those items that were examined and reflect the condition of these items at the time of inspection. The inspection is limited to visual examination of accessible components without dissection, excavation or probing. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees or property in question may not arise in the future.

- The opinions in this Report are given based upon observations made using generally accepted professional judgment, however, because trees and plants are living organisms and subject to change, damage and disease, the results, observations, recommendations, and analysis as set out in this Report are valid only as at the date any such testing, observations and analysis took place. No guarantee, warranty, representation or opinion is offered or made by Silverback Treeworks Ltd. as to the length of the validity of the results, observations, recommendations and analysis contained within this Report.

- Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the appraiser/company can neither guarantee nor be responsible for the accuracy of information provided by others.

- All tree work is to be completed under the supervision of an ISA Certified Arborist and in compliance with ISA, BC Hydro and WCB standards.

- Alteration of any part of this report invalidates the entire report.

- Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.

- Silverback Treeworks Ltd shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

- Silverback Treeworks Ltd, its officers, employees and agents make no warranty, express or implied representation or otherwise, in respect of this report or its contents.

- Silverback Treeworks Ltd, its officers, employees and agents are exempted, excluded and absolved from all liability for damage for injury, howsoever caused, to any person in connection with or arising out of the use by that person for any purpose of this report or its contents.

- Silverback Treeworks Ltd accepts no responsibility of liability for any loss, damage, expense, fine, penalty or other harm that any person may sustain as a result of the information in, or anything done or omitted pursuant to, this document. Owners are solely responsible for assessing, managing and protecting themselves and their properties from wildfire hazards. For more information visit http://www.firesmartcanada.ca

7. CLOSURE

If there are any questions regarding any of the recommendations provided within this report, please feel free to contact me at any time.

Sincerely: [redacted] March 19, 2022

Andrew Hooper — Date
Project Arborist
ISA Certification Number PN# 6307A

Sincerely: [redacted] March 19, 2022

Marek Holin, RPBio — Date
Consulting Arborist
ISA Certification Number PN# 9070A

Appendix 1 Digital Photo Record






Box 100 | 7400 Prospect Street
Pemberton BC V0N 2L0
P: 604.894.6135 | F: 604.894.6136
Email: admin@pemberton.ca
Website: www.pemberton.ca

DEVELOPMENT-GENERAL INFORMATION

Application:

- ☑ OCP Bylaw Amendment &/or Zoning Bylaw Amendment **(Form OR20)**
- ☑ Major Development Permit **(Form DP20)**
- ☐ Minor Development Permit **(Form DPm20)**
- ☐ Development Variance Permit **(Form DVP20)**
- ☐ Temporary Use Permit **(Form TUP20)**
- ☐ Subdivision, Strata Approval/Strata Title Conversion, Lot Consolidation **(Form SUB20)**
- ☐ Antenna System Siting Review **(Form ANT20)**

All Applications **Please include Application Requirements Form (Checklist)**

SITE

Civic Address: Not assigned.

Legal Description: LOT 2 DISTRICT LOT 203 LILLOOET DISTRICT PLAN KAP56640

PID: 023-384-018 Lot: 2

District Lot(DL): 203 Plan: KAP56640

OWNER(S)

Owner Name(s): 567726 B.C. Ltd.

Home:

Work:

Mailing Address: 3681 W 4th Ave, Vancouver, BC V6R 1P2

Cell:

Email:

OWNER(S) AGENT IF APPLICABLE

Agent's Name: Chelsea Mueller of Station One Architects

Work: 604-793-9445

Fax:

Mailing Address: 9355 Young Rd. Chilliwack, BC V2 P 4S3

Cell:

Email: cmueller@soarchitects.ca

☑ *If applicable* Please include Owner's Authorization

X

Owner Signatur [redacted] *Date*

X

Authorized Agent S [redacted] *Date* MARCH 18, 2022

COMMENTS: For owner's authorization, please see Letter of Agency and Schedule C of the PSA attached.

Application No

Fee: $ 35,350 (Total for OCP/Rez/DP)

APPLICATION REQUIREMENTS FOR A MAJOR DEVELOPMENT PERMIT FORM AND CHARACTER OF DEVELOPMENT

1. Pre-Application Meeting

It is strongly recommended that prior to submitting an application for a Major Development Permit, an applicant should meet with the Village of Pemberton's Development Services Department to review application requirements. The intent of the pre-application will be to confirm specific submission requirements for each proposal.

It is important to have the Village identify the information required for the application since any applications deemed incomplete by the Development Services Department will not be accepted and subsequently returned to the applicant.

2. Submission Checklist

- ☐ Complete Application Form *(Form DP20)*
- ☐ Application Fee *(in accordance with Development Procedures Bylaw No. 887, 2020)*
- ☐ Certificate of State of Title or of Indefeasible Title *(dated no more than thirty (30) days prior to submission of the application must accompany the application as a proof of ownership)*
- ☐ Copy of Charges on Title *(i.e. covenants, rights of way, statutory building schemes, etc.)*
- ☐ Owners Agent Authorization *(if applicable)*
- ☐ Site Disclosure Statement (as per https://www2.gov.bc.ca/gov/content/environment/air-land-water/site-remediation/site-identification)

3. Property Information

Legal Description:
LOT 2 DISTRICT LOT 203 LILLOOET DISTRICT PLAN KAP56640

PID#: 023-384-018

Civic Address: Not assigned.

Property Size*: 1,23 HA

Current OCP Land Use and Development Permit Area Designation *(Schedules B, C, K and L of the OCP Bylaw)*:

Gateway Development

Current Zoning: C-2 Tourism, Commercial

Existing Use/Development on the Property: Vacant

Proposed Use/Development of the Property: Affordable housing, commercial, community services

4. **Project Summary Information Checklist** *(provide in written format)*

- ☑ Description of Proposed Development
- ☑ Rationale in Support of the Proposed Development Permit
- ☑ Compliance with Development Permit Guidelines – Refer to Section 7.0 of the Official Community Plan addressing siting, building form, construction materials, streetscape improvements, landscaping, circulation and parking, snow management, CPTED and lighting.
- ☑ Compliance with OCP Policies, Maps and Development Permit Guidelines and Zoning Bylaw

5. **Supporting Information and Plan Checklist**
(Hard copies include full size plans and reductions as well as a digital copy)*

- ☑ Neighbourhood (Location) Context Plan
- ☑ Existing Conditions Site Plan
  - building footprints
  - vegetation and trees
  - watercourses
  - utility fixtures including street lighting
- ☑ Dimensioned Site Plan – The plans should include:
  - development footprints
  - public and private open spaces and/or parks
  - landscaping, tree preservation areas, fencing and/or planters
  - street access and driveways
  - trails and sidewalks
  - parking and loading areas with driveways
  - refuse and recycling enclosures
  - above ground utilities
  - visible antennae or towers
  - post boxes
  - street lighting
  - street furniture
  - public art
  - transit stops and shelters
  - fire access routes
  - snow storage areas
  - riparian setbacks
  - green design initiatives
  - historic buildings
  - fuel storage
  - Public access washrooms

- ☑ Architectural Plans – The plans should include:
  - building plans with unit layout
  - building elevations including overhangs
  - exterior lighting plan
  - signage plan
  - utility locations
  - snow shed areas
  - visible antennae or towers exposed roof equipment
  - accessory buildings including refuge/recycling enclosures
  - roof snow dump zones
  - green build initiatives
  - streetscape

- ☑ Architectural Finishing - Identify specific exterior finishes *(colours and material board)*
- ☑ Site Development Statistics - Identify the following for the proposed buildings:
  - Proposed use by location *(i.e. residential, commercial, etc.)*
  - gross floor area
  - floor space ratio
  - unit count
  - building coverage
  - accessory buildings and uses
  - building heights
- ☑ Lot Grading Plan
- ☑ Stormwater Management Plan
- ☑ Traffic Impact Study
- ☑ Geotechnical Study *(considering flood proofing, flood protection and soil stability)*
- ☑ Photographs of the property
- ☑ Existing Subdivision (Legal) Plan
- ☐ Site Alteration and Construction Management Plan – Indicate the character of the site during construction including any temporary buildings, trailers or storage containers.
- ☑ Green Site Planning, Design, Servicing and Building Initiatives
- ☐ Additional Information _____

6. Servicing Information

(Written text and hard copies of plans to include full size plans and reductions as well as a digital copy)*

- ☑ Location Plan for Road Access Points
- ☑ Description of Existing or Proposed Storm Drainage flows
- ☑ Description of Existing or Proposed Water Service Connections
- ☑ Description of Existing or Proposed Available Sewer Service Connections
- ☑ Description of Existing or Proposed Road Access
- ☑ Location Plan of Existing and Proposed Water and Sewer connections

APPLICATION FORM FOR A MAJOR DEVELOPMENT PERMIT (DP20)

I/We hereby make application under the provisions of Part 26 of the *Local Government Act* and the Village's Development Procedure Bylaw No. 887, 2020 for a Major Development for:

- ☑ Form and Character of Development
- ☐ Environmental Protection (Riparian Areas)
- ☐ Enhancement of Agriculture.

The lands subject of the application are legally described as:

Lot: 2, Plan: KAP56640, District Lot: 203, LLD.

THIS APPLICATION IS MADE WITH MY FULL KNOWLEDGE AND CONSENT

_____ _____

Registered owner's signature Date

Where the applicant is NOT the REGISTERED OWNER, the application must be signed by the REGISTERED OWNERS designated AGENT and proof thereof must be registered in the office of the Village of Pemberton.

FOR OFFICE USE ONLY:

Application/File No.: _____

Application Fee received $_____ Receipt No.: _____

Date received: _____

_____

Signature of Official

GENERAL NOTES

1. ANY SIGNIFICANT REVISIONS TO THESE DRAWINGS MUST BE APPROVED BY THE OWNER'S ENGINEER, WHO SHALL REVIEW ANY CHANGES WITH THE MUNICIPAL ENGINEER, PRIOR TO ANY CONSTRUCTION.
2. WORKSAFE BC IS TO BE GIVEN NOTICE OF CONSTRUCTION PRIOR TO THE START OF CONSTRUCTION.
3. EXISTING UNDERGROUND UTILITIES ARE TO BE LOCATED (EXCAVATED AND SURVEYED) PRIOR TO INSTALLING ANY NEW UNDERGROUND SERVICES. ANY DISCREPANCY IN ELEVATION OR LOCATION IS TO BE REFERRED TO KM CIVIL CONSULTANTS IMMEDIATELY.
4. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED TO EXISTING STREETS OR SERVICES BY CONSTRUCTION EQUIPMENT AND/OR TRUCKS HAULING MATERIALS TO THE SITE. THIS WILL INCLUDE DAILY CLEANING AND SWEEPING OF EXISTING ROADS OF DIRT AND DEBRIS CAUSED BY CONSTRUCTION ACTIVITY.
5. TRAFFIC CONTROL IS TO BE MAINTAINED AT ALL TIMES WHEN WORKING ON OR ADJACENT TO MUNICIPAL RIGHTS-OF-WAY (SIGNS, BARRICADES, CERTIFIED FLAGPERSONS).
6. CONSTRUCTION IN AND CLOSE TO A WATERCOURSE MUST RECEIVE PRIOR APPROVAL FROM THE PROVINCIAL MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE STRATEGY AND/OR THE FEDERAL DEPT. OF FISHERIES AND OCEANS, WHERE APPLICABLE.
7. LEGAL SURVEY POSTS, MONUMENTS, STAKES AND INTEGRATED SURVEY MONUMENTS ARE TO BE REPLACED IF DESTROYED OR DAMAGED DURING CONSTRUCTION AT THE OWNER'S EXPENSE; THIS WORK IS TO BE UNDERTAKEN BY A B.C. LAND SURVEYOR UNLESS OTHERWISE NOTED.
8. THE VILLAGE OF PEMBERTON'S SURVEY MONUMENTS ARE TO BE PROTECTED. SHOULD THEY REQUIRE RAISING OR RELOCATING, THE CONTRACTOR MUST NOTIFY THE MUNICIPAL INSPECTOR AT LEAST 72 HOURS IN ADVANCE OF SCHEDULING WORK AFFECTING THEM.
9. MATERIAL SUPPLIED AND CONSTRUCTION PERFORMED ARE TO BE IN ACCORDANCE WITH THE VILLAGE OF PEMBERTON SUBDIVISION AND DEVELOPMENT CONTROL SERVICING STANDARDS BYLAW No. 677, 2011, MMCD SPECIFICATIONS, AND APPLICABLE DESIGN CRITERIA AND SPECIFICATION STANDARD DRAWINGS IN EFFECT AT THE TIME OF DRAWING ACCEPTANCE.
10. APPROVED GRANULAR MATERIAL MUST BE USED FOR BACKFILL IN TRENCHES WHEN INSIDE ROAD LIMITS. APPROVED NATIVE MATERIAL MAY BE USED ONLY AS CONFIRMED IN WRITING BY A GEOTECHNICAL ENGINEER, AND ACCEPTED BY THE MUNICIPAL ENGINEER.
11. WHERE UTILITY OR SERVICE CROSSINGS ARE REQUIRED ACROSS EXISTING PAVEMENT, ALL EXISTING PAVEMENT, BOULEVARDS, DRIVEWAYS, ETC. WHICH ARE DISTURBED DURING CONSTRUCTION MUST BE RESTORED TO ORIGINAL OR BETTER CONDITION, WHERE NO IMPROVEMENT IS OTHERWISE PROPOSED UNDER THIS CONTRACT. EXISTING DRIVEWAYS MUST BE REPAVED ACROSS THE WIDTH OF BOULEVARD TO FORM A SMOOTH TRANSITION WITH NEW PAVEMENT. THE FINISHED PAVEMENT SURFACE OVER TRENCH EXCAVATIONS MUST BLEND IN SMOOTHLY WITH EXISTING PAVEMENT.
12. WHERE INFILLING OF DITCHES ETC. IS REQUIRED OR PROPOSED, AND WHERE SERVICES ARE CONSTRUCTED IN FILL SECTIONS, THE FILL MATERIAL MUST BE APPROVED GRANULAR MATERIAL PLACED IN LIFTS NOT EXCEEDING 300mm AND COMPACTED TO 95% MODIFIED PROCTOR DENSITY.
13. FIGURED DIMENSIONS SHALL GOVERN OVER SCALED DIMENSIONS.
14. ALL REFERENCES TO MMCD REFER TO THE 2019 EDITION.

ROADWORKS

1. THE CONTRACTOR IS TO ENGAGE A GEOTECHNICAL ENGINEER TO PERFORM IN-PLACE TESTING DURING THE PREPARATION OF THE SUBGRADE AND CONSTRUCTION OF THE ROAD STRUCTURE TO VERIFY THE ADEQUACY OF THE PROPOSED AND EXISTING ROAD STRUCTURE AND SUBGRADE.
2. CHANGES OF GRADE ARE TO BE FORMED BY SMOOTH VERTICAL CURVES. GRADE TRANSITIONS ARE TO BE FORMED TO BE UNNOTICABLE TO VEHICULAR TRAFFIC WHEN BEING TRAVERSED.
3. LOOSE OR ORGANIC MATERIAL IS TO BE EXCAVATED FROM ROADWAY PRISM.
4. GRANULAR SUB-BASE AND OTHER BASE MATERIALS MUST BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY.
5. THE ROAD BASE MUST EXTEND A MINIMUM OF 0.3m BEYOND THE SIDEWALK AND/OR CURB & GUTTER.
6. CATCH BASIN ELEVATIONS GIVEN ARE FOR TOP OF RIM. RIM IS TO BE SET 30mm BELOW GUTTER GRADE.
7. EXISTING VALVE BOXES, MANHOLES, ETC, WITHIN THE RIGHT-OF-WAY ARE TO BE ADJUSTED TO FINISHED GRADE.
8. PLACEMENT OF ASPHALT CONCRETE AND PORTLAND CEMENT CONCRETE IS TO BE UNDERTAKEN ONLY WHEN WEATHER CONDITIONS ARE IN CONFORMANCE WITH MMCD SPECIFICATIONS.
9. UNLESS OTHERWISE ACCEPTED BY THE MUNICIPAL ENGINEER, ASPHALT CONCRETE IS TO BE LAID IN A MINIMUM OF 2 LIFTS TO A MAXIMUM OF 85mm PER LIFT AND A MINIMUM OF 35mm PER LIFT.
10. ASPHALT TAPERS TO BE CONSTRUCTED TO PAVEMENT DESIGN SPECIFICATIONS AS SHOWN IN THE VILLAGE OF PEMBERTON SUBDIVISION AND DEVELOPMENT CONTROL SERVICING STANDARDS BYLAW No. 677, 2011.
11. MACHINERY AND MATERIALS MUST NOT BE PARKED OR PLACED IN THE MUNICIPAL RIGHT-OF-WAY OVERNIGHT WHERE POSSIBLE. ANY SUCH PLACEMENT WILL REQUIRE A HIGHWAY USE PERMIT AND ILLUMINATED BARRACADES AND SIGNAGE.

WATERWORKS

1. FOR TYPICAL "UTILITY TRENCH" SECTION DETAIL, SEE MMCD STANDARD DETAIL DRAWING. PAVEMENT RESTORATION TO BE IN ACCORDANCE WITH THE VILLAGE OF PEMBERTON STANDARDS.
2. WATERMAIN MATERIALS MUST CONFORM TO MMCD MASTER MUNICIPAL SPECIFICATIONS, AND SCHEDULE `B' OF THE SQUAMISH-LILLOOET REGIONAL DISTRICT SUBDIVISION SERVICING BYLAW NO. 2373, 2015.
3. TIE-INS OF PROPOSED MAINS AND SERVICE CONNECTIONS TO EXISTING WATERMAINS WILL BE PERFORMED BY THE SQUAMISH-LILLOOET REGIONAL DISTRICT AT THE DEVELOPER'S EXPENSE.
4. NEW WATERMAIN IS TO BE INSTALLED TO WITHIN 2.0m OF EXISTING WATERMAIN AT CONNECTION LOCATION EXCEPT AS ACCEPTED BY THE SQUAMISH-LILLOOET REGIONAL DISTRICT.
5. THE CONTRACTOR MUST ENSURE NEW WATERMAIN ELEVATION MATCHES EXISTING WATERMAIN ELEVATION AT THE CONNECTION LOCATION.
6. THE CONTRACTOR MUST EXPOSE AND CONFIRM ELEVATION & OFFSET OF ALL UTILITIES BETWEEN NEW WATERMAIN & EXISTING WATERMAIN AT THE CONNECTION LOCATION.
7. CONNECTIONS MUST NOT BE MADE WITHIN 1.0m OF EXISTING CONNECTIONS, BENDS, VALVES, OR OTHER SYSTEM FITTINGS.
8. MINIMUM COVER ON WATERMAINS IS TO BE 1.0m.
9. WATER SERVICE CONNECTIONS ARE TO BE SET SO THAT AN ADJUSTMENT OF 200mm ABOVE FINAL GRADE IS AVAILABLE BY THE TELESCOPING BURY-BOX, MINIMUM DEPTH 0.80m, MAXIMUM DEPTH 1.0m.
10. HYDRANTS IN URBAN AREAS MUST BE SUPPLIED WITH THE CORRECT DEPTH OF BURY TO MEET FINAL BOULEVARD GRADES. FOR HYDRANT DETAILS, SEE MMCD OR SQUAMISH - LILLOOET REGIONAL DISTRICT STANDARD DRAWINGS.
11. FOR VALVE-BOX AND VALVE INSTALLATION DETAILS, SEE MMCD STANDARD DRAWING.
12. THRUST BLOCKS AS SHOWN ON MMCD STANDARD DRAWING ARE TO BE LOCATED AT VALVES, BENDS, TEES, WYES, REDUCERS AND PLUGS. REVERSE THRUST BLOCKS ARE REQUIRED ON CAPS AND BLOWOFFS
13. HYDRANTS MUST HAVE A 1.2m OFFSET FROM PROPERTY LINE UNLESS OTHERWISE NOTED. DURING CONSTRUCTION, AND AT ANY TIME PRIOR TO ACCEPTANCE OF WATERMAINS BY THE SQUAMISH-LILLOOET REGIONAL DISTRICT, THE CONTRACTOR SHALL INSTALL A 300mm X 300mm SQUARE 19mm SHEET OF PLYWOOD (PAINTED WHITE) OVER THE PUMPER NOZZLE OF EACH HYDRANT TO INDICATE THAT THE HYDRANT IS NOT IN SERVICE. HYDRANTS TO HAVE A STORZ QUICK RELEASE NOZZLE INSTALLED.
14. THE CONTRACTOR MUST ENSURE THAT ALL SECTIONS OF LINES HAVE TEST POINTS AND TEMPORARY BLOW-OFFS SUITABLE TO ENSURE ADEQUATE PRESSURE TESTING, CHLORINATION AND FLUSHING. DISCHARGE OF CHLORINATED WATER IS NOT PERMITTED INTO DITCHES, STORM SEWERS OR WATERCOURSES UNLESS NEUTRALIZED WITH SODIUM THIO SULPHATE OR APPROVED EQUIVALENT ACCEPTED BY THE SQUAMISH-LILLOOET REGIONAL DISTRICT.
15. TESTING AND CHLORINATION OF WATERMAINS IS THE RESPONSIBILITY OF THE CONTRACTOR WITH INSPECTION AUTHORIZED BY THE SQUAMISH-LILLOOET REGIONAL DISTRICT. WATERMAINS MUST PASS PRESSURE AND BACTERIOLOGICAL TESTING BEFORE CONNECTION IS MADE TO EXISTING WATER SYSTEM.
16. WHERE APPLICABLE, ALL SERVICE CONNECTIONS ARE TO BE MARKED ON THE CURB WITH A 2mm DEEP SAW CUT AND A 50mm x 100mm STAKE 0.3m FROM PROPERTY LINE. BOTH ARE TO BE PAINTED BLUE.

STORM SEWER

1. STORM SEWER MATERIALS ARE TO CONFORM TO THE MMCD SPECIFICATIONS AND PART 10 OF THE VILLAGE OF PEMBERTON SUBDIVISION AND DEVELOPMENT CONTROL SERVICING STANDARDS BYLAW No. 677, 2011.
2. FOR TYPICAL "UTILITY TRENCH" SECTION DETAIL, SEE MMCD STANDARD DETAIL DRAWING.
3. EXISTING DRAINS FROM PRIVATE PROPERTIES ARE TO BE TIED INTO THE NEW STORM SYSTEM WHEN INFILLING EXISTING DITCHES, CONNECTIONS ARE NOT TO PROTRUDE INTO MAIN.
4. FOR TYPICAL CATCH BASIN DETAILS REFER TO MMCD STANDARD DETAIL DRAWING UNLESS OTHERWISE SPECIFIED BY MUNICIPAL ENGINEER.
5. ALL SINGLE CATCH BASIN LEADS ARE TO BE MINIMUM 200mm DIAMETER, ALL DOUBLE CATCH BASIN LEADS ARE TO BE MINIMUM 250mm DIAMETER. NO CURVES OR BENDS ARE PERMITTED IN THE LEADS.
6. ALL STORM SEWER SERVICE CONNECTIONS ARE TO BE MINIMUM 100mm DIAMETER FOR RESIDENTIAL AND 150mm FOR INDUSTRIAL/COMMERCIAL.
7. DIAMETER OF ALL STORM SEWER MANHOLES MUST CONFORM TO THE MMCD STANDARD DETAIL DRAWING UNLESS OTHERWISE NOTED.
8. MANUFACTURED WYES ARE TO BE USED ON STORM PIPE UNDER 450mm DIAMETER.
9. STORM SEWERS ARE TO BE CONSTRUCTED WITH SEALED JOINTS UNLESS OTHERWISE SPECIFIED ON THE DESIGN DRAWINGS.
10. WHERE APPLICABLE ALL STORM SEWER CONNECTIONS ARE TO BE MARKED BY ALL OF THE FOLLOWING - 2mm DEEP SAW CUT ON THE CURB, 50mm x 100mm STAKE (PAINTED GREEN) AND PLACED AT END OF PIPE, AND THE END OF THE PIPE TO BE CAPPED AND PAINTED GREEN. STORM IC LID IS ALSO PAINTED GREEN.
11. TOP OF INSPECTION CHAMBER STANDPIPES IS TO BE CONSTRUCTED TO 600mm ABOVE FINAL LOT GRADE.
12. SEWER MAINS AND CONNECTIONS TO BE VIDEO INSPECTED PRIOR TO USE. CONTRACTOR TO PROVIDE A VIDEO COPY ON DVD TO THE VILLAGE OF PEMBERTON.

SANITARY SEWER

1. SANITARY SEWER MATERIALS MUST CONFORM TO THE MMCD SPECIFICATIONS AND PART 10 OF THE VILLAGE OF PEMBERTON SUBDIVISION AND DEVELOPMENT CONTROL SERVICING STANDARDS BYLAW No. 677, 2011.
2. MANHOLE DETAILS TO BE IN ACCORDANCE WITH MMCD STANDARD DETAIL DRAWINGS.
3. FOR TYPICAL DETAILS OF ALL SEWER CONNECTIONS, SEE VILLAGE OF PEMBERTON SUPPLEMENTARY DRAWINGS.
4. FOR TYPICAL "UTILITY TRENCH" SECTION DETAIL SEE MMCD STANDARD DETAIL DRAWING.
5. SERVICE CONNECTIONS ARE AS PER DRAWING No. 2
6. TOP OF INSPECTION CHAMBER STANDPIPES ARE TO BE CONSTRUCTED TO 600mm ABOVE FINAL LOT GRADE.
7. NEW SEWER LINES TIED INTO EXISTING LINES MUST BE PLUGGED UNTIL THEY ARE TESTED, FLUSHED AND ACCEPTED BY THE VILLAGE OF PEMBERTON.
8. SERVICE CONNECTIONS MUST BE MADE TO THE MAIN WHEREVER POSSIBLE. SHOULD A CONNECTION HAVE TO BE MADE TO A MANHOLE, IT MUST BE AT A HIGHER ELEVATION THAN THE CROWN OF THE HIGHEST SEWER MAIN ENTERING THE MANHOLE.
9. TIE-INS OF PROPOSED MAINS TO EXISTING SANITARY SEWER MAINS ARE TO BE PERFORMED BY THE VILLAGE OF PEMBERTON.
10. TESTING IS THE RESPONSIBILITY OF THE CONTRACTOR WITH INSPECTION AUTHORIZED BY THE MUNICIPAL ENGINEER. SEWER MAINS MUST PASS PRESSURE TESTING BEFORE CONNECTION IS MADE TO EXISTING SEWER SYSTEM.
11. THE CONTRACTOR MUST DISCONNECT AND SEAL ABANDONED SERVICES TO THE ACCEPTANCE OF THE MUNICIPAL ENGINEER.
12. CONNECTIONS TO MAIN MUST BE PERPENDICULAR TO MAIN EXCEPT AS ACCEPTED BY THE MUNICIPAL ENGINEER.
13. WHERE APPLICABLE, ALL SANITARY SEWER CONNECTIONS ARE TO BE MARKED BY ALL OF THE FOLLOWING - 2mm DEEP SAW CUT ON CURB, 50mm x 100mm STAKE (PAINTED RED) AT END OF PIPE, AND THE END OF THE PIPE TO BE PAINTED RED. SANITARY I.C. LID IS ALSO PAINTED RED.
14. CONTRACTOR IS RESPONSIBLE FOR ENSURING VILLAGE OF PEMBERTON INSPECTOR IS PRESENT TO WITNESS SERVICE CONNECTION TIE-INS TO EXISTING SEWERS.
15. SEWER MAINS AND CONNECTIONS TO BE VIDEO INSPECTED PRIOR TO USE. CONTRACTOR TO PROVIDE A VIDEO COPY ON DVD TO THE VILLAGE OF PEMBERTON.

SILTATION CONTROL

1. THE CONTRACTOR SHALL ENSURE THAT TEMPORARY SILTATION CONTROL IS PROVIDED DURING CONSTRUCTION AS REQUIRED BY PROVINCIAL MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE STRATEGY AND/OR THE FEDERAL DEPT. OF FISHERIES AND OCEANS AND AS SPECIFIED IN PART 10 OF THE VILLAGE OF PEMBERTON SUBDIVISION AND DEVELOPMENT CONTROL SERVICING STANDARDS BYLAW No. 677, 2015, UNTIL 90% OF THE CONSTRUCTION IS COMPLETE.
2. THE CONTRACTOR TO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT TO REGULARLY MONITOR AND, IF NECESSARY, MODIFY SILTATION CONTROL MEASURES DURING VARIOUS PHASES OF CONSTRUCTION.
3. THE CONTRACTOR TO MAINTAIN EXISTING ROADS IN A CLEAN CONDITION BY SWEEPING ACCEPTABLE TO THE MUNICIPALITY.
4. THE CONTRACTOR TO COVER ALL EXCAVATED MATERIAL WITH POLY AND INSTALL A PERIMETER SILT FENCE AROUND STOCKPILED MATERIALS.

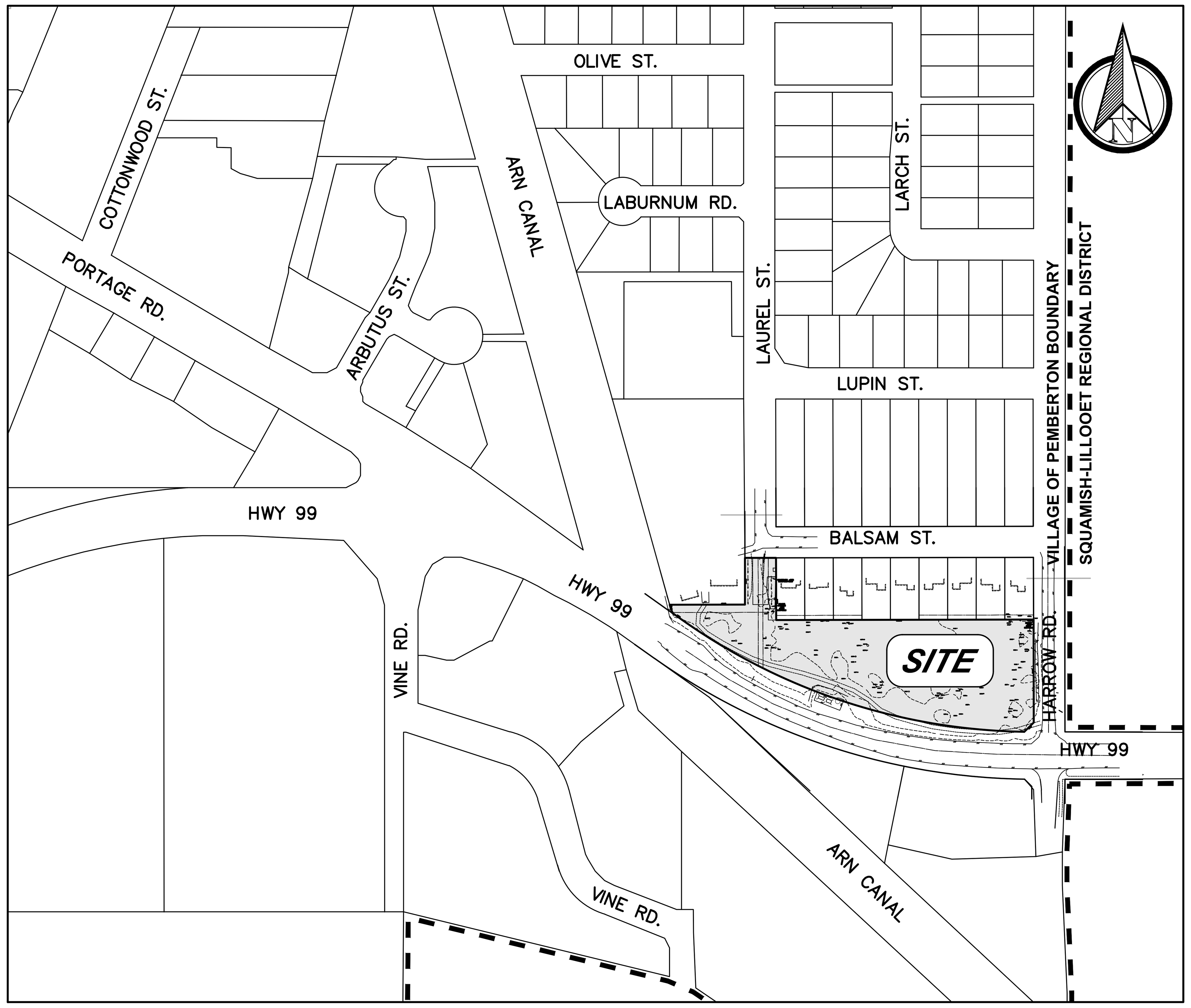
DRAWING INDEX

SHEET NO.	DRAWING TITLE
1	LOCATION PLAN AND GENERAL NOTES
2	SITE GRADING PLAN
3	SITE SERVICING PLAN
4	–

LEGEND

PROPOSED / EXISTING / DESCRIPTION

- BENCH MARK – GEODETIC DATUM
- GRAVEL SURFACE TREATMENT
- EDGE OF PAVEMENT
- CURB AND GUTTER
- SANITARY SEWER
- SANITARY FORCE MAIN
- SANITARY SEWER SERVICE (c/w INSPECTION CHAMBER)
- STORM SEWER
- STORM SEWER SERVICE (c/w INSPECTION CHAMBER)
- CATCH BASIN – TOP INLET
- CATCH BASIN – SIDE INLET
- CATCH BASIN – ROUND
- SWALE
- DITCH
- SIDEWALK (ASPHALT)
- SIDEWALK (CONCRETE)
- WATERMAIN
- WATER SERVICE CONNECTION
- WATER VALVE
- AIR VALVE
- HYDRANT AND VALVE ASSEMBLY
- CAPPED END
- BLOW–OFF
- TEMPORARY BLOW–OFF
- JUNCTION BOX
- UNDERGROUND HYDRO/TELEPHONE
- GAS MAIN
- UTILITY POLE
- UTILITY POLE WITH LIGHT
- STREET LIGHT



LOCATION PLAN

SCALE 1:2500

No.	DATE	REVISION	DRN	TECH	ENG
6					
5					
4	2022.03.17	REVISED PER NEW ARCHITECTURAL SITE PLAN	NWP	JKC	PRG
3	2022.03.11	TRAIL REMOVED	NWP	JKC	PRG
2	2022.03.10	DETENTION TANK LOCATION REVISED	NWP	JKC	PRG
1	2022.03.04	OCP AMENDMENT AND DP SUBMISSION	NWP	JKC	PRG

DESTROY ALL PRINTS BEARING PREVIOUS REVISION NUMBER

PLOT DATE Mar 17, 2022
FILE X:\2021\210733-C Lot 2 Harrow Rd, Pemberton - SCSS Housing\2-Dwgs\5-Civil\1-CURRENT\210733-C-01C5.dwg

LEGAL DESCRIPTION:
LOT 2, DISTRICT LOT 203, LILLOOET DISTRICT PLAN KAP56640.

BENCHMARK:
ELEVATIONS ARE ON CGVD28BC GEODETIC DATUM AND WERE DERIVED FROM NATURAL RESOURCE CANADA'S PPP SERVICE USING GNSS OBSERVATIONS.

KM Civil
CONSULTANTS LTD.
EGBC PERMIT TO PRACTICE No. 1000138

ABBOTSFORD OFFICE
400 - 34077 Gladys Avenue
Abbotsford, BC V2S 2E8
Tel: 604-853-8831 Fax: 604-853-1580
VANCOUVER OFFICE
110 - 2920 Virtual Way
Vancouver, BC V5M 0C4
Tel: 604-294-6662 Fax: 604-294-6665

YELLOWRIDGE CONSTRUCTION LTD.
200-2605 CLARKE STREET,
PORT MOODY, B.C., V3H 1Z4
ATTENTION: RONALDO DUFOUR
TEL:(604)936-2605 EMAIL: info@yellowridge.ca

LOCATION PLAN AND GENERAL NOTES

LOT 2, HARROW RD., PEMBERTON, B.C.

DESIGNED: JKC | DRAWN: DBL | REVIEWED: PRG | APPROVED: PRG | SCALE: HORZ. AS SHOWN VERT.

MUNICIPAL PROJECT NUMBER:
MUNICIPAL DRAWING NUMBER:
KM CIVIL PROJECT No.: 210733-C
DATE: JANUARY, 2022
DRAWING No.: 1 of 5
REVISION No. 4

SITE GRADING LEGEND:

FIRST FLOOR ELEVATION OF BUILDING	207.50
EXISTING SURVEY ELEVATION	3.50 +
PROPOSED GRADE ELEVATION	(206.00)
FINISHED GROUND ELEVATION AT HIGH SIDE OF WALL. TOP OF WALL TO BE 0.15m ABOVE FINISHED GROUND.	(206.00) TW
FINISHED GROUND ELEVATION AT LOW SIDE OF WALL	(206.00) BW
DIRECTION OF OVERLAND FLOW	
EXISTING GROUND CONTOUR	10
LANDSCAPED AREA – SEE LANDSCAPE ARCHITECTS PLANS DETAILS	
RIDGELINE	
PROPOSED ASPHALT PAVEMENT STRUCTURE PER GEOTECHNICAL RECOMMENDATIONS	
PROPOSED CONCRETE SIDEWALK – SEE ARCHITECTURAL DRAWINGS FOR DETAILS	
CONCRETE CURB & GUTTER – SEE ARCHITECTURAL DRAWINGS FOR DETAILS.	
RETAINING WALL	
PROPOSED CATCH BASIN (RIM ELEVATION)	(23.54)
PROPOSED LAWN DRAIN (RIM ELEVATION)	(23.54)
SWALE	

NOTES:

1. ALL DIMENSIONS AND ELEVATIONS ARE METRIC.
2. REFER TO ARCHITECTURAL PLANS FOR DETAILED CURB AND BUILDING ALIGNMENT/LAYOUT, AS WELL AS DETAILS OF CONCRETE SIDEWALKS, STYLES, COLOURING, AND TYPES.

BEFORE YOU DIG

EXISTING UNDERGROUND UTILITIES SHOWN ON THIS DRAWING WERE COMPILED FROM A COMBINATION OF VARIOUS AS–CONSTRUCTED RECORD DRAWINGS AND SOME FIELD SURVEYS. THIS INFORMATION IS NOT NECESSARILY ACCURATE OR COMPLETE AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION WHERE POTENTIAL CONFLICTS EXIST. CONTRACTOR TO CONTACT TELUS, B.C. HYDRO, FORTISBC AND BC ONE CALL PRIOR TO CONSTRUCTION TO CONFIRM LOCATIONS OF UTILITIES AND APPURTENANCES REQUIRING ADJUSTMENT. ANY DISCREPANCIES REQUIRING CHANGES TO THE DESIGN MUST BE REPORTED TO KM CIVIL CONSULTANTS IMMEDIATELY.

No.	DATE	REVISION	DRN	TECH	ENG
6					
5					
4	2022.03.17	REVISED PER NEW ARCHITECTURAL SITE PLAN	NWP	JKC	PRG
3	2022.03.11	TRAIL REMOVED	NWP	JKC	PRG
2	2022.03.10	DETENTION TANK LOCATION REVISED	NWP	JKC	PRG
1	2022.03.04	OCP AMENDMENT AND DP SUBMISSION	NWP	JKC	PRG

DESTROY ALL PRINTS BEARING PREVIOUS REVISION NUMBER

LEGAL DESCRIPTION:
LOT 2, DISTRICT LOT 203, LILLOET DISTRICT PLAN KAP56640.

BENCHMARK:
ELEVATIONS ARE ON CGVD28BC GEODETIC DATUM AND WERE DERIVED FROM NATURAL RESOURCE CANADA'S PPP SERVICE USING GNSS OBSERVATIONS.

KM Civil CONSULTANTS LTD.
EGBC PERMIT TO PRACTICE No. 1000138

ABBOTSFORD OFFICE
400 - 34077 Gladys Avenue
Abbotsford, BC V2S 2E8
Tel: 604-853-8831 Fax: 604-853-1580
VANCOUVER OFFICE
110 - 2920 Virtual Way
Vancouver, BC V5M 0C4
Tel: 604-294-6662 Fax: 604-294-6665

YELLOWRIDGE CONSTRUCTION LTD.
200-2605 CLARKE STREET,
PORT MOODY, B.C., V3H 1Z4
ATTENTION: RONALDO DUFOUR
TEL:(604)936-2605 EMAIL: info@yellowridge.ca

SITE GRADING PLAN

LOT 2, HARROW RD., PEMBERTON, B.C.

DESIGNED:	DRAWN:	REVIEWED:	APPROVED:	SCALE:
JKC	NWP	PRG	PRG	HORZ. 1:300 VERT.

MUNICIPAL PROJECT NUMBER:
MUNICIPAL DRAWING NUMBER:
KM CIVIL PROJECT No.: 210733-C
DATE: JANUARY, 2022
DRAWING No.: 2 of 5
REVISION No.: 4

PLOT DATE Mar 17, 2022

NOTES:

1. ALL DIMENSIONS AND ELEVATIONS ARE METRIC.
2. EXPOSE AND VERIFY DEPTH AND LOCATION OF ALL TIE–IN POINTS AND EXISTING UNDERGROUND SERVICES CROSSING PROPOSED STORM, SANITARY AND WATER MAINS PRIOR TO COMMENCING CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO KM CIVIL CONSULTANTS IMMEDIATELY.
3. SEE ARCHITECTURAL DRAWINGS FOR DETAILED CURB AND BUILDING ALIGNMENT/LAYOUT, AS WELL AS DETAILS OF CONCRETE SIDEWALKS, STYLES, COLOURING, AND TYPES.
4. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH THE BC PLUMBING CODE, MMCD LATEST EDITION, AND THE VILLAGE OF PEMBERTON BYLAW No. 677, 2011.
5. REFER TO MECHANICAL PLANS FOR ALL SERVICING DETAILS WITHIN ONE METRE OF THE BUILDING.
6. CONTRACTOR TO TEST, CHLORINATE AND FLUSH THE WATER SYSTEM UNDER SUPERVISION OF KM CIVIL CONSULTANTS LTD. PRIOR TO TIE–IN. 48 HOURS NOTICE IS REQUIRED.
7. TYPE 1 BEDDING AND 100mm GRANULAR BACKFILL PER MMCD STD. DWG. G4.
8. ALL WATER FITTINGS TO BE D.I.
9. ALL WATER MAIN PIPE TO BE PVC C900 UNLESS OTHERWISE NOTED.
10. ALL PVC C900 WATER MAIN TO BE INSTALLED WITH MIN. 1.2m COVER AND MIN. 0.10% GRADE.
11. ALL SANITARY MAIN PIPE TO BE PVC SDR35 UNLESS OTHERWISE NOTED.
12. ALL TRENCH DRAIN AND WALL DRAIN LEADS TO BE 150mm DIAMETER PVC DWV AT MINIMUM 1.0%, UNLESS OTHERWISE NOTED.
13. ALL STORM MAIN PIPE TO BE PVC SDR35 UNLESS OTHERWISE NOTED.
14. ALL CATCH BASINS AND LAWN DRAINS TO BE c/w TRAPPING HOODS AND 600mm SUMPS.
15. ALL LAWN DRAINS TO BE 600ø AS PER MMCD STD. DWG. S12 c/w 150ø PVC SDR35 LEAD at MIN. 1.0% UNLESS OTHERWISE NOTED.
16. ALL STORM MAINS TO BE INSTALLED c/w GASKETED JOINTS.
17. ALL CATCH BASINS TO BE AS PER DOBNEY No. 23 (GRATE) AND No. 24 (FRAME) OR APPROVED EQUIVALENT c/w 150ø PVC SDR 35 LEAD at MIN. 1.0% UNLESS OTHERWISE NOTED.
18. ALL STORM CONNECTIONS TO EXCLUDE BUILDING SUMPS. SUMPS TO BE BY OTHERS.
19. ALL SANITARY AND WATER MAINS AND CONNECTIONS WITH LESS THAN 1.0m COVER TO BE CONCRETE ENCASED PER MMCD STD. DWG. G7.
19. ALL STORM PIPES WITH LESS THAN 1.0m COVER TO BE CONCRETE ENCASED PER MMCD STD. DWG. G7 OR DWV PIPE IN ACCORDANCE WITH BRITISH COLUMBIA PLUMBING CODE, 2018.
20. WATER MAIN JOINTS ARE TO BE WRAPPED WITH PETROLATUM TAPE WITHIN 3.0m ON EACH SIDE OF ALL CROSSINGS, WHERE 0.5m CLEARANCE FROM OTHER UTILITIES CANNOT BE ACHIEVED, IN ACCORDANCE WITH THE LATEST VERSION OF AWWA STANDARDS C217, C214 OR C209.
21. REINSTATE ALL DISTURBED BOULEVARDS, SHOULDERS, CONCRETE AND ASPHALT SIDEWALK AND DRIVEWAYS TO ORIGINAL OR BETTER CONDITION.
22. ADJUST ALL EXISTING MANHOLE, VALVE, ETC. RIM ELEVATIONS AS REQUIRED TO MEET PROPOSED GRADES.
23. ALL WATER MAIN TEES AND BENDS TO HAVE THRUST RESTRAINTS.

BEFORE YOU DIG

EXISTING UNDERGROUND UTILITIES SHOWN ON THIS DRAWING WERE COMPILED FROM A COMBINATION OF VARIOUS AS–CONSTRUCTED RECORD DRAWINGS AND SOME FIELD SURVEYS. THIS INFORMATION IS NOT NECESSARILY ACCURATE OR COMPLETE AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION WHERE POTENTIAL CONFLICTS EXIST. CONTRACTOR TO CONTACT TELUS, B.C. HYDRO, FORTISBC AND BC ONE CALL PRIOR TO CONSTRUCTION TO CONFIRM LOCATIONS OF UTILITIES AND APPURTENANCES REQUIRING ADJUSTMENT. ANY DISCREPANCIES REQUIRING CHANGES TO THE DESIGN MUST BE REPORTED TO KM CIVIL CONSULTANTS IMMEDIATELY.

No.	DATE	REVISION	DRN	TECH	ENG
6					
5					
4	2022.03.17	REVISED PER NEW ARCHITECTURAL SITE PLAN	NWP	JKC	PRG
3	2022.03.11	TRAIL REMOVED	NWP	JKC	PRG
2	2022.03.10	DETENTION TANK LOCATION REVISED	NWP	JKC	PRG
1	2022.03.04	OCP AMENDMENT AND DP SUBMISSION	NWP	JKC	PRG

DESTROY ALL PRINTS BEARING PREVIOUS REVISION NUMBER

LEGAL DESCRIPTION:
LOT 2, DISTRICT LOT 203, LILLOET DISTRICT PLAN KAP56640.

BENCHMARK:
ELEVATIONS ARE ON CGVD28BC GEODETIC DATUM AND WERE DERIVED FROM NATURAL RESOURCE CANADA'S PPP SERVICE USING GNSS OBSERVATIONS.

KM Civil CONSULTANTS LTD.
EGBC PERMIT TO PRACTICE No. 1000138

ABBOTSFORD OFFICE
400 - 34077 Gladys Avenue
Abbotsford, BC V2S 2E8
Tel: 604-853-8831 Fax: 604-853-1580

VANCOUVER OFFICE
110 - 2920 Virtual Way
Vancouver, BC V5M 0C4
Tel: 604-294-6662 Fax: 604-294-6665

YELLOWRIDGE CONSTRUCTION LTD.

200-2605 CLARKE STREET,
PORT MOODY, B.C., V3H 1Z4
ATTENTION: RONALDO DUFOUR
TEL:(604)936-2605 EMAIL: info@yellowridge.ca

SITE SERVICING PLAN

LOT 2, HARROW RD., PEMBERTON, B.C.

DESIGNED:	DRAWN:	REVIEWED:	APPROVED:	SCALE:
JKC	NWP	PRG	PRG	HORZ. 1:300 VERT.

MUNICIPAL PROJECT NUMBER:
MUNICIPAL DRAWING NUMBER:
KM CIVIL PROJECT No.: 210733-C
DATE: JANUARY, 2022
DRAWING No.: 3 of 5
REVISION No. 4

210733-C
2022.02.07
Pemberton Affordable Housing

Harrow Road/Portage Road

FUS Sprinkler Demand Calculations

1. Development Details

Type:	Commercial/Residential	
Floor Area:	61,520	sq.ft.
Floor Area:	5,715	sq.m

2. Construction Details

Type:	Fire Rated Structure - Concrete Main Floor / Wood Frame Stories Above	
FUS Type:	Combustible	
FUS 'C' Value:	0.92	

3. FUS Basic Fire Flow Requirement

Fire Flow:	220 * C * (A)^1/2	L/min
Fire Flow:	15000	L/min (rounded to nearest 1,000)

4. Adjustment for Occupancy Type

Occupancy:	Multi-Family	
Occupancy:	Limited Combustible	
Charge:	-15.00	%

5. Adjustment for Sprinklering

Sprinklered:	YES	
Reduction:	50	%

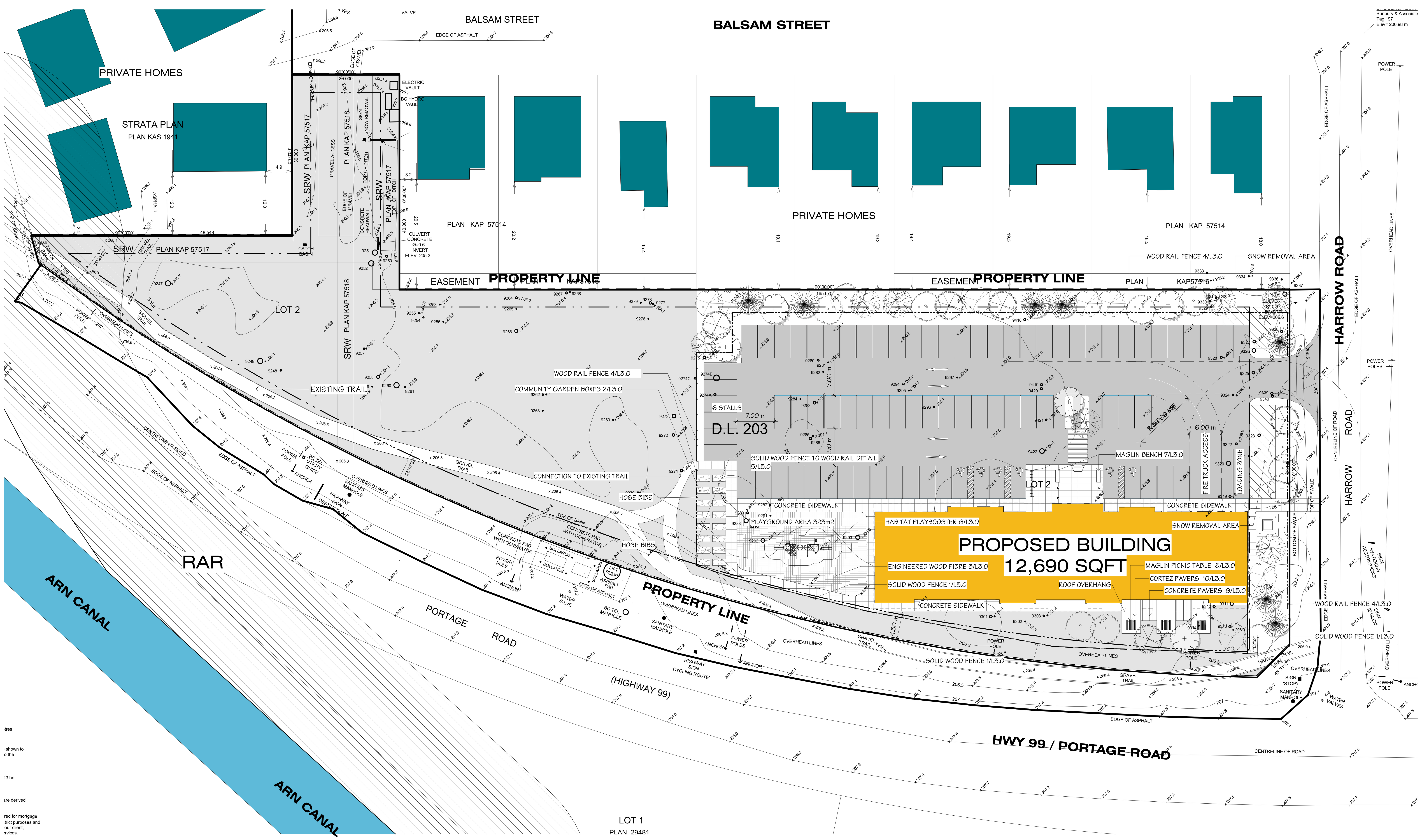
6. Adjustment for Exposure

Location:	Distance (m)	Charge (%)
South side:	>45	0
West side:	8.5	20
East side:	35	5
North side:	>45	0
Total:		25

Harrow Road/Portage Road
FUS Sprinkler Demand Calculations

7. Resultant FUS Fire Flow Requirement

Base Flow:	15000.00	L/min
Occupancy:	-2250.0	L/min
Sub-Total:	12750.00	L/min
Sprinklers:	-6375.0	L/min
Exposures:	3187.5	L/min
Total:	10000.0	L/min
Total:	**166.7**	**L/sec**
Duration:	2.0	hours
Volume:	1200	cubic metres



OVERALL LANDSCAPE PLAN
1 : 400
NORTH

LANDSCAPE DRAWING LIST

L1.0	OVERALL LANDSCAPE PLAN
L2.0	OVERALL PLANTING PLAN
L3.0	LANDSCAPE DETAILS
L3.1	LANDSCAPE DETAILS

LANDSCAPE GENERAL NOTES

1. THE CONTRACTOR TO CONFIRM UNITS AND MEASUREMENTS
2. PREVENT DAMAGE TO ALL LANDSCAPING , BUILDINGS , STRUCTURES AND UNDERGROUND AND/OR OVERHEAD UTILITIES. MAKE GOOD ALL DAMAGE TO SATISFACTION OF OWNER.
3. PRIOR TO CLEARING, VERIFY LIMITS OF CLEARING WITH OWNER.
4. DISPOSE OF CLEARED AND GRUBBED MATERIALS AS WORK PROGRESSES AND DO NOT ACCUMULATE.
5. LEAVE GROUND SURFACE IN CONDITION SUITABLE FOR IMMEDIATE GRADING OPERATIONS.
6. CONTROL DUST AT ALL TIMES FOR DURATION OF CONTRACT.
7. PROVIDE HOARDING IF NECESSARY AND PROTECT PUBLIC AND PRIVATE PROPERTY FROM INJURY OR DAMAGE.
8. PROVIDE TEMPORARY DRAINAGE AND PUMPING IF NECESSARY AND DO NOT DISCHARGE WATER CONTAINING SUSPENDED MATERIALS INTO WATERCOURSES OR DRAINAGE SYSTEM.
9. MAINTAIN EXISTING CONDITIONS FOR PARKING AND TRAFFIC AROUND THE SITE THROUGHOUT CONSTRUCTION, TAKE MEASURES TO RE-ROUTE TRAFFIC OR WARN VISITORS TO THE SITE THAT HEAVY EQUIPMENT AND WORK CREWS ARE OPERATING.
10. AREA AND VEGETATION DISTURBED DUE TO GRADING AND EXCAVATING SHALL BE REHABILITATED SATISFACTORY TO THE OWNER AND NEIGHBOURS.

[redacted]

station one architects
Chilliwack 9355 Young Rd V2P 4S3
604 793 9445
Abbotsford 203-2

DRAWING NAME
HARROW ROAD AFFORDABLE HOUSING
LOT 2 HARROW ROAD, PEMBERTON

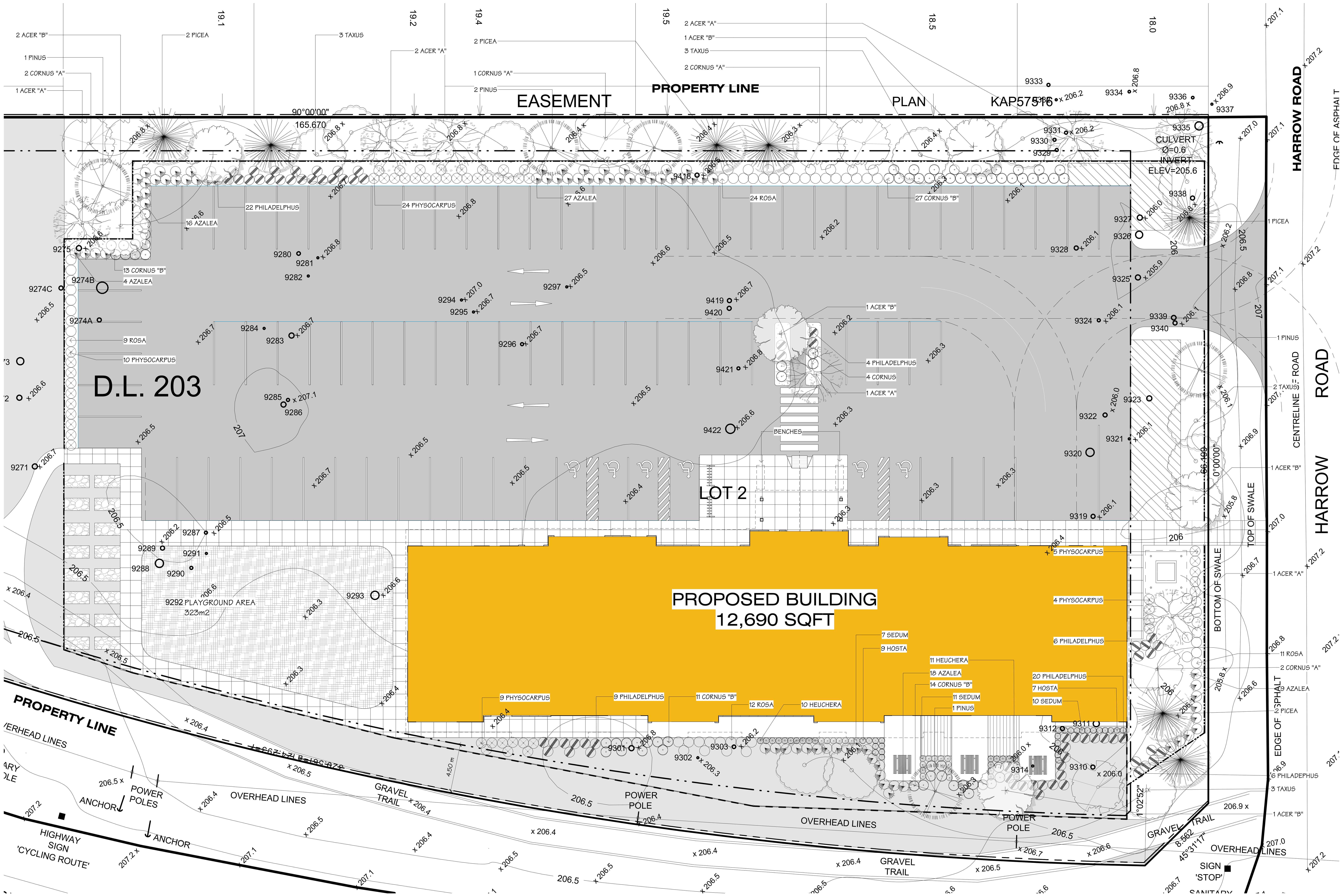
REVISIONS

NO.	DATE	DESCRIPTION
1	10.03.2022	ISSUED FOR DP

DRAWING NAME
OVERALL LANDSCAPE PLAN

JOB NO. 20123
SCALE As indicated
DATE Issue Date

L1.0



PLANTING PLAN
1 : 200
NORTH

PLANTING SCHEDULE - TREES						
TYPE	QUANTITY	LATIN NAME	COMMON NAME	SIZE	ROOTS	REMARKS
"B"	6	ACER PALMATUM DISS CRIMSON QUEEN	WEEPING JAPANESE MAPLE	6cm CAL.		1.8M STAND.
"A"	7	ACER RUBRUM	RED MAPLE	6cm CAL.		1.8M STAND.
"A"	7	CORNUS NUTTALLII	PACIFIC DOGWOOD	6cm CAL.		1.8M STAND.
	7	PICEA ABIES OHLENDORFII	NEST SPRUCE			
	5	PINUS THUNBERGII TEMPLETON	TEMPLETON PINE			
	11	TAXUS FAST. AUREOMARGINATA	GOLDEN COLUMNER YEW			

PLANTING SCHEDULE - SHRUBS						
TYPE	QUANTITY	LATIN NAME	COMMON NAME	SIZE	ROOTS	REMARKS
	74	AZALEA JAPONICA	EVERGREEN AZALEA			
"B"	69	CORNUS SERICEA FLAVIRAMEA	YELLOWTWIG DOGWOOD			
	67	PHILADELPHUS LEWISII	MOCK ORANGE			
	52	PHYSOCARPUS OPULIFOLIUS DIABLO	NINEBARK			
	56	ROSA NUTKANA	NOOTKA ROSE			

PLANTING SCHEDULE - PERENNIAL						
TYPE	QUANTITY	LATIN NAME	COMMON NAME	SIZE	ROOTS	REMARKS
PERENNIALS						
	21	HEUCHERA	CORAL BELLS			
	26	HOSTA 'SIEBOLDIANA ELEGANS', 'SUM AND SUBSTANCE' 'SUN POWER' 'ZOUNDS'	SLUG RESISTANT HOSTA			
	18	SEDUM "AUTUMN JOY"	SEDUM "AUTUMN JOY"			

[redacted]

station one architects
Chilliwack 9355 Young Rd V2P 4S3
604 793 9445
Abbotsford 2

DRAWING NAME
HARROW ROAD AFFORDABLE HOUSING
LOT 2 HARROW ROAD, PEMBERTON

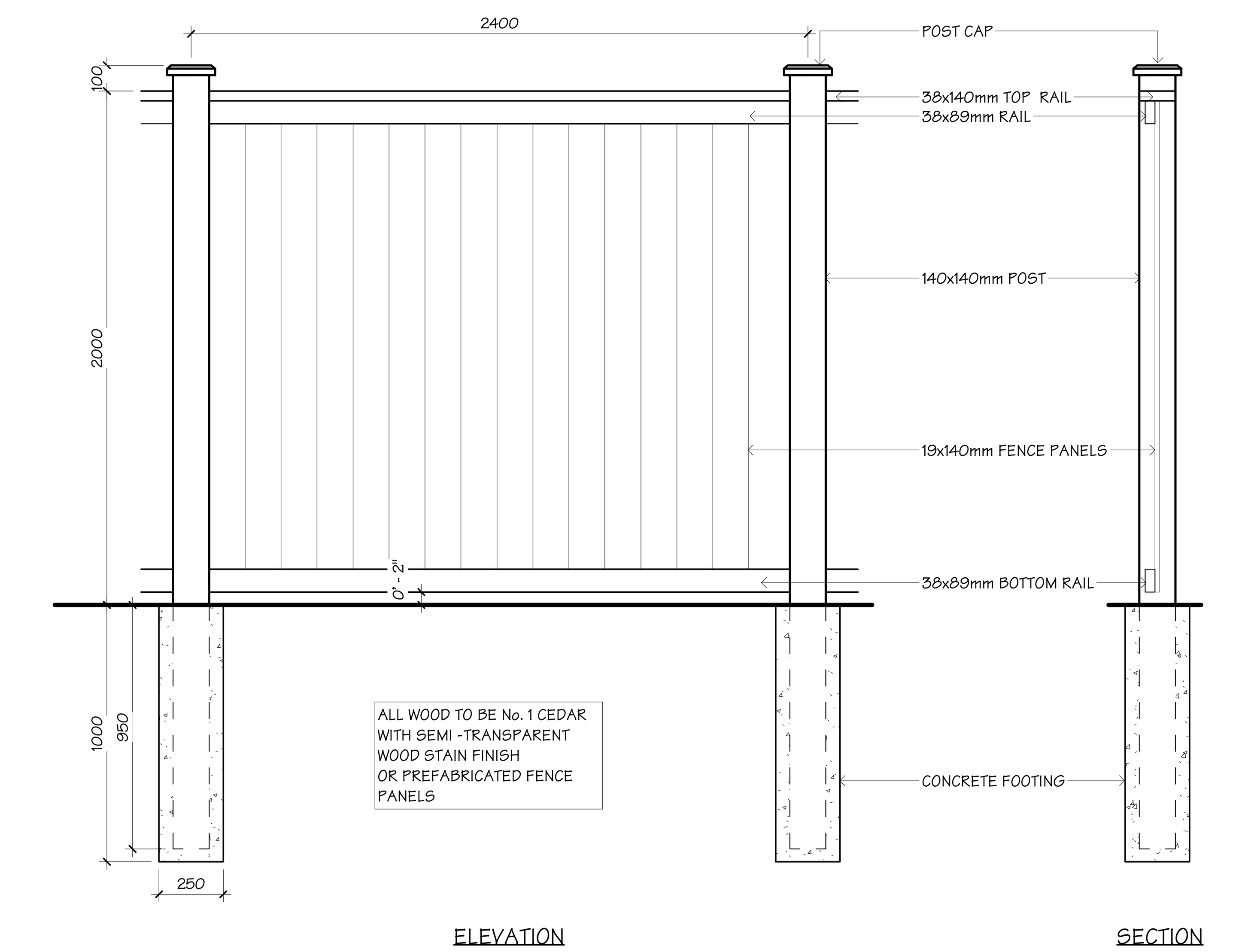
REVISIONS

NO.	DATE	DESCRIPTION
1	10.03.2022	ISSUED FOR DP

DRAWING NAME
OVERALL PLANTING PLAN

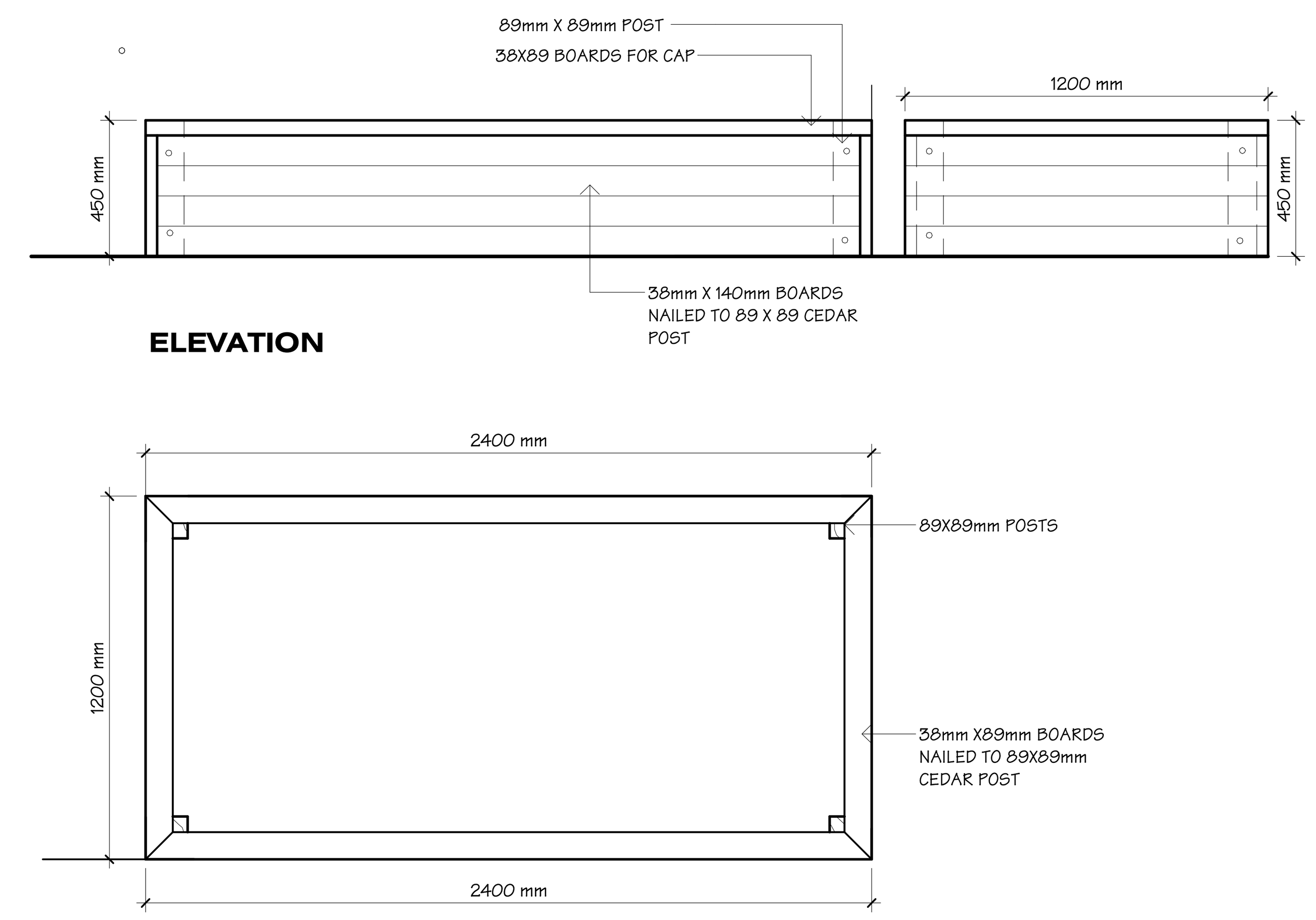
JOB NO. 20123
SCALE 1 : 200
DATE Issue Date

L2.0

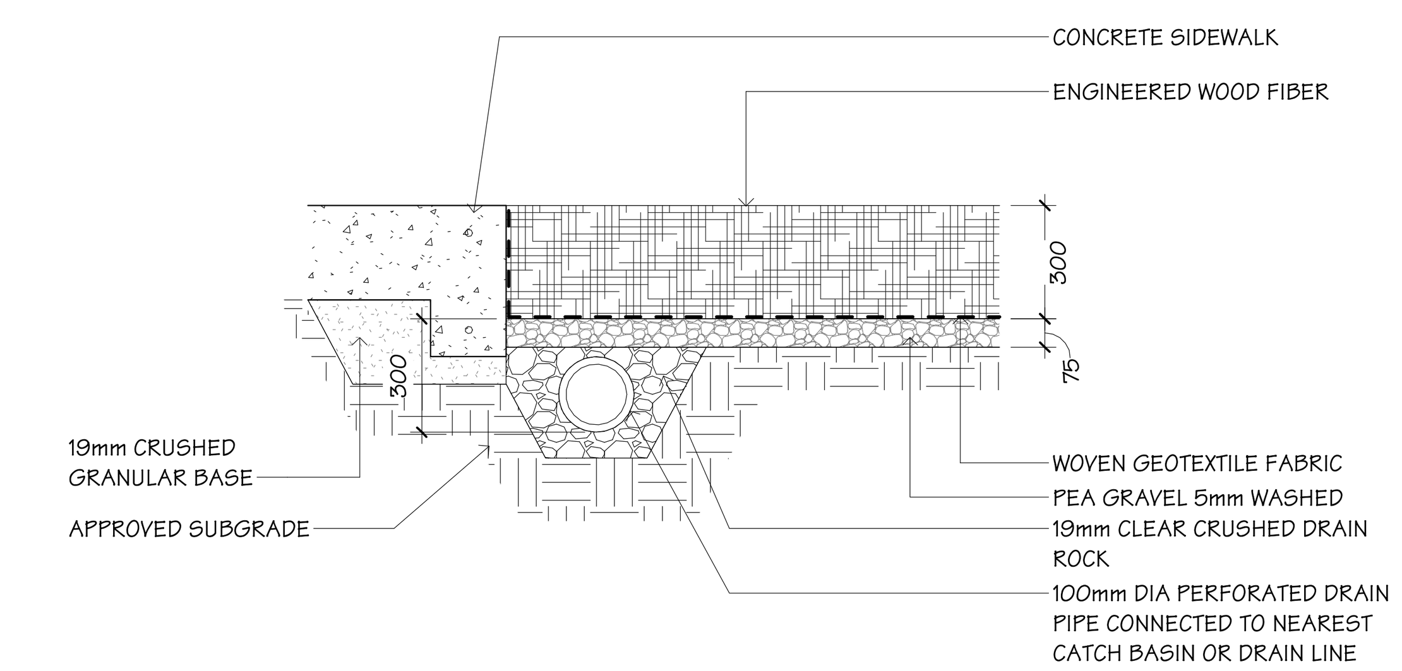


1 L3.0 **SOLID WOOD FENCE**
1 : 20

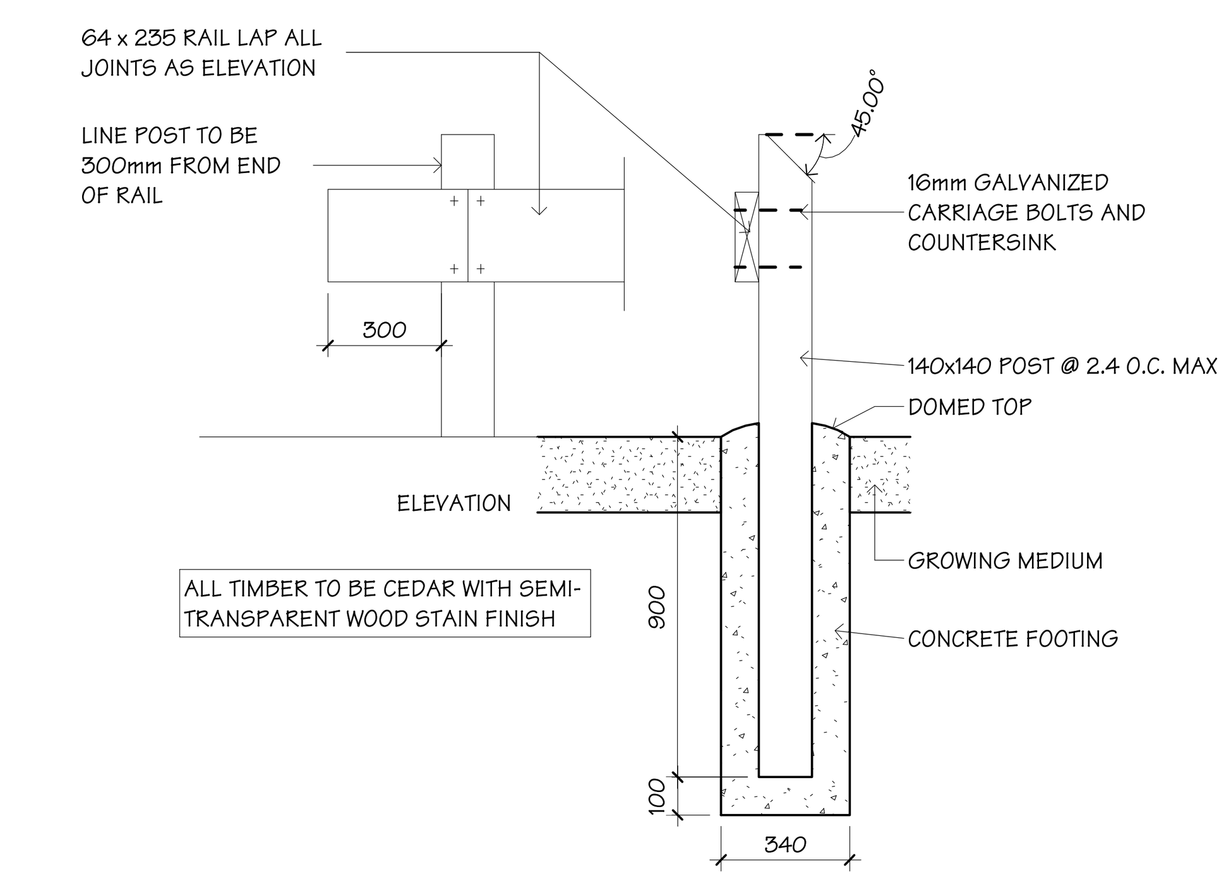
NOTE:
1. ALL TIMBER TO BE NO 1. WESTERN RED CEDAR WITH 546 C/W 2 COATS OF CLEAR SIKKENS 1,2,3 SYSTEM FINISH. SUBMIT SAMPLE OF FINISHED WOOD FOR APPROVAL.
2. ALL EXPOSED HARDWARES TO BE GALVANIZED FINISH FASTENED TOGETHER WITH 76MM LENGTH WOOD SCREWS



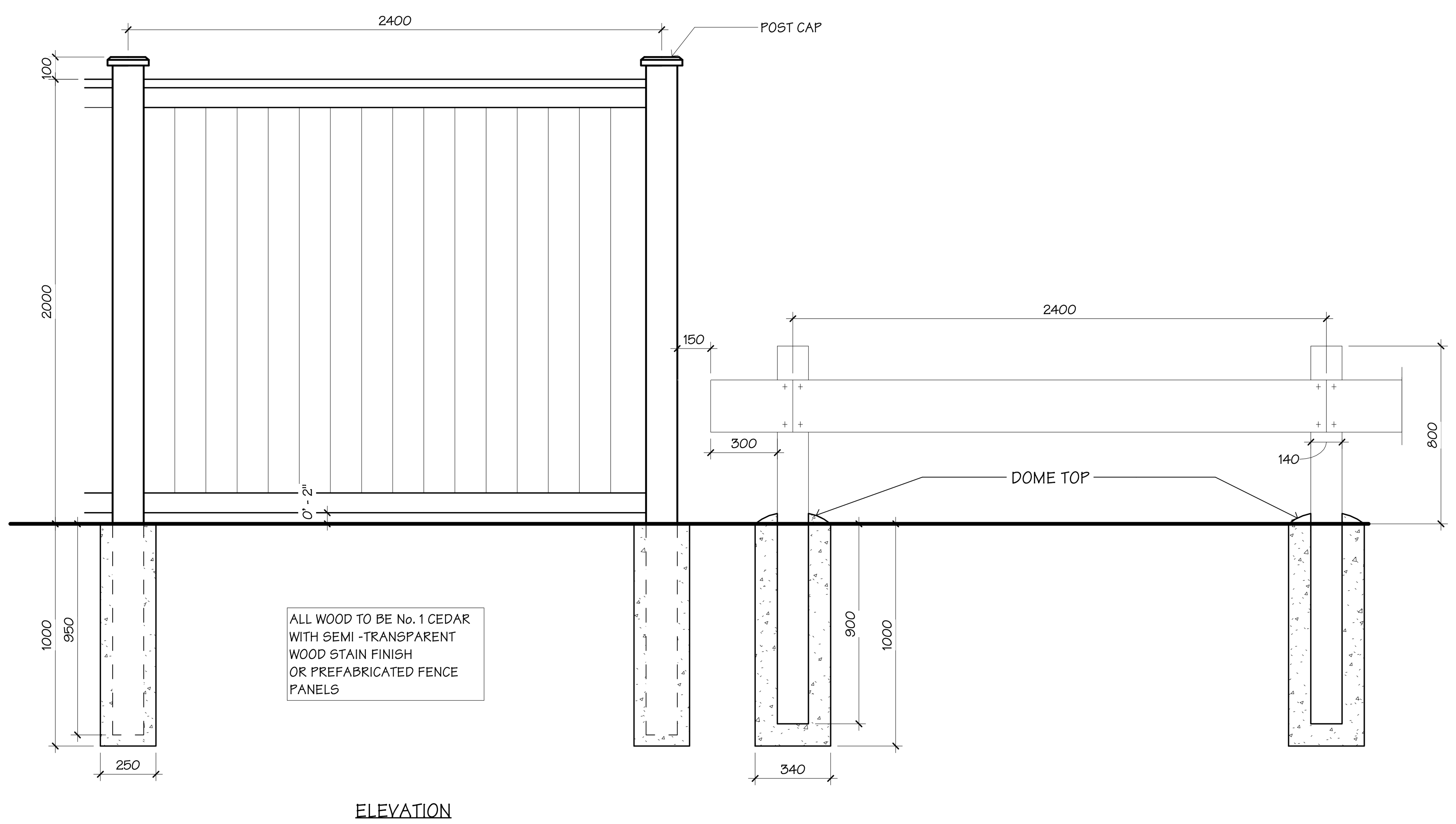
2 L3.0 **COMMUNITY GARDEN BOXES**
1 : 20



3 L3.0 **ENGINEERED WOOD FIBRE W/ CONCRETE EDGE**
1 : 20



4 L3.0 **WOOD RAIL FENCE**
1 : 20



5 L3.0 **SOLID WOOD FENCE TO WOOD RAIL FENCE DETAIL**
1 : 20

MAGLIN PRODUCT
SERIAL NO: MBE-2300-00015
2300 ICONIC BACKED BENCH, 70IN L
Colour: IPE WOOD FOR BENCH SEAT AND BACKREST AND BLACK POWDERCOAT FOR METAL FRAME
CONTACT: 1-800-716-5506

QUANTITY: 2

7 L3.0 **MAGLIN BENCH**
N.T.S.

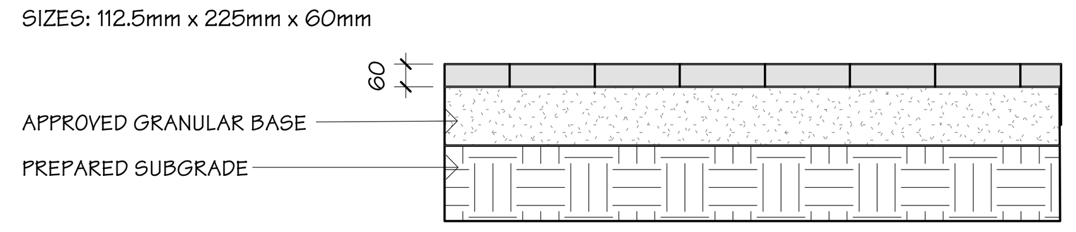
HABITAT SYSTEMS
ITEM: HABITAT PLAYBOOSTER
CONTACT: 604-294-4224

QUANTITY: 1

6 L3.0 **Habitat PlayBooster**
N.T.S.

CLASSIC STANDARD SERIES
COLOUR: NATURAL AND CHARCOAL - RANDOM PLACEMENT OF COLOURS
PATTERN: RUNNING BOND
LOCATION: AS NOTES ON L1.0
SUPPLIER : ABBOTSFORD CONCRETE

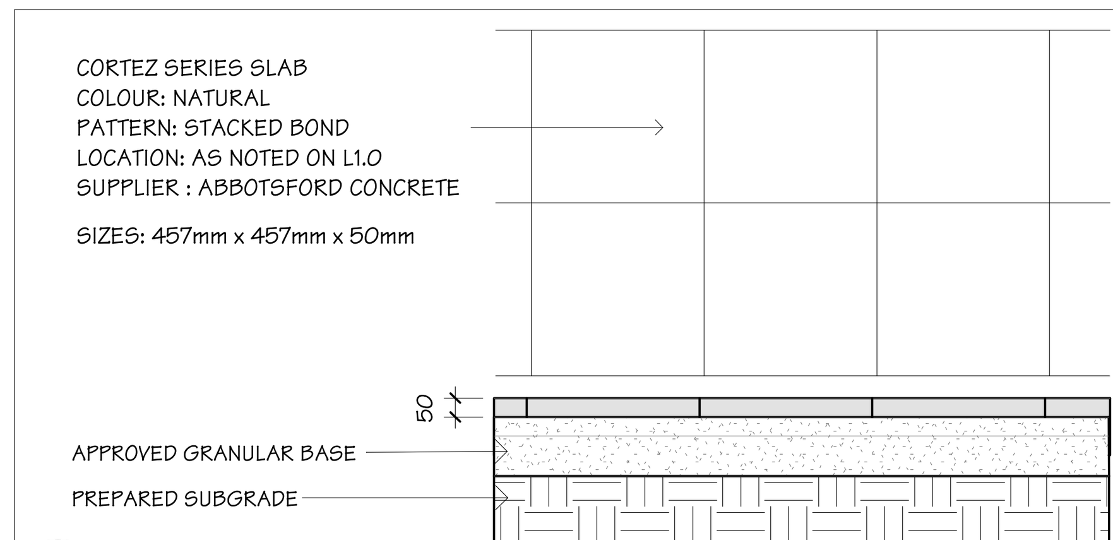
SIZES: 112.5mm x 225mm x 60mm



9 L3.0 **CONCRETE PAVERS**
1 : 20

CORTEZ SERIES SLAB
COLOUR: NATURAL
PATTERN: STACKED BOND
LOCATION: AS NOTED ON L1.0
SUPPLIER : ABBOTSFORD CONCRETE

SIZES: 457mm x 457mm x 50mm



10 L3.0 **CORTEZ PAVERS**
1 : 20

MAGLIN PRODUCT
MODEL: 200 SERIES - MTB-0210-00040
SURFACE MOUNT AS PER MANUFACTURERS SPECIFICATIONS
COLOUR: IPE WOOD AND BLACK POWDER COATING FOR FRAME
CONTACT: 1-800-716-5506

QUANTITY: 3

8 L3.0 **MAGLIN PICNIC TABLE**
N.T.S.

[redacted]

station one architects
604 793 9445 Chilliwack 9355 Young Rd V2P 4S3 Abbotsf

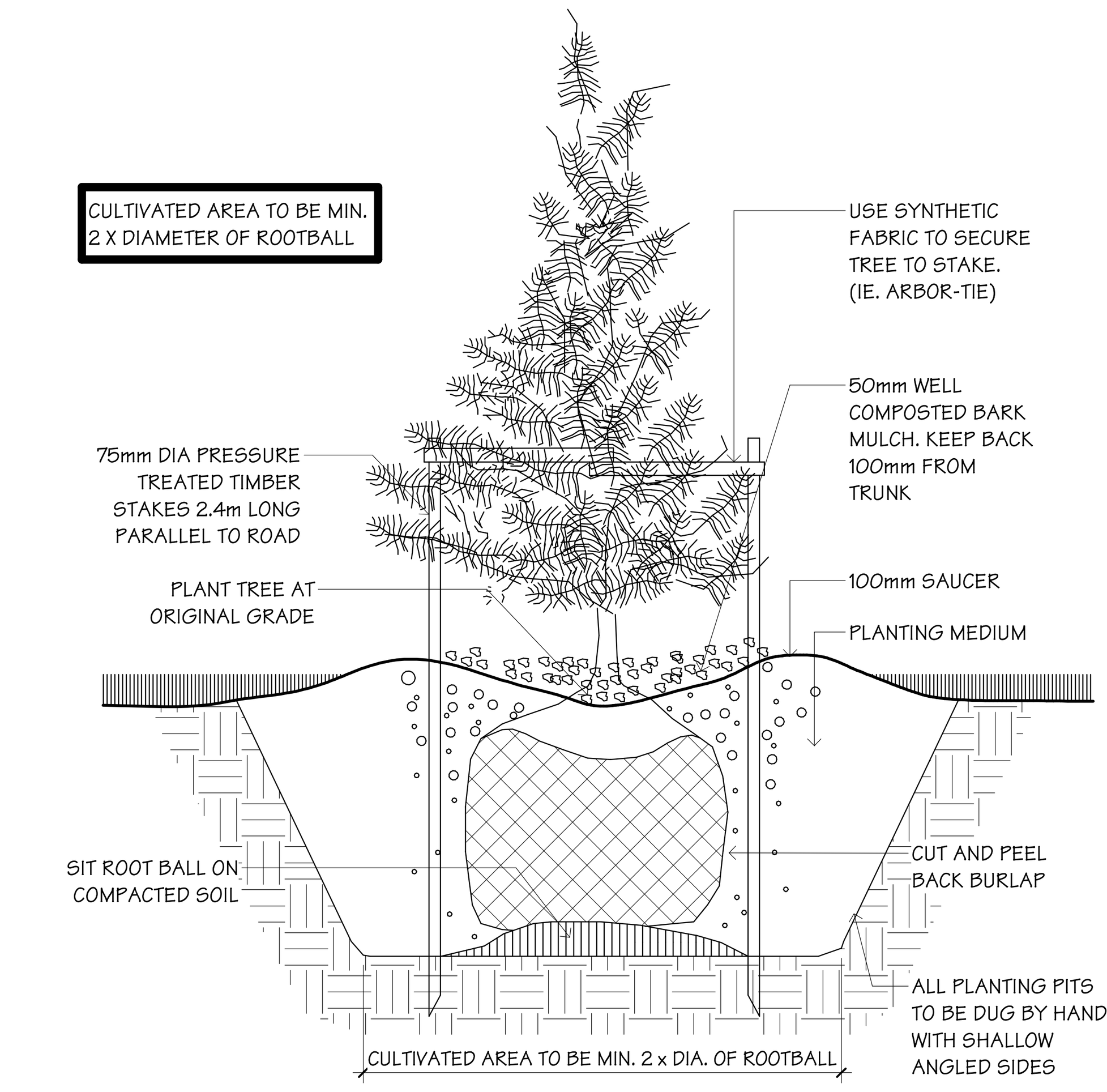
DRAWING NAME
HARROW ROAD AFFORDABLE HOUSING
LOT 2 HARROW ROAD, PEMBERTON

REVISIONS		
NO.	DATE	DESCRIPTION
1	10.03.2022	ISSUED FOR DP

DRAWING NAME
LANDSCAPE DETAILS

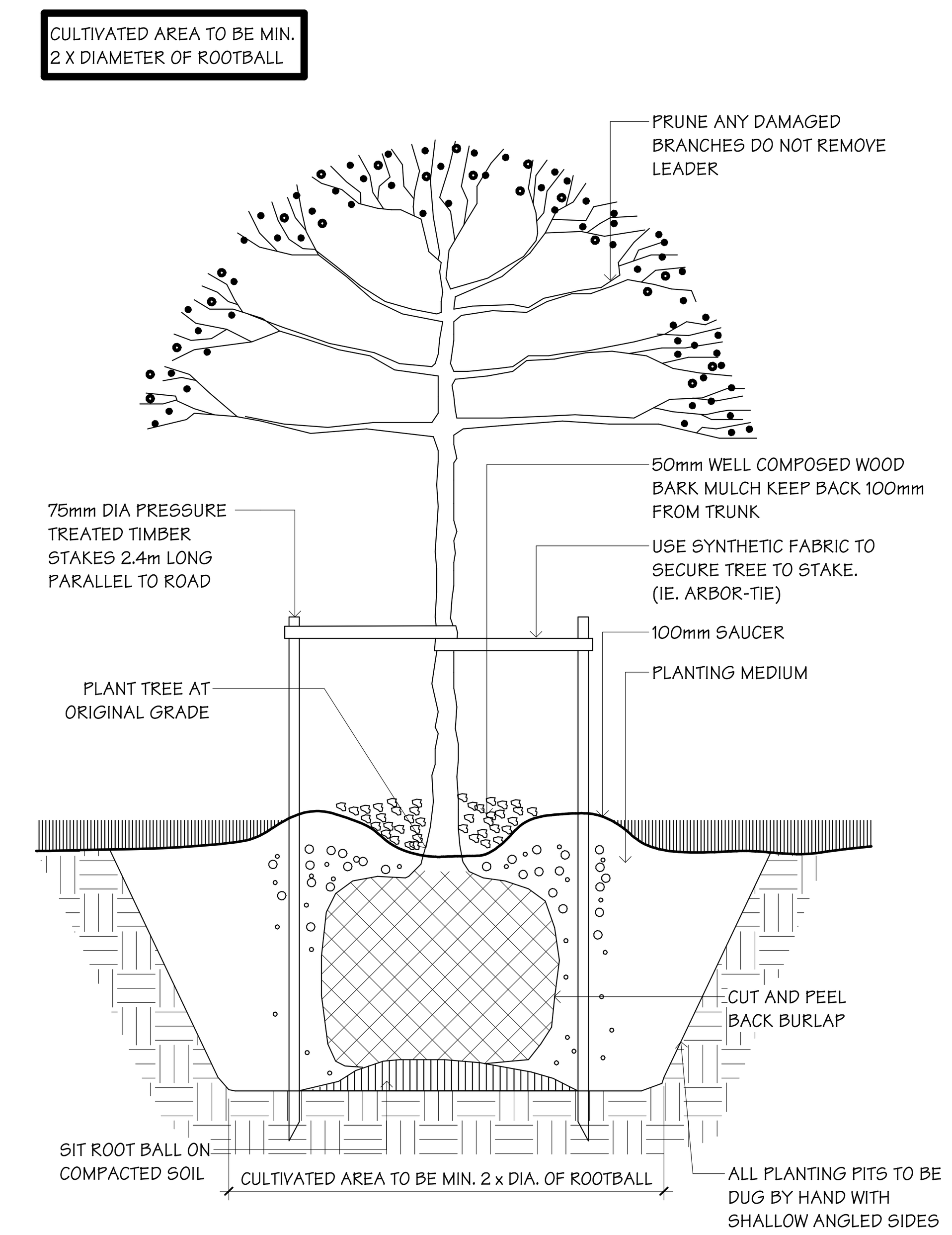
JOB NO. 20123
SCALE As indicated
DATE Issue Date

L3.0



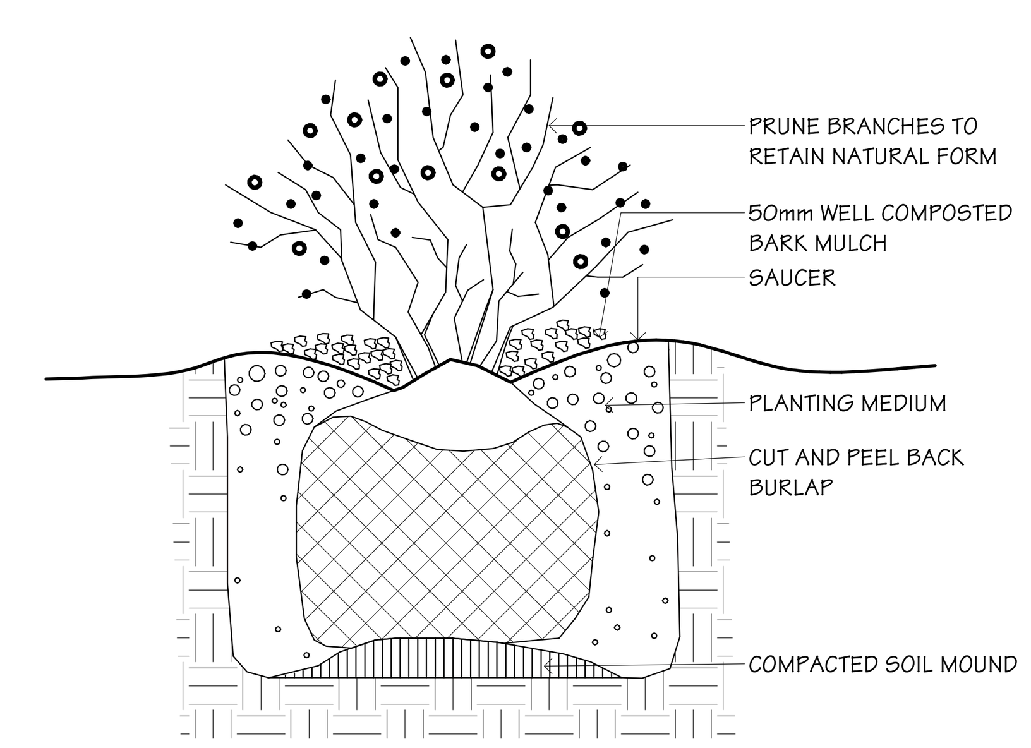
CONIFEROUS TREE PLANTING DETAIL

1 : 30



DECIDUOUS TREE PLANTING DETAIL

1 : 30



SHRUB PLANTING DETAIL

1 : 30

[redacted]

station one architects

604 793 9445 Chilliwack 9355 Young Rd V2P 4S3 Abbotsford

DRAWING NAME

HARROW ROAD AFFORDABLE HOUSING

LOT 2 HARROW ROAD, PEMBERTON

REVISIONS

NO.	DATE	DESCRIPTION
1	10.03.2022	ISSUED FOR DP

DRAWING NAME

LANDSCAPE DETAILS

JOB NO. 20123

SCALE 1:30

DATE Issue Date

L3.1

Energy Step Code Step 3 Energy Modelling Inputs and Results

Pemberton Affordable Housing

Pemberton, BC

Prepared by:
Brian Ward, P. Eng., LEED AP BD+C
Rocky Point Engineering Ltd.

January 6, 2022

RPE File: 21749-M

ROCKY POINT
ENGINEERING LTD.

SUMMARY AND RESULTS

The Pemberton Affordable Housing project consists of 4 storeys of wood-framed residential construction over a wood-framed ground-level commercial and support space. The building is intended to meet Step 3 of the provincial Energy Step Code. Modelling results indicate that the building will meet Step 3 targets for part 3 buildings using the modelling inputs described below. The adjusted TEDI/TEUI results of 23.5 / 94.1 meet the area-weighted Step 3 targets of 34.3 / 121.4 ekWh/sqm/yr. The greenhouse gas intensity (GHGI) target as specified by BC Housing is 5.50 kgCO2e/sqm/yr and the adjusted modelled result was 4.38 kgCO2e/sqm/yr.

Project Name:	Pemberton Affordable Housing
Location:	Lot 2 Harrow Rd, Pemberton, BC
Building Use and Occupancy	Multifamily Residential
Modelled Floor Area (MFA):	6,090 m^2 (65,530 sqft)
Number of Storeys/Units	5 / 63
Energy Standard:	Energy Step Code, Step 4
Energy Modelling Software:	eQuest v3.65 build 7163
Date:	2022-01-06
Simulator:	Brian Ward
TEDI/TEUI Step 3 Targets (ekWh/sqm/yr)	34.3 / 121.4
TEDI/TEUI Result (ekWh/sqm/yr, before corridor pressurization adjustment)	33.4 / 103.9
Corridor Adjustment Factor (ekWh/sqm/yr)	9.84 (based on 11.8 L/s/door of corridor pressurization)
TEDI/TEUI Result (Including corridor pressurization adjustment)	**23.5 / 94.1**
Greenhouse Gas Intensity Target (kgCO2e/sqm/yr)	5.50
Greenhouse Gas Intensity Result (kgCO2e/sqm/yr, before corridor pressurization adjustment)	6.20
Greenhouse Gas Corridor Pressurization Adjustment Factor (kgCO2e/sqm/yr)	1.82
Greenhouse Gas Intensity Result (Including corridor pressurization adjustment)	**4.38**

SIMULATION GUIDELINES USED

City of Vancouver Energy Modelling Guidelines v2.0

NECB 2011 Part 8

CLIMATIC INFORMATION

Climate Zone: 5
Heating Degree Days (HDD): 3350
Weather File: EPW Pemberton Airport

SCHEDULES

Suites: Occupancy, Lighting, Receptacles, Fans & Ventilation, Cooling, Heating and Domestic Hot Water operating schedules as per NECB 2011 Table A-8.4.3.2.(1)G

Other areas: based on Table A-8.4.3.3.(1)B

ENVELOPE

2X6 Wood-framed wall with R22 cavity batt and 25 mm continuous semi-rigid exterior insulation: Clear wall u-value: U-0.037

Thermal Bridging Guide effective wall u-value (See fig 2): U-0.066

Roof effective u-value (R40 insulation above deck): U-0.024

Slab-on-grade: R15 for 1.2m from perimeter

Vinyl Glazing u-value: U-0.25

Aluminum-framed u-value: U-0.38

Glazing SHGC: 0.27

Glazing Percentage: 24.6%

Opaque Doors: U-0.25

Note: infiltration modelled as per 2.4 of the COV guidelines for Step 4 buildings. In order to ensure a conservative airtightness target, a modelled infiltration rate of 0.20 L/s/sqm (3,241 sqm above-grade gross wall area) was utilized in the Step 3 model. This modelling rate results in a normalized air leakage rate (NALR/EALR) target of 1.02 L/s/sqm @ 75 Pa (5,687 sqm total envelope area).

HVAC

Ventilation Rates: ASHRAE 62.1-2001 (except addendum n). Corridor pressurization modelled @ 11.8 L/s/door (25 CFM/door) in residential spaces. Suites and corridor ventilation modelled as continuous operation.

Temperature Setpoints: Heating (22/18), Cooling (24)

HVAC Systems:

Suites – PTACs (10.8 EER) and electric resistance baseboard heat. Continuous ventilation via individual suite HRVs, sensible effectiveness = 83%, modelled as per 2.6.4 of the City of Vancouver Energy Modelling Guidelines.

Common/Amenity – Split Heat Pump (10.8 EER, 7.0 HSPF)

Corridor Makeup Air – 1,700 CFM continuous O/A, 81.0% Et gas-fired unit.

DOMESTIC HOT WATER

Modelled with 0.025 gpm/occupant as per 2.2.1 of COV guidelines. 95% Et gas-fired storage unit. Peak flow rate of 3.46 gpm (13.1 l/min). Low-flow fixture rates as follows:

1) Shower head: 6.6 L/min
2) Lavatory faucet: 3.8 L/min

LIGHTING

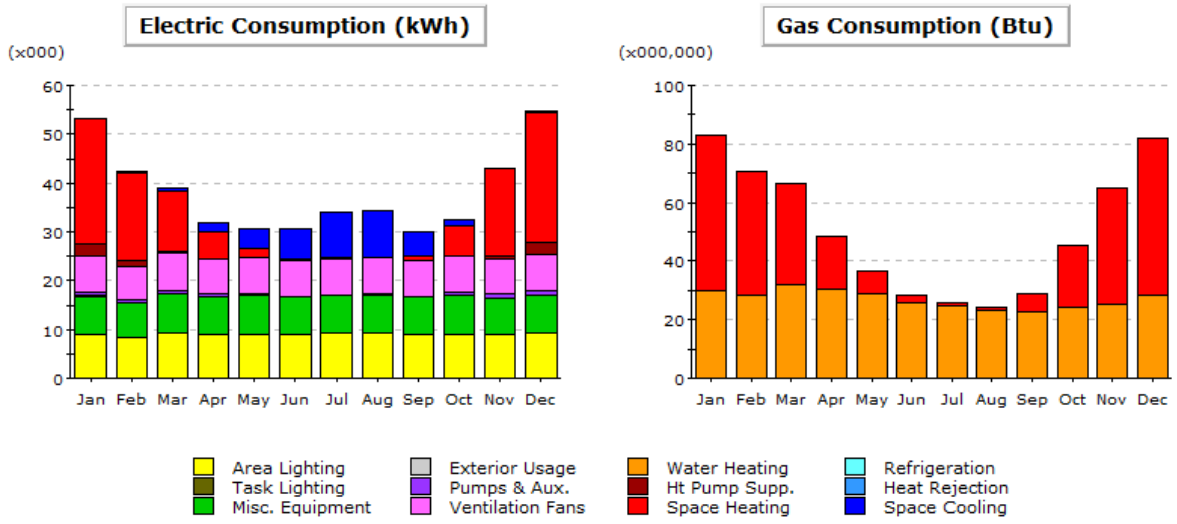
Lighting schedules and suite lighting power modelled as per the City of Vancouver Energy Modelling Guidelines v2. Lighting power of remaining spaces is based on assumed typical LED lighting design package.

Modelled lighting power densities (LPDs):	Suites – 0.46 W/sqft (as per EMG v2)
	Corridors – 0.60 W/sqft
	Storage – 0.40 W/sqft
	Stair – 0.60 W/sqft
	Commercial – 0.70 W/sqft
	Utility/Mechanical – 0.40 W/sqft
	Office – 0.70 W/sqft
	Lounge – 0.60 W/sqft
	Laundry – 0.60 W/sqft
	SSCS – 0.70 W/sqft
Modelled Exterior Lighting Power:	0.46 kW

PLUG LOADS

Suites modelled as 0.46 W/sqft (5 W/sqm) as per City of Vancouver guidelines. Remaining spaces loads and schedules modelled as per NECB table A-8.4.3.2

Project/Run: Pemberton Affordable Housing Step 3 - Baseline Design | Run Date/Time: 01/06/22 @ 08:41



Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	0.06	0.30	0.72	1.69	4.25	6.22	9.40	9.62	4.76	1.19	0.09	0.05	38.34
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	25.59	17.99	12.23	5.55	1.80	0.26	0.06	0.07	1.05	6.17	17.79	26.58	115.15
HP Supp.	2.35	1.10	0.48	0.09	0.02	-	-	-	0.00	0.06	0.62	2.54	7.27
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	7.43	6.74	7.50	7.25	7.43	7.24	7.45	7.46	7.22	7.43	7.21	7.47	87.83
Pumps & Aux.	0.87	0.77	0.79	0.52	0.32	0.13	0.05	0.04	0.22	0.63	0.83	0.87	6.03
Ext. Usage	0.04	0.03	0.04	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.44
Misc. Equip.	7.82	7.11	7.92	7.66	7.84	7.66	7.87	7.89	7.63	7.84	7.61	7.87	92.72
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	9.01	8.28	9.32	9.00	9.09	9.00	9.16	9.24	8.92	9.09	8.84	9.16	108.10
Total	53.17	42.33	38.99	31.79	30.77	30.53	34.01	34.36	29.85	32.46	43.04	54.59	455.88

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	53.08	42.26	34.64	18.26	8.07	2.39	1.00	0.85	6.13	21.45	39.68	53.61	281.39
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	29.96	28.40	31.86	30.23	28.62	25.85	24.65	23.37	22.48	24.15	25.13	28.14	322.84
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	83.04	70.66	66.50	48.49	36.69	28.24	25.65	24.22	28.61	45.60	64.81	81.74	604.24

Figure 1 – Estimated Annual Energy End Use

BC hydro powersmart FORTIS BC™

Scenario Description

Pemberton Affordable Housing
Create New Worksheet
Copy to New Worksheet
Reset Current WorkSheet

Enhanced Thermal Performance Spread Sheet

IP Units (Change Units)

Clear Field Area Method

Select Area Calculation (Choose One)	Area	Units
◉ Sum of Active Clear Field Areas (Default)	26300.00	ft²
○ User Defined Area	Enter User Defined Opaque Area	ft²

Overall Opaque Wall Thermal Performance Values

Base Building		Proposed Building	
Opaque U-Value (BTU/hr ft²*F)	Enter Base Building U-Value	Opaque U-Value (BTU/hr ft²*F)	0.066
Effective R-Value (hr ft²*F/BTU)	-	Effective R-Value (hr ft²*F/BTU)	15.1

Proposed Building Entries

								Totals	1746.9	100%
Add/Remove Detail	Transmittance Type	Include	Transmittance Description	Area, Length or Amount Takeoff	Units	Transmittance Value	Units	Source Reference	Heat Flow (BTU/hr*F)	%Total Heat Flow
Add Clear Field	Clear Field	☑	2X6 Wood Frame with R22 batt plus 1in CI on exterior	26300.00	ft²	0.037	BTU/ hr ft² °F	8.1.5	960.0	55%
Remove Clear Field	Clear Field	☑	Enter Description Here	Enter Area Here	ft²	.0	BTU/ hr ft² °F	Enter Source Here	-	-
Add Linear Interface Detail	Linear Interface Detail	☑	Rim Joist	2628.00	ft	0.044	BTU/ hr ft °F	8.2.2	115.6	7%
Remove Linear Interface Detail	Linear Interface Detail	☑	Wall to Vinyl Window Intersection	6093.00	ft	0.032	BTU/ hr ft °F	8.3.1	195.0	11%
Remove Linear Interface Detail	Linear Interface Detail	☑	Wall to Roof Intersection	657.00	ft	0.032	BTU/ hr ft °F	8.4.1	21.0	1%
Remove Linear Interface Detail	Linear Interface Detail	☑	Wall Corner Intersection	3192.00	ft	0.020	BTU/ hr ft °F	8.5.1	63.8	4%
Remove Linear Interface Detail	Linear Interface Detail	☑	Parking Slab to Wall Intersection	657.00	ft	0.493	BTU/ hr ft °F	8.6.4	323.9	19%
Remove Linear Interface Detail	Linear Interface Detail	☑	Balcony to Wall Intersection	938.00	ft	0.072	BTU/ hr ft °F	8.2.3	67.5	4%

Figure 2 – Building Envelope Thermal Bridging Guide Result

BC Hydro Emissions Factor (kgCO2e/kWh)	0.011					
Natural Gas Emissions Factor (kgCOe/kWh)	0.185					
Corridor Pressurization Adjustment (kgCO2/sqm/yr)	1.85					
	Electricity Consumption (kWh)	Electricity Emissions (kgCO2e)	Natural Gas Consumption (Therm)	Natural Gas Emissions (kgCO2e)	Total Emissions (kgCO2e)	GHG Intensity (kgCO2/sqm/yr)
Proposed	558582.00	6144.40	5745.00	31140.77	37285.17	4.46
Adjusted GHG Intensity (kgCO2/sqm/yr)	**2.61**					

Figure 3 – Greenhouse Gas Intensity Calculation

ROCKY POINT ENGINEERING LTD.

FRONTERA GEOTECHNICAL

1 – 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093

Sea to Sky Community Services
c/o CPA Development Consultants Inc.
100-283 East 11th Avenue
Vancouver, BC V5T 2C4

November 29, 2021
File: 1706

Attention: Mr Casey Clerkson

RE: Preliminary Geotechnical Report, Proposed Mixed-Use Development, Lot 2 Harrow Road, Pemberton, BC

1.0 INTRODUCTION

It is proposed to construct an affordable housing project at Lot 2 Harrow Road in Pemberton, BC which has the legal lot description LOT 2 DISTRICT LOT 203 LILLOOET DISTRICT PLAN KAP56640.

We have reviewed the conceptual drawings prepared by Station One Architects dated August 30, 2021, and the site survey prepared by Bunbury and Associates dated October 6, 2021, in preparing this report. We understand that a four or five level building is being considered. Both building options are proposed to be at grade with a full or partial level of commercial space and/or parkade structure on the first floor and with residential development above.

A geotechnical investigation of the building site was completed by Frontera on October 22, 2021. This report presents the results of our geotechnical investigation which includes soil and groundwater conditions at the site and provides preliminary geotechnical recommendations for the design and construction of the building.

The site is located within the Lillooet River floodplain therefore a flood hazard exists. A flood hazard report has been prepared for the site by Frontera under separate cover which should be referenced alongside this report.

This report has been prepared exclusively for our client and for the use of others within their design and construction team, however it remains the property of Frontera Geotechnical Inc.

2.0 SITE DESCRIPTION

The property is located on the east side of the main village of Pemberton and is the lot directly adjacent to the intersection of Pemberton Portage Road and Harrow Road. The site is bound by acreages to the east and residential development and by Highway 99 to the south.

The site is an irregular triangular shape and is generally flat with grades ranging from approximately 206.0 m at the east and west ends of the site and up to 207.1 m geodetic elevation near the centre of the property based on the survey.

3.0 FIELD INVESTIGATION

Frontera conducted a geotechnical investigation on October 22, 2021. The investigation included eight solid-stem auger test holes. Four of the eight auger holes were supplemented with dynamic cone penetration test (DCPT) soundings. Two of the auger holes were supplemented with a cone penetration test (CPT) sounding.

The test holes were advanced to various depths ranging from 3.1 m to 9.1 m below the local grades at the time of the investigation. The soils were logged in the field and samples were collected for laboratory moisture content analysis. The test hole logs are included in Appendix A.

DCPT soundings are completed by driving steel rods with a blunt tip into the ground using a standardized mechanical drop hammer. The number of blows from the drop hammer required to advance the rods are recorded in 300 mm intervals. The number of blows required to drive the rods 300 mm can be used for inference of the in-situ density of granular soils and fills.

The CPT soundings were advanced to depths of 30 m below site grades, where the desired investigation depth was achieved. As the cone penetrometer is advanced into the ground, it records the tip resistance, sleeve friction, pore water pressure and inclination at 2 cm intervals. Analysis of the CPT sounding data allows for an estimation of geotechnical design parameters and inference of the sub-surface stratigraphy from soil-type behaviour characteristics. The CPT sounding logs and CPT based liquefaction analysis are presented in Appendix B and C, respectively.

The approximate locations of the test holes are shown on the attached site plan, Drawing No. 1706-01.

4.0 SUBSURFACE CONDITIONS

4.1 Soil Conditions

In general, the soil profile noted from the surface downwards at our test hole locations consists of sand to silty sand, over silt, which overlies interbedded peat and clayey silt deposits, underlain by a silt and sand layer. A general description of the soils encountered is as follows:

SAND

From the ground surface, a layer of sand was encountered in all test holes. This sand varied in thickness from 2.7 m to 3.3 m. The sand was fine to coarse grained and became coarser with depth. The sand was generally clean sand, with a trace of gravel in TH21-07. The sand was loose and dry to moist, becoming wet at approximately 2.0 m in all test hole locations. Based on laboratory moisture content analysis the moisture content within this stratum was found to range between 6% and 48%.

SILT

The sand is underlain by soft to firm, low plastic, moist, grey silt with some fibrous organics. This stratum was found at depths between 3.1 m and 3.8 m at TH21-02 to TH21-04, TH21-05 and TH21-06. Within TH21-06, the silt was found to contain traces of intact organic fibers. Moisture contents within this stratum were found to range from 33% to 45%.

Clayey SILT to Clayey PEAT

Deposits of clayey silt to clayey peat were encountered in TH21-02 through TH21-05 underlying the sand and silt where present. At similar depths, in TH21-01 a deposit of peat with trace silt and in TH21-06 an organic silt with organic fibers were noted. The unit was generally observed to contain soft, low plasticity clay and organic fibers and was encountered at depths between 3.3 m and 5.0 m.

Based on laboratory moisture content analysis the moisture content within this stratum was found to range between 80% and 118%.

PEAT

Peat was encountered below the materials above. The peat was amorphous and contained a significant long fibres and wood-like strands and noted to be soft. The peat was found to be up to 1.1 m thick and extended to depths of up to 6.1 m below ground surface. The moisture content was found to range between 104% and 297%.

SILT

The interbedded peat and clayey silt deposits are underlain by low plastic, soft silt at TH21-01, TH21-03, TH21-04 and TH21-05. The deposits encountered in TH21-05 contain traces of rotten wood. This stratum is found at depths between 4.6 m to 6.1 m. The moisture content was found to range between 42% and 53%.

SILTY SAND to SAND

At test holes TH21-05 and TH21-06 fine grained, uniformly graded, loose sand was encountered. This stratum was found at depths between 4.4 m and 9.1 m. The encountered thickness of this stratum was between 1.7 m and 2.0 m, however the stratum continued beyond the extent of our test holes. The moisture content of samples taken from this layer was found to range between 33% and 40%. Based on our review of the CPT interpretations, the silty sand/sand layer was encountered at between 9 to 9.5 m in test hole CPT21-01 and CPT21-02, and was found to extend to depths greater than 30 m.

For a more detailed description of the subsurface conditions refer to the test hole logs in Appendix A.

4.2 Groundwater Conditions

The groundwater table was estimated to be between 1.9 m and 2.4 m below the site grades at test hole locations based on CPT dissipations. The groundwater table is expected to be higher following periods of persistent precipitation and snow melt and may be influence by the water level within the Lillooet River.

5.0 DISCUSSION

5.1 General Comments

In general, the soil conditions consist of sand and silt underlain by clayey silt which in some areas is interbedded with peat. These deposits are underlain by peat, silt and loose sand to silty sand to depth beyond our investigation.

The near surface clayey silt and peat are considered susceptible to consolidation settlement when exposed to an increase in stress such as that imposed by foundation loads or site grading fill. Additional long-term

settlement is expected due to secondary compression and degradation of the peat over time. The compressible layers vary in thickness and depth across the site and therefore differential settlement would be expected unless mitigated against.

The underlying granular soils were found to be generally loose and are considered susceptible to earthquake induced liquefaction in consideration of the 2018 British Columbia Building Code (2018 BCBC) probabilistic seismic hazard.

The site is located within an identified flood hazard area. Available mapping indicates that the flood hazard at the site is significant. The flood hazard report prepared by Frontera should be referred to for flood construction considerations.

The site may be located within a geohazard area. A geohazard report should be completed, and if a hazard exits appropriate recommendations should be made for the project.

Provided the geotechnical consideration above are addressed as described below, we are of the opinion that the project is feasible from a geotechnical foundation design standpoint.

5.2 Consolidation Settlement

The underlying silt and clayey silt are considered susceptible to consolidation settlement when exposed to an increase in stress, such as that imposed by the expected foundation loads. The peat is considered susceptible to primary consolidation, secondary compression, and long-term degradation which would contribute to long term total and differential settlement. Therefore, unacceptable levels of total and differential settlement are expected if not mitigated against.

In consideration of the ground stress increase expected due to the weight of the building and site grading fill settlements are expected. To mitigate the potential for large and differential settlements, we recommend to prepare the site with a preload. The preload will pre-expose the underlying compressible soils to stress levels greater than those expected following construction.

Regardless, some long-term settlement beneath the building should be expected due to secondary compression and the long-term degradation of the underlying peat. To help reduce long term differential settlements, we propose to surcharge the preload to further compress the peat. Ultimately, review of the preload performance would allow us to estimate long term settlements.

5.3 Seismic Consideration

It is generally accepted that loose to compact and saturated non-plastic silts and sands are prone to liquefaction or strain softening during cyclic loading caused by large earthquakes. Once liquefaction is triggered, significant, permanent, vertical and horizontal movements may be experienced. The strength reduction caused by soil liquefaction can cause conventional spread foundations to fail by punching into the liquefied soils.

The 2018 BCBC states that the objective of earthquake-resistant design is to prevent major failure and/or collapse of structures. Structures designed in conformance with the National Building Code of Canada (NBCC) provisions should be able to resist moderate earthquakes without significant damage and major earthquakes without collapse. Collapse is defined as a state where occupants can no longer exit the building because of structural failure. For our analysis, we have relied upon the 2015 NBCC interpolated seismic hazard values from Natural Resources Canada, which are consistent with the 2018 BCBC.

For design purposes, the 2018 BCBC defines a “major” earthquake as one which results in accelerations and velocities with a 2% chance of being exceeded in 50 years which equates to a 1 in 2,475-year

probabilistic seismic hazard. The firm ground peak ground acceleration (PGA) at this location is 0.17g, where g is acceleration due to gravity.

For the purpose of this report, moderate ground shaking has been represented by the mean ground motion with a probability of exceedance of 10% in 50 years. This equates to a 1 in 475-year probabilistic seismic hazard with an associated firm ground PGA of 0.07g.

5.4 Liquefaction Assessment

5.4.1 Liquefaction Triggering

The near surface silts and peat are not considered susceptible to liquefaction although some strain softening may occur. The underlying loose to compact sand is considered susceptible to liquefaction.

We have carried out a liquefaction analysis using the methods of Boulanger and Idriss (2014). Liquefaction triggering was defined using a factor of safety against liquefaction of less than or equal to 1. We considered the method described by Zhang et al. (2002) for estimating liquefaction-induced free field settlements from CPT sounding data. We have limited our analysis of liquefaction potential to 20 m below grade based on common practice and the methods described by Zhang et al. (2002) which states that based on case studies from past earthquakes, little or no surface manifestation has been observed when the liquefied layer is below 20 m depth.

Review of our analysis indicates that the loose sand below 1.5 m to 2 m depth is susceptible to liquefaction triggering. Our liquefaction analysis was based on two CPT soundings at CPT21-01 and CPT21-02. The CPT soundings were advanced to 30 m depth.

Liquefaction triggering is expected when the 1 in 2,475-year seismic hazard is considered. Based on the methods proposed by Ishihara et. al (1985), ground damage is not considered likely.

Liquefaction triggering is considered to be negligible for the 1 in 475-year seismic hazard.

5.4.2 Vertical Settlements

1 in 2,475-year Seismic Hazard Analysis

Post-liquefaction free field settlements for the 1 in 2,475-year seismic hazard ranging from 32 to 40 cm have been calculated when summed from 20 m depth. We recommend that settlements up to 40 cm be considered for structural design due to inherent uncertainty. The soil profile is relatively uniform, and the total thickness and depth of liquefiable soils are similar at our test locations, however, some differential settlements should be expected. We therefore recommend that the structural designers consider differential settlements of up to 20 cm across the width of building.

1 in 475-year Seismic Hazard Analysis

Post-liquefaction free field settlements from the 1 in 475-year event are calculated to be negligible when summed from 20 m depth.

*It must be appreciated that the settlements estimated above are free field settlements and therefore are expected to be similar to the settlement of the surrounding area. The differential settlement estimates do not account for any stiffness associated with the foundation system.

5.4.3 Liquefaction Induced Lateral Displacements

Horizontal displacements are most problematic where sites are located on sloping ground, or near-to a free face such as a shoreline or large drainage channel. These conditions introduce a static bias within the soils and encourage post-liquefaction reconsolidation strains to accumulate in one direction.

The topography surrounding the site is relatively level and therefore, post-liquefaction lateral displacements are considered negligible for this site.

5.4.4 Liquefaction Induced Foundation Shear Failure

Soil liquefaction can cause a loss of vertical load carrying capacity of foundation soils. Foundations supported on non-liquefiable surficial soils can punch through into the underlying liquefied soils.

Based on the anticipated site grades we do not expect that there is sufficient thickness of non-liquefiable soils above the liquefiable stratum to prevent shear induced punching failure. Therefore, it is recommended to support the building on a raft foundation.

5.5 Liquefaction Mitigation Considerations

Provided that structural design can tolerate the post-liquefaction settlements described above, ground improvement to reduce the potential for liquefaction is not considered necessary. If the settlements as described above cannot be accommodated in the structural design of the building, then ground improvement would need to be considered.

5.6 Foundation Support Considerations

Following the recommended site preparation and preloading, we recommend that the building be supported on a raft foundation.

6.0 DESIGN RECOMMENDATIONS

6.1 Site Preparation

6.1.1 Stripping

Site stripping beneath buildings and on-site roads includes removing all trees and vegetation, organic debris, topsoil, structures, foundations, variable fill materials, and any other material considered to compromise the design recommendations herein. In all cases related to the construction these unsuitable materials should be excavated to expose a subgrade consisting of native sand or silty sand.

6.1.2 Compaction

Following stripping, the exposed granular soils should be compacted in place with a large ride-on vibratory compactor.

6.1.3 Site Grading – Engineered Fill

Following compaction, it may be necessary to place fill materials to achieve the desired building grades. Any fill materials placed beneath foundations, grade supported slabs, or roads should be carried out with “engineered fill”.

In the context of this report “engineered fill” is defined as clean sand and gravel fill, compacted in 300 mm loose lifts to a minimum standard of 95% of its Modified Proctor Maximum Dry Density (ASTM D1557) while at a moisture content that is within 2% of its optimum for compaction.

6.1.4 Preloading

Following site stripping and filling we recommend that the building area be preloaded to reduce the total and differential settlements associated with the consolidation of the underlying silt, clayey silt, and peat and to help reduce long-term settlements associated with the underlying peat deposits.

The preload would expose the underlying near-surface compressible soils to a level of stress greater than that anticipated following construction. We do not expect any significant stress attenuation between the applied stress at foundation level and the compressible stratum. Therefore, the foundations are required to be designed as not to exceed the pre-consolidation stress which will be applied during the preload period.

We recommend that for preliminary design purposes you allow for a 3.5 to 4.5 m high preload sand or sand and gravel above the finished slab level. The preload should extend outside of the edge of the foundations, at full height, a distance at least 1.5 m and then sloped at 1.5H to 1V to existing site grades. Any fill proposed for any nearby parking areas, roadways, and any raised landscaped or hardscaped areas should be placed at the time of preload placement.

Settlement gauges should be installed within the preload to measure the rate of settlement. Based on our experience in the area, we estimate that it will take 6 to 9 months for primary consolidation settlement to be complete; at which point the preload could be removed, however, ultimately the preload performance would govern when it can be removed.

Once the building design has been finalized and structural loads are available a preload design drawing can be prepared upon request.

6.2 Foundation Recommendations

6.2.1 Raft Foundation

We expect that following the preloading treatment that building loads could be supported on a raft foundation at serviceability limit state (SLS) bearing pressures of up to 60 kPa and a factored ultimate limit state (ULS) bearing pressure of up to 120 kPa. The bearing capacity for final design should be confirmed once the preload design is complete.

6.2.2 Subgrade Modulus

We recommend that the structural engineer consider a subgrade reaction modulus of 20 MPa/m for preliminary design however, we actual modulus should be confirmed, through testing, at the time of initial site preparation prior to preload placement.

6.2.3 Settlement of Foundations

Post-construction foundation settlements should be expected due to the underlying peat deposits which will continue to settle long-term as they degrade. Frontera can provide updated anticipated settlements once the site has been preloaded and the associated settlements have been reviewed.

6.2.4 Seismic Design of Foundations

The proposed development site qualifies as Site Class F as defined in Table 4.1.8.4.A of the BCBC 2018 due to the presence of liquefiable soils beneath the site. However, in accordance with 4.1.8.4(8), we have assumed that the structure will have a fundamental period of vibration of less than 0.5 seconds and therefore we recommend that the site be classified as “Site Class E” for structural design purposes.

In accordance with BCBC 2018, Section 4.1.8.16., Sentence 8 b), the requirement that “spread footings founded on soil defined as Site Class E or F shall be interconnected by continuous ties in not less than two directions” should be adhered to.

6.2.5 Frost Protection

All foundations should be located a minimum of 0.6 m below site grades for frost protection.

6.4 Concrete Slabs

All grade supported concrete slabs should be underlain by a minimum of 150 mm of 19 mm clear crushed gravel, to help prevent moisture from accumulating below the slab, placed over compacted “engineered fill” as described in this report. The gravel should be lightly tamped in place. We recommend that a poly moisture barrier be placed overlying the gravel beneath the grade supported slabs to help reduce moisture within the concrete.

6.5 Backfill

Backfill adjacent to the foundations should be completed with free draining material such as clean sand and gravel or crushed rock fill containing less than 5% fines. The backfill should be compacted in lifts. In areas where the backfill will support hard landscaping or pavement areas the material should be compacted to a minimum of 95% of its Modified Proctor Maximum Dry Density while at a moisture content that is within 2% of its optimum for compaction.

6.6 Methane Generation Potential

Methane will be produced as a by-product of the natural decay of the underlying peat. Therefore, a gas barrier and gas ventilation system should be incorporated into the project in accordance with building code requirements.

6.7 On-Site Pavement Structures

The peat deposits present beneath the pavement structure will continue to settle with time as the organics decompose and therefore some maintenance due to settlement should be planned for. Following the recommended site preparation outlined in this report, the following pavement structure is considered sufficient to carry the vehicular loading for on-site parking areas.

Table 1: Recommended minimum pavement structure for parking areas

Material	*Thickness (mm)*
Asphaltic Concrete	75
19 mm minus crush gravel base	150
100 mm minus, well graded, clean, sand and gravel subbase course	300

All base and sub-base materials should be compacted to a minimum of 95% of their Modified Proctor Maximum Dry Density (ASTM D698) at a moisture content that is within 2% of optimum for compaction.

The use of geosynthetics in the asphalt subgrade or within the pavement section could be considered to help reduce the effects of settlement on the pavement and improve long-term pavement performance.

7.0 FIELD REVIEWS

As is normally required for Municipal Letters of Assurance, Frontera Geotechnical Inc. should be asked to carry out sufficient field reviews during construction to ensure that the Geotechnical Design recommendations contained within this report have been adequately communicated to the design team and to the contractors implementing the design. These field reviews are not carried out for the benefit of the contractors and therefore do not in any way effect the contractor's obligations to perform under the terms of their contract.

It is the contractors' responsibility to advise Frontera Geotechnical Inc. (a minimum of 24 hours in advance) that a field review is required. Geotechnical field reviews are normally required at the time of the following:

1.	Stripping	Review of stripped subgrade prior to any fill placement
2.	Engineered Fill	Review of materials, placement, and compaction
3.	Preload	Review of preload location and settlement readings
4.	Subgrade	Review of prepared foundation subgrade
5.	Slab-on-grade	Review of slab-on-grade preparation
6.	Backfill/Frost Depth	Review of final building backfill

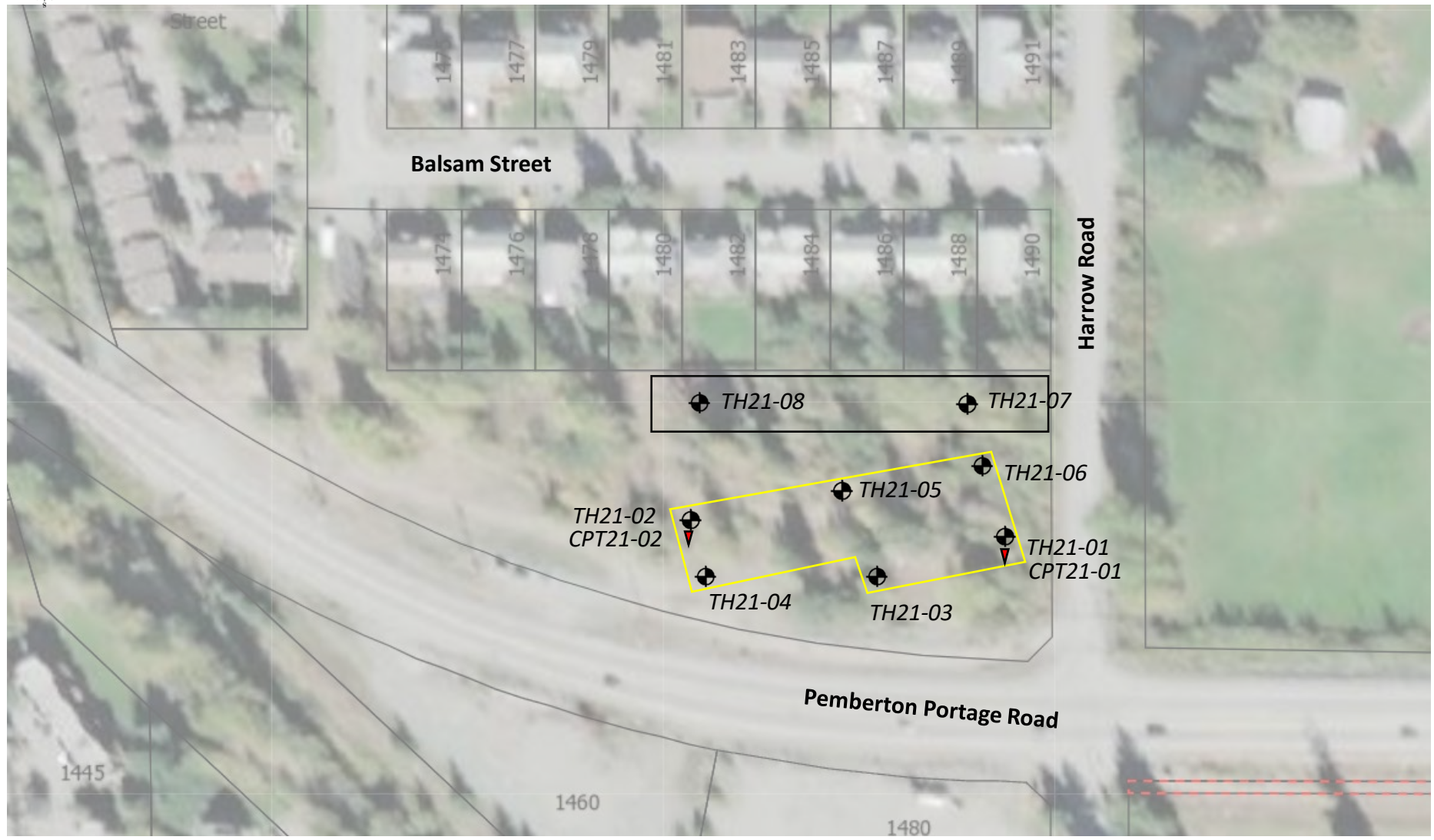
It is critical that these reviews are carried out to ensure that our intentions have been adequately communicated. It is also critical that contractors working on the site view this document in advance of any work being carried out so that they become familiarized with the sensitive aspects of the works proposed. It is the responsibility of the developer to notify Frontera Geotechnical Inc. when conditions or situations not outlined within this document are encountered.

8.0 CLOSURE

This report is prepared solely for use by our client and their design team for this project as described to the general standards of similar work for similar projects in this area and no other warranty of any kind is expressed or implied. Frontera Geotechnical Inc. accepts no responsibility for any other use of this report.

We are pleased to assist you with this project, and we trust this information is helpful and sufficient for your purposes at this time. Please do not hesitate to call the undersigned if you require clarification or additional details.

Frontera Geotechnical Inc.



Geotechnical Investigation Plan

Proposed Mixed-Use Development

Lot 2 Harrow Road, Pemberton, BC

FILE NO. 1706

DWG NO. 1706 - 01

LEGEND

- Auger Borehole
- CPT Location

Date: 2021-10-05

Drawn By:	Approved By:	Reviewed By:
JB		

Scale: NTS, Locations Approximate

FRONTERA GEOTECHNICAL

APPENDIX A
TEST HOLE LOGS

Test Hole Log: TH21-01

Project No.: 1706
Project: Proposed Mixed-Use Development
Client: Sea to Sky Community Services Society
Location: Lot 2 Harrow Road, Pemberton, BC

FRONTERA GEOTECHNICAL
#1 - 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093
www.fronterageo.ca

Depth (m)	Soil Profile: Strata	Soil Profile: Description	Soil Profile: Elevation (m)	Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
0		Ground Surface	206.0				
0 – 2		**SAND** Medium grained, well graded, loose, moist, brown.	204.0		20		
2 – 3		**SAND** Coarse grained, well graded, loose, wet, grey.	203.2		20	▼	
3 – 4		**PEAT** Fibrous peat, woody, trace silt, soft, wet, brown.	201.4		196		
4 – 6		**SILT** Trace organics (wood), low plastic, soft, brown.	199.9		32		
6		End of Borehole					

Dynamic Cone Penetration Resistance: 0 20 40 60 80 (blows/0.3m)

Date of Drilling: 10/22/2021
Rig Type: Solid Stem Auger
Logged By: SG

Datum: Bunbury Land Surveyin
Page: 1 of 1

Test Hole Log: TH21-02

Project No.: 1706
Project: Proposed Mixed-Use Development
Client: Sea to Sky Community Services Society
Location: Lot 2 Harrow Road, Pemberton, BC

FRONTERA GEOTECHNICAL
#1 - 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093
www.fronterageo.ca

Depth (m)	Soil Profile: Strata	Description	Elevation (m)	Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
0		Ground Surface	206.7				
0		**SAND** Fine to medium grained, poorly graded, loose, dry to moist. 1.5 m - grades to medium-coarse. 2.1 m - becomes wet and grey.			25		
3			203.3				
3		**SILT** Low plastic, soft, moist, grey.	202.8				
4		**Clayey Peaty SILT** Low plastic, soft, moist to wet, brown/grey.	201.6		80		
5					297		
6		**PEAT** Amorphous with some fibres, soft, wet, brown	200.6				
		End of Borehole					

Dynamic Cone Penetration Resistance: 0 20 40 60 80

Date of Drilling: 10/22/2021
Rig Type: Solid Stem Auger
Logged By: SG

Datum: Bunbury Land Surveyin
Page: 1 of 1

Test Hole Log: TH21-03

Project No.: 1706
Project: Proposed Mixed-Use Development
Client: Sea to Sky Community Services Society
Location: Lot 2 Harrow Road, Pemberton, BC

FRONTERA GEOTECHNICAL
#1 - 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093
www.fronterageo.ca

Depth (m)	Soil Profile: Strata	Soil Profile: Description	Soil Profile: Elevation (m)	Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
0		Ground Surface	206.5				
0		**SAND** Medium grained, well graded, loose, dry to moist, brown.		3, 7, 4, 5, 3			
2				2, 4, 4, 3, 4	28	▼	
3			203.1	5, 1, 0, 1, 1			
4		**Clayey SILT Interbedded with PEAT** Low plastic clayey silt, fibrous peat, soft, moist, grey/brown	202.2		118		
5		**PEAT** Fibrous,trace silt, soft, moist, dark brown.	201.3	3, 3, 2, 4, 7	139		
6		**SILT** Low plastic, soft, moist, grey.	200.4		53		
7		End of Borehole					
8							
9							
10							

Date of Drilling: 10/22/2021
Rig Type: Solid Stem Auger
Logged By: SG

Datum: Bunbury Land Surveyin
Page: 1 of 1

Test Hole Log: TH21-04

Project No.: 1706
Project: Proposed Mixed-Use Development
Client: Sea to Sky Community Services Society
Location: Lot 2 Harrow Road, Pemberton, BC

FRONTERA GEOTECHNICAL
#1 - 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093
www.fronterageo.ca

Depth (m)	Soil Profile: Strata	Soil Profile: Description	Soil Profile: Elevation (m)	Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
0		Ground Surface	206.3				
0		**SAND** Fine grained, uniformly graded, loose, dry, brown.	205.6				
1		**SAND** Coarse grained, well graded, loose, moist, brown.	203.3				
3		**SILT** Low plastic, soft, moist, grey.	202.7				
4		**Clayey SILT** Intact organic fiber, low plastic, soft, moist, grey/brown.	201.8				
5		**PEAT** Fiberous, trace silt, soft, moist, dark brown.	200.9				
6		**SILT** Low plastic, soft, wet, grey.	200.3				
7		End of Borehole					
8							
9							
10							

Dynamic Cone Penetration Resistance (blows/0.3m): 0 20 40 60 80

Dynamic Cone Penetration Resistance values: 3, 7, 7, 7, 5, 5, 5, 3, 5, 5, 3, 4, 2, 1, 3, 2, 5, 4, 4, 7, 10

Water Content (%): 25, 33, 101, 42

Date of Drilling: 10/22/2021
Rig Type: Solid Stem Auger
Logged By: SG

Datum: Bunbury Land Surveyin
Page: 1 of 1

Test Hole Log: TH21-05

Project No.: 1706
Project: Proposed Mixed-Use Development
Client: Sea to Sky Community Services Society
Location: Lot 2 Harrow Road, Pemberton, BC

FRONTERA GEOTECHNICAL
#1 - 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093
www.fronterageo.ca

Depth (m)	Strata	Description	Elevation (m)	Water Content (%)	Groundwater/Well	Remarks
0		Ground Surface	206.4			
		SAND Medium grained, well graded, loose, dry to moist, brown.	204.4			
2		**SAND** Coarse grained, well graded, loose, wet, grey.	203.4	30		
3		**SILT** Low plastic, soft, moist, grey.	202.9	45		
4		**Clayey PEAT** Low plastic, soft, moist, grey/brown.	202.3	104		
5		**PEAT** Fibrous, soft, moist, dark brown.	201.2			
6		**SILT** Trace organics (rotten wood), low plastic, soft, wet, grey.		45		
7		**Silty SAND** Fine grained, uniformly graded, loose, moist, grey.	199.2			
8				33		
9		End of Borehole	197.3			
10						

Dynamic Cone Penetration Resistance (blows/0.3m): 0, 20, 40, 60, 80

Date of Drilling: 10/22/2021
Rig Type: Solid Stem Auger
Logged By: SG

Datum: Bunbury Land Surveyin
Page: 1 of 1

Test Hole Log: TH21-06

Project No.: 1706
Project: Proposed Mixed-Use Development
Client: Sea to Sky Community Services Society
Location: Lot 2 Harrow Road, Pemberton, BC

FRONTERA GEOTECHNICAL
#1 - 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093
www.fronterageo.ca

Depth (m)	Soil Profile: Strata	Soil Profile: Description	Soil Profile: Elevation (m)	Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
0		Ground Surface	206.3				
0 – 1.5		**SAND** Medium grained, well graded, loose, dry to moist, brown.	204.8	1, 3, 5, 5, 7	6		
1.5 – 2.7		**SAND** Coarse grained, well graded, loose, wet, grey.	203.6	5, 3, 3, 2, 2	19	▼	
2.7 – 3.4		**SILT** Trace organics (intact fibers), low plastic, soft, moist, grey.	203.0	1, 1, 1, 2, 2	190		
3.4 – 4.4		**PEAT** Fibrous, soft, moist, dark brown.	201.9	4, 4, 7, 8, 5	40		
4.4 – 6.0		**Silty SAND** Fine grained, uniformly graded, loose, moist, grey.	200.3				
6		End of Borehole					
7 – 10							

Dynamic Cone Penetration Resistance: (blows/0.3m) 0 20 40 60 80

Date of Drilling: 10/22/2021
Rig Type: Solid Stem Auger
Logged By: SG

Datum: Bunbury Land Surveyin
Page: 1 of 1

Test Hole Log: TH21-07

Project No.: 1706
Project: Proposed Mixed-Use Development
Client: Sea to Sky Community Services Society
Location: Lot 2 Harrow Road, Pemberton, BC

FRONTERA GEOTECHNICAL
#1 - 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093
www.fronterageo.ca

Depth (m)	Strata	Description	Elevation (m)	Dynamic Cone Penetration Resistance (blows/0.3m) 0 20 40 60 80	Water Content (%)	Groundwater/Well	Remarks
0		Ground Surface	206.2				
0		**SAND** Trace gravel, medium to coarse grained, well graded, loose, dry to moist, brown.	204.7				
2		**SAND** Coarse grained, well graded, loose, wet, grey.	203.1		18	▼	
3		End of Borehole					

Date of Drilling: 10/22/2021
Rig Type: Solid Stem Auger
Logged By: SG

Datum: Bunbury Land Surveyin
Page: 1 of 1

Test Hole Log: TH21-08

Project No.: 1706
Project: Proposed Mixed-Use Development
Client: Sea to Sky Community Services Society
Location: Lot 2 Harrow Road, Pemberton, BC

FRONTERA GEOTECHNICAL
#1 - 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093
www.fronterageo.ca

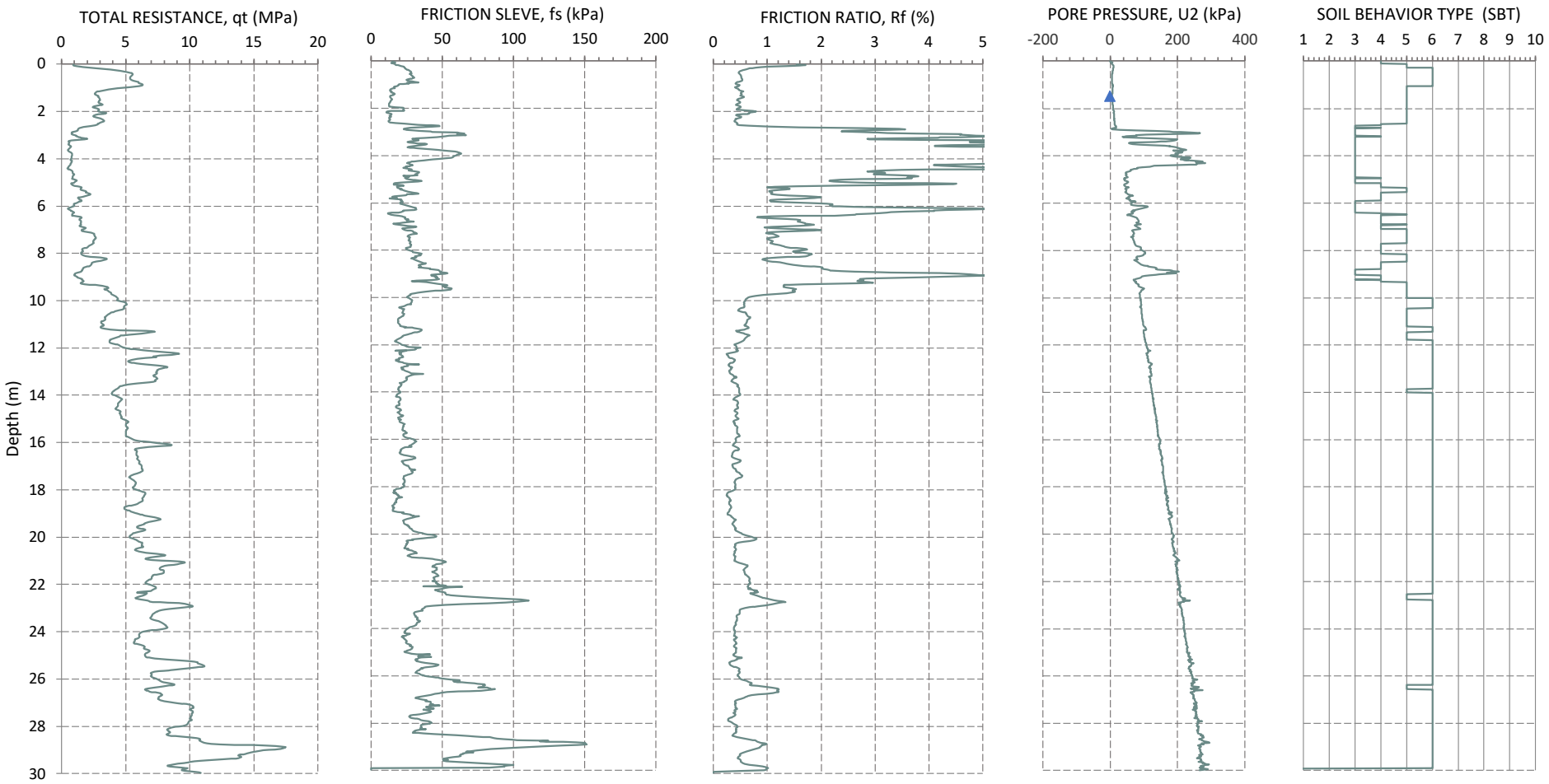
Depth (m)	Soil Profile: Strata	Soil Profile: Description	Soil Profile: Elevation (m)	Dynamic Cone Penetration Resistance (blows/0.3m) 0 20 40 60 80	Water Content (%)	Groundwater/Well	Remarks
0		Ground Surface	206.2				
0 – 1.4		**SAND** Medium grained, well graded, loose, dry to moist, brown. 1.4 m - grades to coarse.					
			204.4		28		
1.4 – 3		**SAND** Coarse grained, well graded, loose, wet, grey.				▼	
			203.1		48		
3		End of Borehole					

Date of Drilling: 10/22/2021
Rig Type: Solid Stem Auger
Logged By: SG

Datum: Bunbury Land Surveyin
Page: 1 of 1

APPENDIX B

CPT BASED SOIL INTERPERTATION



SBT Legend

1. Sensitive Fine Grained	4. Clayey Silt - Silty Clay	7. Gravely Sand - Sand
2. Organic Material	5. Silty Sand - Sandy Silt	8. Very Stiff Clay Sand
3. Clay - Silty Clay	6. Sand to Silty Sand	9. Very Stiff Fine Grained

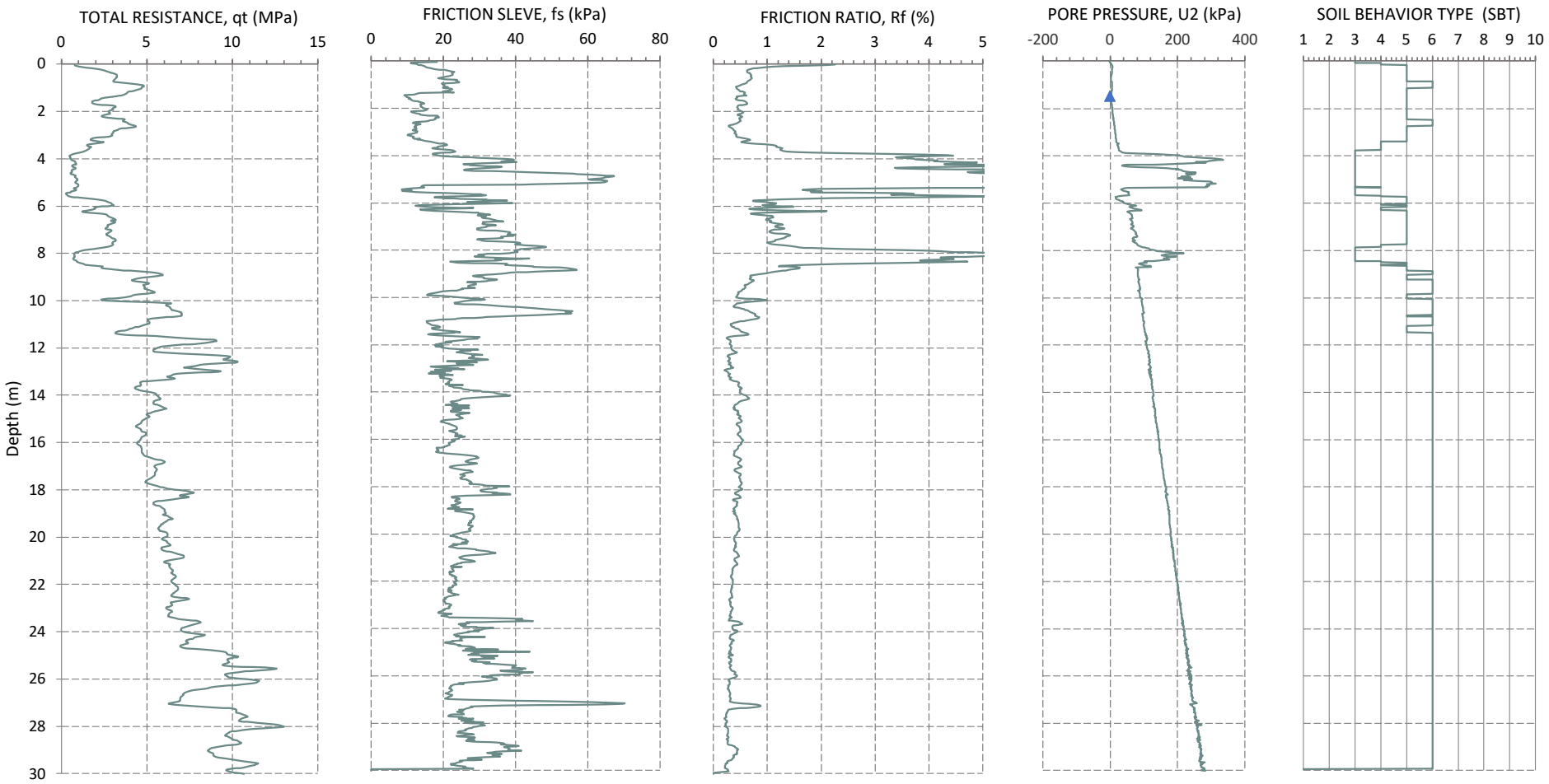
FRONTERA GEOTECHNICAL

Frontera Geotechnical Inc.
#1-38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093

Client:	Sea to Sky Community Services Society
Job No.	1706
Location:	Lot 2 Harrow Road, Pemberton, BC
Date:	October 22, 2021
CPT Trace:	**CPT21-01**

Input Parameters and Analysis Data

SBT Method:	Robertson (1986)
Water Table (m, below grade):	1.5



SBT Legend

1. Sensitive Fine Grained	4. Clayey Silt - Silty Clay	7. Gravely Sand - Sand
2. Organic Material	5. Silty Sand - Sandy Silt	8. Very Stiff Clay Sand
3. Clay - Silty Clay	6. Sand to Silty Sand	9. Very Stiff Fine Grained

FRONTERA GEOTECHNICAL

Frontera Geotechnical Inc.
#1-38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093

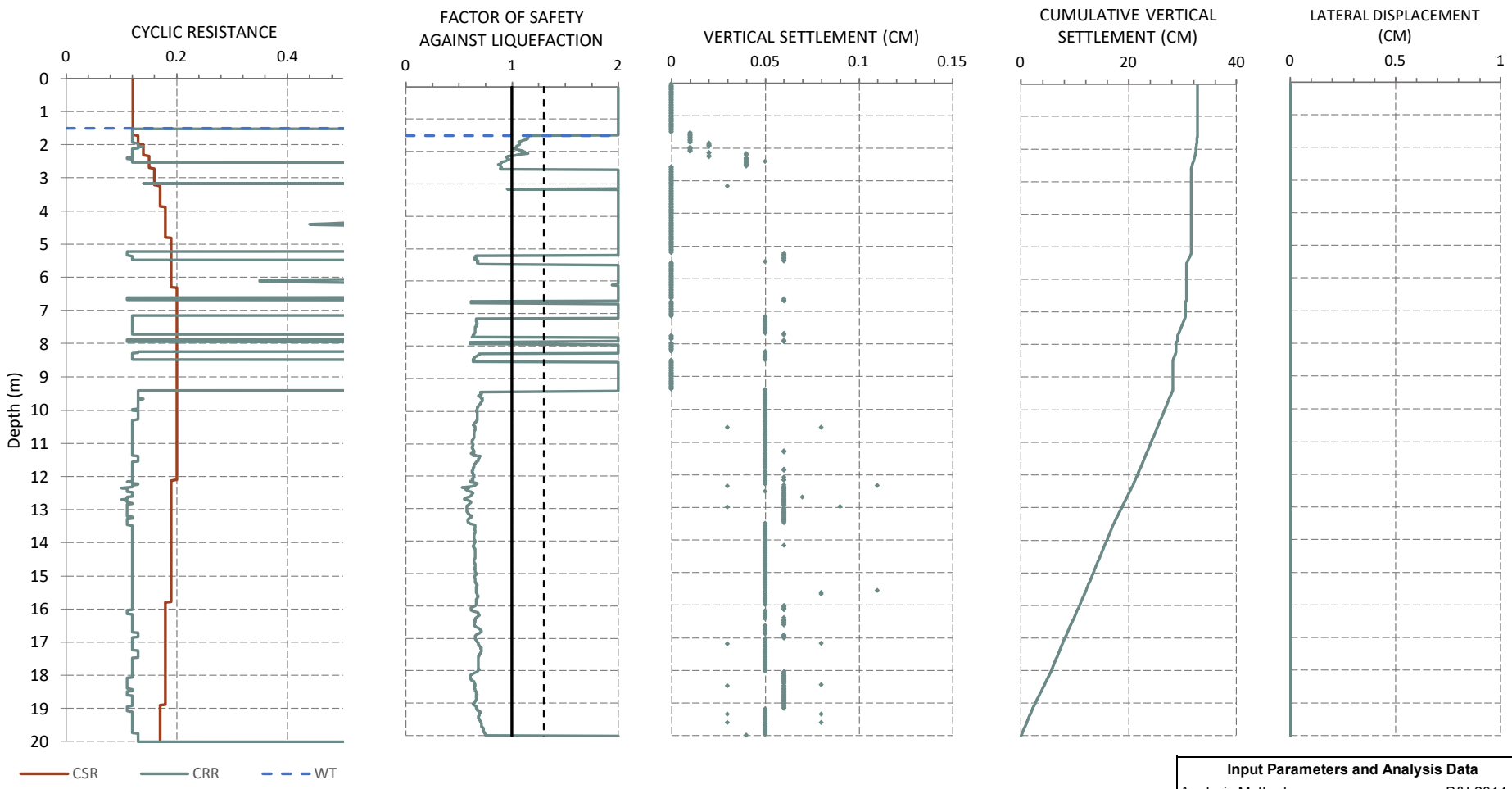
Client:	Sea to Sky Community Services Society
Job No.	1706
Location:	Lot 2 Harrow Road, Pemberton, BC
Date:	October 22, 2021
CPT Trace:	**CPT21-02**

Input Parameters and Analysis Data

SBT Method:	Robertson (1986)
Water Table (m, below grade):	1.5

APPENDIX C.1

1 IN 2,475 YEAR SEISMIC HAZARD CPT BASED LIQUEFACTION ANALYSIS

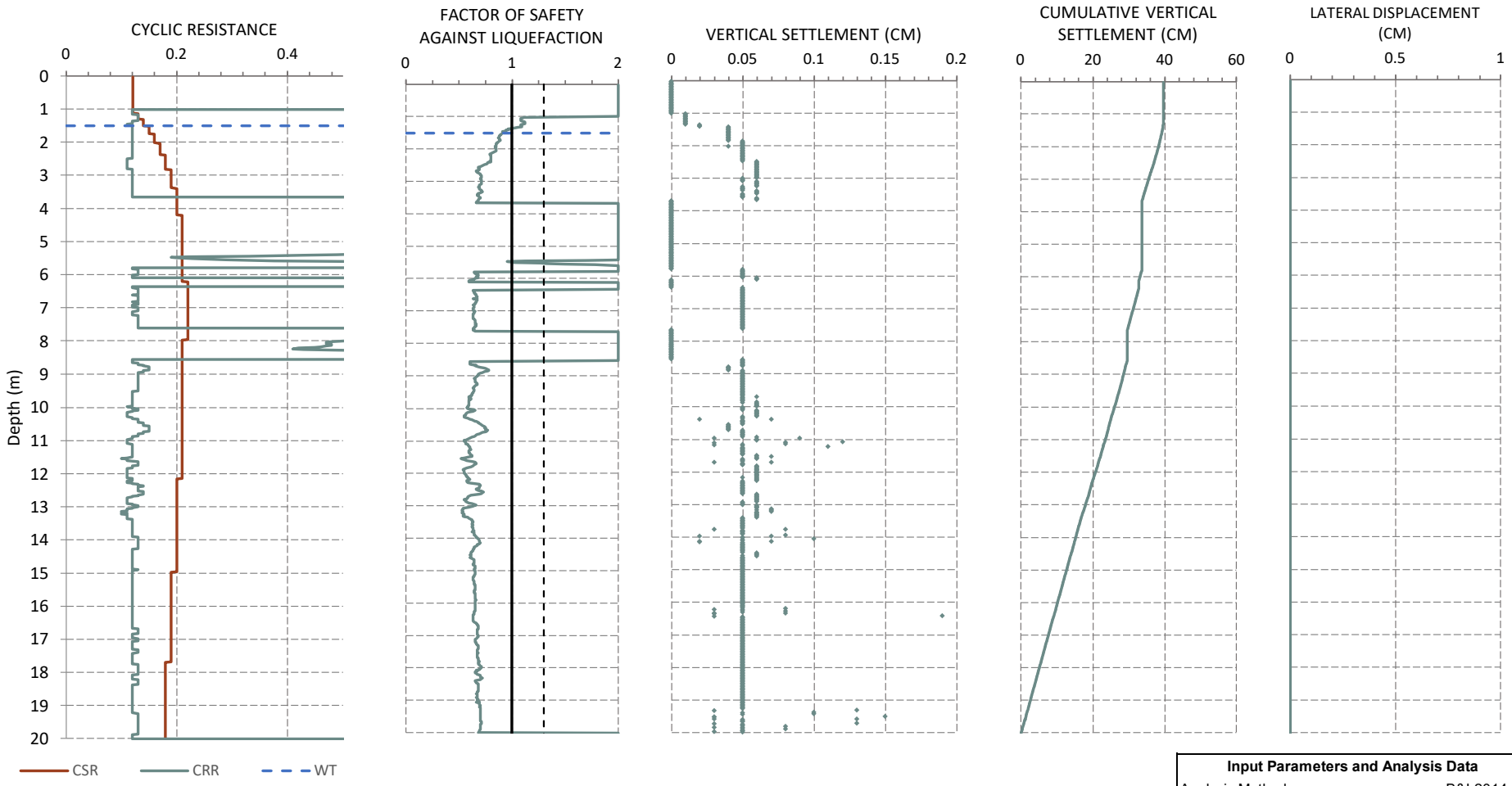


Input Parameters and Analysis Data	
Analysis Method:	B&I 2014
Fines Correction Method:	B&I 2014
Earthquake Magnitude:	7
Peak Ground Acceleration:	0.18
Seismic Hazard:	**1 in 2,475**
I_c cut-off value	2.6
Transitional Layer Detection:	ON
Limit Depth:	20.00 m
Water Table (m, below grade):	1.5

FRONTERA GEOTECHNICAL

Frontera Geotechnical Inc.
#1-38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093

Client: Sea to Sky Community Services Society
Job No. 1706
Location: Lot 2 Harrow Road, Pemberton, BC
Date: October 22, 2021
CPT Trace: **CPT21-01**



Input Parameters and Analysis Data	
Analysis Method:	B&I 2014
Fines Correction Method:	B&I 2014
Earthquake Magnitude:	7
Peak Ground Acceleration:	0.18
Seismic Hazard:	**1 in 2,475**
I_c cut-off value	2.6
Transitional Layer Detection:	ON
Limit Depth:	20.00 m
Water Table (m, below grade):	1.5

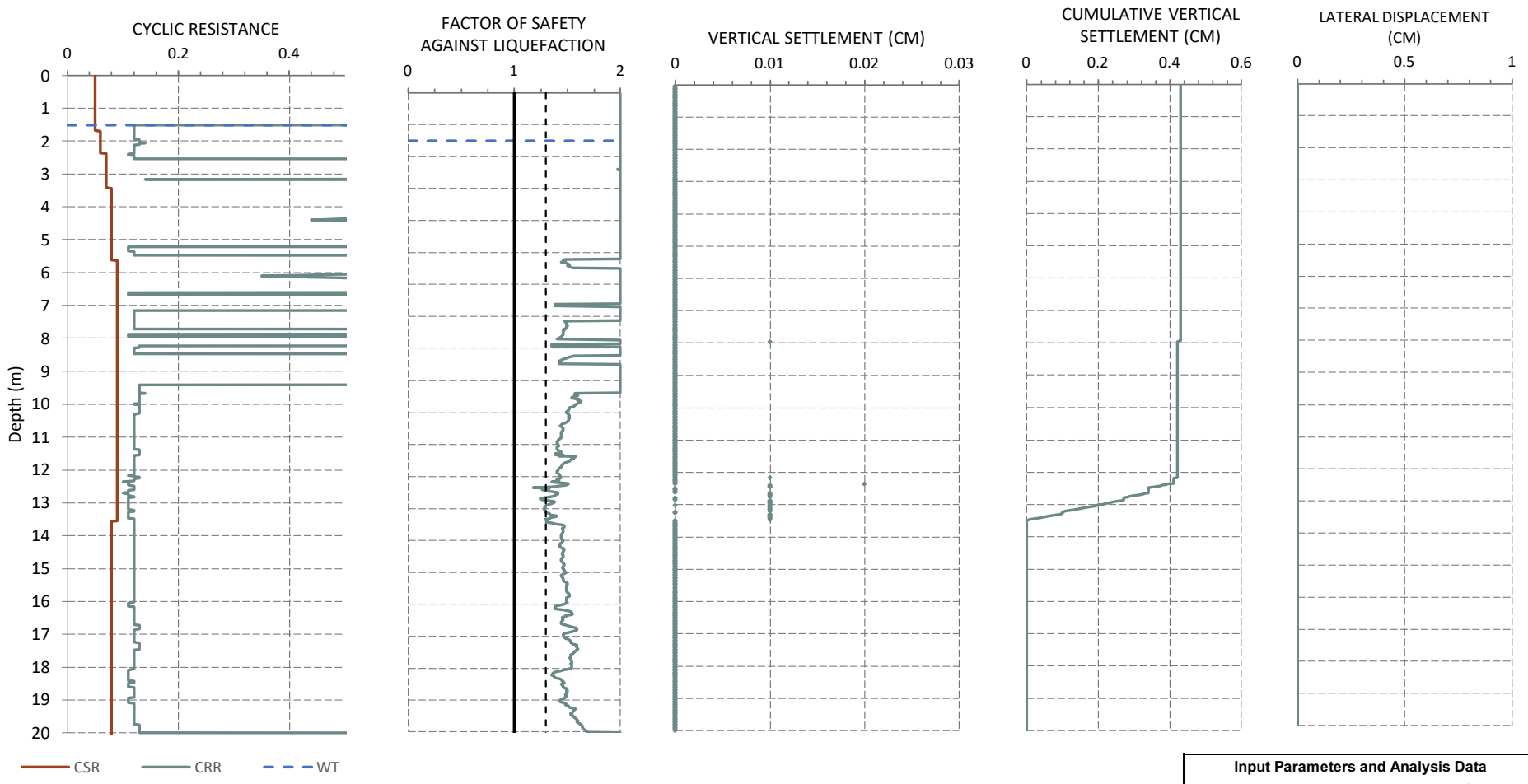
FRONTERA GEOTECHNICAL

Frontera Geotechnical Inc.
#1-38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093

Client:	Sea to Sky Community Services Society
Job No.	1706
Location:	Lot 2 Harrow Road, Pemberton, BC
Date:	October 22, 2021
CPT Trace:	**CPT21-02**

APPENDIX C.2

1 IN 475 YEAR SEISMIC HAZARD CPT BASED LIQUEFACTION ANALYSIS

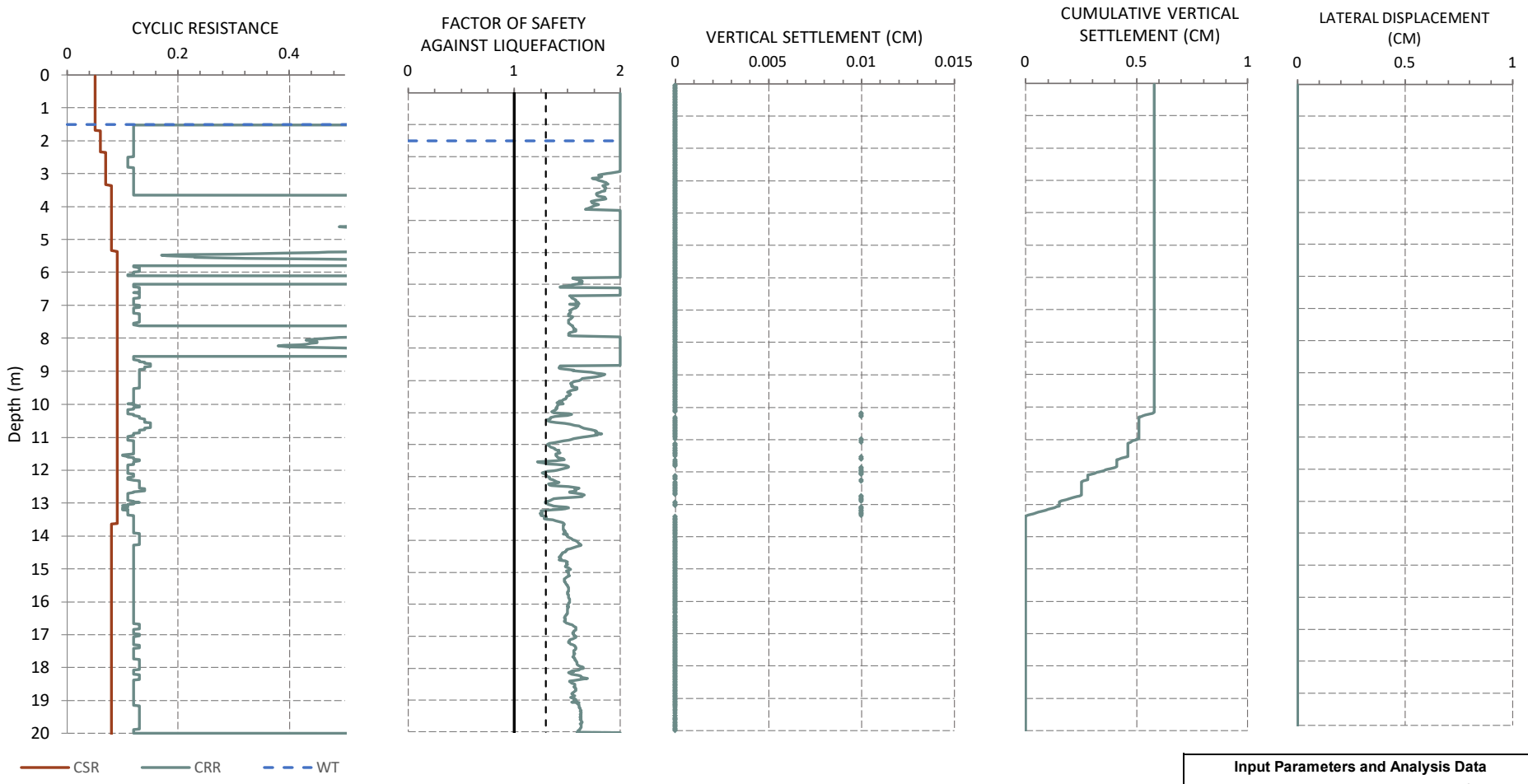


Input Parameters and Analysis Data	
Analysis Method:	B&I 2014
Fines Correction Method:	B&I 2014
Earthquake Magnitude:	7
Peak Ground Acceleration:	0.08
Seismic Hazard:	**1 in 475**
I_c cut-off value	2.6
Transitional Layer Detection:	ON
Limit Depth:	20.00 m
Water Table (m, below grade):	1.5

FRONTERA GEOTECHNICAL

Frontera Geotechnical Inc.
#1-38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093

Client: Sea to Sky Community Services Society
Job No. 1706
Location: Lot 2 Harrow Road, Pemberton, BC
Date: October 22, 2021
CPT Trace: **CPT21-01**



Input Parameters and Analysis Data	
Analysis Method:	B&I 2014
Fines Correction Method:	B&I 2014
Earthquake Magnitude:	7
Peak Ground Acceleration:	0.08
Seismic Hazard:	**1 in 475**
I_c cut-off value	2.6
Transitional Layer Detection:	ON
Limit Depth:	20.00 m
Water Table (m, below grade):	1.5

FRONTERA GEOTECHNICAL

Frontera Geotechnical Inc.
#1-38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093

Client:	Sea to Sky Community Services Society
Job No.	1706
Location:	Lot 2 Harrow Road, Pemberton, BC
Date:	October 22, 2021
CPT Trace:	**CPT21-02**

Development Services
Village of Pemberton
7400 Prospect St.
Pemberton, BC
V0N 2L0

4 March 2022

RE: Letter of Agency for Harrow Road Project

Dear Development Services,

Please accept this letter as confirmation that Sea to Sky Community Services ("SSCS"), the authorized agent of LOT 2 DISTRICT LOT 203 LILLOOET DISTRICT PLAN KAP56640, is appointing Station One Architects to apply for the OCP Amendment, Rezoning, and Development Permit applications for our property located at the corner of Harrow Road and Highway 99.

Please find attached the Consent and Authorization Form between Sea to Sky Community Services and the Owner which appoints SSCS as the authorized agent regarding permit applications.

I trust this satisfies your requirements. If you have any questions or issues, please do not hesitate to give me a call.

We look forward to working with you and the community to bring about a successful application.

Respectfully yours,

[redacted]

Jaye Russell
Executive Director, Sea to Sky Community Services
604-892-5796

SCHEDULE C

CONSENT & AUTHORIZATION FORM

Date: January_____, 2021

TO: The Village of Pemberton Municipal Clerk

This will confirm and authorize our appointment of Sea to Sky Community Services Society ("**SSCS**") as our agent to act on our behalf to seek information or make application regarding any or all of the following enquires, inspections, applications, or permits:

1. Property Enquiries;
2. Property Inspections;
3. Rezoning or OCP Application;
4. Subdivision Application;
5. Development Permit;
6. Building Permit;

regarding those certain lands and premises legally described as:

PID: 023-384-018 LOT 2 DISTRICT LOT 203 LILLOOET DISTRICT PLAN KAP56640.

I / We, the registered owner(s), reserve the right to revoke the above appointment at any time with written notice.

I / we, the registered owner(s):

[redacted]

Print Name

Authorized

Hereby cer

above Land and do hereby consent to the above enquiries, applications, or permits.

Box 100 | 7400 Prospect Street
Pemberton BC V0N 2L0
P: 604.894.6135 | F: 604.894.6136
Email: admin@pemberton.ca
Website: www.pemberton.ca

DEVELOPMENT-GENERAL INFORMATION

Application:

- ☑ OCP Bylaw Amendment &/or Zoning Bylaw Amendment **(Form OR20)**
- ☑ Major Development Permit **(Form DP20)**
- ☐ Minor Development Permit **(Form DPm20)**
- ☐ Development Variance Permit **(Form DVP20)**
- ☐ Temporary Use Permit **(Form TUP20)**
- ☐ Subdivision, Strata Approval/Strata Title Conversion, Lot Consolidation **(Form SUB20)**
- ☐ Antenna System Siting Review **(Form ANT20)**

All Applications **Please include Application Requirements Form (Checklist)**

SITE

Civic Address: Not assigned.

Legal Description:
PID: 023-384-018 Lot: 2
District Lot(DL): 203 Plan: KAP56640

OWNER(S)

Owner Name(s): 567726 B.C. Ltd.

Mailing Address: 3681 W 4th Ave. Vancouver, BC, V6R 1P2

Home:
Work:
Cell:
Email:

OWNER(S) AGENT IF APPLICABLE

Agent's Name: Chelsea Mueller of Station One Architects

Mailing Address: 9355 Young Rd. Chilliwack, BC V2 P 4S3

Work: 604-793-9445
Fax:
Cell:
Email: cmueller@soarchitects.com

☑ *If applicable* Please include Owner's Authorization

X
Owner Signature [redacted] *Date*

X
Authorized Agent Signature *Date* March 18, 2022

COMMENTS:

For owner's authorization, please see Letter of Agency and Schedule C of the PSA attached.

Application No | Fee: $ 35,350 (Total for OCP/Rez/DP)

APPLICATION REQUIREMENTS FOR AN OFFICIAL COMMUNITY PLAN BYLAW AMENDMENT AND/OR ZONING BYLAW AMENDMENT

1. Pre-Application Meeting

It is strongly recommended that prior to submitting an application to amend the Official Community Plan and/or the Zoning Bylaw, an applicant should meet with the Village of Pemberton's Development Services Department to review application requirements. The intent of the pre-application will be to confirm specific submission requirements for each proposal.

It is important to have the Village identify the information required for the application since any applications deemed incomplete by the Development Services Department will not be accepted and subsequently returned to the applicant.

2. Submission Checklist

- ☐ Complete Application Form *(Form OR20)*
- ☐ Application Fee *(in accordance with Development Procedures Bylaw No. 887, 2020)*
- ☐ Certificate of State of Title or of Indefeasible Title *(dated no more than thirty (30) days prior to submission of the application must accompany the application as a proof of ownership)*
- ☐ Copy of Charges on Title *(i.e. covenants, rights of way, statutory building schemes, etc.)*
- ☐ Owners Agent Authorization *(if applicable)*
- ☐ Site Disclosure Statement (*as per* https://www2.gov.bc.ca/gov/content/environment/air-land-water/site-remediation/site-identification)

3. Property Information

Legal Description:
LOT 2 DISTRICT LOT 203 LILLOOET DISTRICT PLAN KAP56640

PID#: 023-384-018

Civic Address: N/A

Property Size*: _____

Current OCP Land Use Designation *(Schedules A and B of the OCP Bylaw):*

Gateway Development

Proposed OCP Land Use Designation *(Schedules A and B of the OCP Bylaw):*

_____

_____

Existing Use/Development on the Property: Vacant

Proposed Use/Development of the Property: Affordable Housing, Commercial, and Community Services

Lands within Agricultural Land Reserve: N/A

4. **Project Summary Information Checklist** *(provide in written format)*

- ☐ Description of Proposed Development
- ☐ Rationale in Support of the Proposed Development
- ☐ Overview of the Proposed OCP and/or Zoning Bylaw Amendment(s)
- ☐ Consistency with OCP Policies and Maps
- ☐ Proposed OCP Policy Amendment(s)
- ☐ Proposed OCP Map Amendment(s)
- ☐ Proposed Zoning Regulation Amendment(s)
- ☐ Proposed Zoning Bylaw Map Amendment(s)

5. **Supporting Plans and Illustrations Checklist**
(hard copies include full size plans and reductions as well as a digital copy)*

- ☐ Location Context Plan
- ☐ Conceptual Site Plan *(indicating development footprints, approximate density, parks/playgrounds, preservation areas, access roads, trails. parking, transit stops, watercourses, agricultural lands, etc.)*
- ☐ Site Development Statistics *(approximate area, unit count, building coverage, area, height, parking, loading, bike racks, etc.)*
- ☐ Environmental Review *(refer to Schedule B of the OCP)* Phase 1 ESA - Complete
- ☐ Geotechnical and Slope Stability Study *(by a qualified professional)*
- ☐ Viewscape Analysis
- ☐ ~~Archeological Overview *(by a qualified professional)*~~ Not req'd
- ☐ Lot Grading Plan
- ☐ Stormwater Management Plan
- ☐ Traffic Impact Study
- ☐ Photographs of the property
- ☐ Existing Subdivision (Legal) Plan
- ☐ Proposed Subdivision Plan
- ☐ Existing and Proposed Slope Analysis
- ☐ Aerial Photo Map
- ☐ Additional Information _____

6. **Servicing Information**
(written text and hard copies of plans to include full size plans and reductions as well as a digital copy)*

- ☐ Location Plan for Road Access Points
- ☐ Description of Existing or Proposed Storm Drainage flows
- ☐ Description of Existing or Proposed Water Service Connections
- ☐ Description of Existing or Proposed Available Sewer Service Connections
- ☐ Description of Existing or Proposed Road Access
- ☐ Location Plan of Existing and Proposed Water and Sewer connections
- ☐ Information to be provided regarding development for the Village to perform an independent evaluation of the water and sanitary requirements in context of the existing systems:
    - AutoCAD based base plan illustrating the onsite collection/distribution system of each utility. Base plan must be referenced to legal cadastral.
    - Sanitary catchment plan complete with calculations and expected pipe inverts.

- Water system plan complete with all expected fixtures (fire hydrants, air valves etc. if applicable) and load calculations. Fire Underwriters Survey fire flow calculation sheet under a Professional Engineer's seal.
- Proposed onsite and offsite works in AutoCAD format for each utility as supported above.
- Preliminary ground elevations within the development.

APPLICATION FORM FOR AN AMENDMENT TO THE OFFICIAL COMMUNITY PLAN AND/OR ZONING BYLAWs (OR20)

I/We hereby make application under the provisions of Part 26 of the *Local Government Act* and the Village's Development Procedure Bylaw No. 887, 2020 for:

- ☑ An Amendment to the Official Community Plan Bylaw and/or
- ☑ An Amendment to the Zoning Bylaw

to permit development on lands legally described as:

Lot: 2, Plan: KAP56640, District Lot: 203, LLD.

THIS APPLICATION IS MADE WITH MY FULL KNOWLEDGE AND CONSENT

_____ _____

Registered owner's signature Date

Where the applicant is NOT the REGISTERED OWNER, the application must be signed by the REGISTERED OWNERS designated AGENT and proof thereof must be registered in the office of the Village of Pemberton.

FOR OFFICE USE ONLY:

Application/File No.: _____

Application Fee received $_____ Receipt No.: _____

Date received: _____

_____

Signature of Official

FRONTERA GEOTECHNICAL

1 – 38920 Queens Way
Squamish, BC V8B 0K8
604-898-1093

Sea to Sky Community Services
c/o CPA Development Consultants Inc.
100-283 East 11th Avenue
Vancouver, BC V5T 2C4

November 4, 2021
File: 1706

Attention: Mr Casey Clerkson

RE: Preliminary Flood Hazard Review Report, Proposed Mixed-Use Development, Lot 2 Harrow Road, Pemberton, BC

1.0 INTRODUCTION

It is proposed to construct an affordable housing project at Lot 2 Harrow Road in Pemberton, BC which has the legal lot description LOT 2 DISTRICT LOT 203 LILLOOET DISTRICT PLAN KAP56640.

We have reviewed the conceptual drawings prepared by Station One Architects dated August 30, 2021 and the site survey prepared by Bunbury and Associates dated October 6, 2021 in preparing this report. We understand that a four or five level building is being considered. Both building options are proposed to be at grade with a full or partial level of commercial space on the first floor and residential housing above. The site is located within the Lillooet River floodplain therefore a flood hazard exists.

This report presents our review of the flood hazard defined by others, provides a recommendation for a 200-year flood construction level (FCL), and provides geotechnical recommendations related to flooding.

There are other geohazards which could affect the site which have not been considered herein and should be addressed by others, as assessing these are beyond the scope of our engagement.

This report has been prepared exclusively for Sea to Sky Community Services, for their use, and the use of others on their design team and for the Village of Pemberton in the permitting process however, it remains the property of Frontera Geotechnical Inc.

2.0 SITE DESCRIPTION

The property is located on the east side of the main Village of Pemberton and is the lot directly adjacent to the intersection of Pemberton Portage Road and Harrow Road. The site is bound by acreages to the east and residential developments to the north. The site is bound to the south by Highway 99 and across the highway is the Pemberton Valley Lodge Hotel.

The site is an irregular triangular shape and is generally flat with grades ranging from approximately 206.0 m at the east and west ends of the site and up to 207.1 m geodetic elevation at the highest point near the centre of the property according to the survey.

3.0 FLOOD HAZARD REVIEW

3.1 Recommended FCL

We have based our FCL determination on the Lillooet River Floodplain Mapping Report prepared by Northwest Hydraulic Consultants Ltd. (NHC), dated November 2018, for the Pemberton Valley Diking District (PVDD) and the Squamish-Lillooet Regional District (SLRD). Review of the documents indicates that the flood surface elevation at the building location ranges from approximately 209.05 to 209.25 metres geodetic.

EGBC 2018, defines the FCL as the design flood level plus an allowance for freeboard. The Lillooet River Floodplain Mapping Report recommends that no additional freeboard be applied to the values presented on the flood mapping as 0.6 m of freeboard was included in their recommendations. Therefore, our recommended FCL for this project is 209.25 m.

Provincial guidelines, best practices, and Frontera recommend that all habitable space be located above the FCL. In the context of flood assessments habitable space typically includes any area used for living, commercial use, or storage of goods damageable by floodwaters. In habitable areas, the top of any concrete slabs-on-grade or the underside of wooden floor systems should be located above the FCL. Typically, building areas located below the FCL are limited to entry foyers, crawl spaces and garages. Any major electrical equipment or mechanical equipment should be located above the FCL.

3.2 Site-Specific Exemption

The site grades range from approximately 206.0 to 206.5 metres geodetic elevation around the edges of the property and are at the highest at 207.1 near the centre of the lot. Based on the review of the available documents, the flood depth for a 1 in 200-year flood event is estimated to be up to approximately 2.0 m to 2.5 m across the site. However, in more frequent but less significant flood events, the flood depth across the site could range between 1.0 m and 1.5 m for a 1 in 100-year event or between 0.5 m to 1.0 m for a 1 in 50-year event.

In order to achieve the FCL for all habitable space, up to 3 m of fill would be required or the ground level could be used as a parkade with a small entrance foyer. Therefore, we understand that a site-specific exemption is being sought to allow for commercial and amenity space to be located on the first level, below the FCL. We understand that similar exemptions have been granted for other projects in Pemberton and that the Village may be supportive provided that the building is deemed to be safe for the intended use by a qualified professional.

We understand all residential space will be located above the FCL on the upper levels of the building. If non-residential uses are permitted to be below the FCL, the building must incorporate the following design requirements.

1. Major fixed equipment including major electrical switchgear, furnaces, ventilation systems and hot water tanks that are integral to and necessary for the functioning of a building according to the BC Building Code are located above the FCL.
2. All elevators have an automatic shut-off to prevent occupants from inadvertently descending into an inundated area.
3. Portions of the structure located below the 1 in 200-year floodplain should maintain some level of resilience against lesser flood events or overland flow. Therefore, we recommend that at a minimum the building slab be at least 0.3 m above the crown of the fronting roads. Based on the available survey, this would result in a slab elevation of at least 207.5 m geodetic elevation.

Provided the recommendations specified above are incorporated in the design, the Village of Pemberton may consider a site-specific exemption to allow for commercial and amenity space to be located below the flood construction level.

Ultimately, it is up to the Village of Pemberton to decide if a site-specific exemption is in their best interest. Frontera would be in a position to provide an assurance on safety as defined in Section 4 of this report.

3.3 Further Considerations

Frontera Geotechnical Inc. will not accept any liability resulting from damage to goods or equipment, or structures constructed below the FCL. This letter should be registered as a covenant on the title and should be made available to future building tenants.

The portions of the structure located below the FCL will be subject to flooding and therefore the owner and any future tenants of the property must be made aware of this risk and should fully appreciate that the portion of the building below the FCL would be subject to flood damage, any contents or stored goods within these areas would be subject to flood damage, and that following major flooding a significant restorative effort would likely be required.

Much of the surrounding area would likely be cut off from access and safe egress during extreme flood events. We recommend that evacuation of the property be prepared for and implemented at the onset of predicted moderate to large flooding in accordance with Village of Pemberton evacuation procedures.

Interpretation of the flood flow velocities from the hazard ratings provided in the Lillooet River Floodplain Report indicates that the subject site is in an area where flood flows in the range of 0.5 – 1.0 m/s could occur and therefore scour protection is recommended. For these moderate flow velocities, per the Village of Pemberton Flood Management Bylaw, armouring of fill slopes which support foundations is considered necessary. Frontera can design the erosion and scour protection upon request once the final design is complete.

The structural designer must consider the hydrodynamic loading which could be imparted by the flood flow velocities and flood depths described above. The structure must be able to safely withstand these flood flows from a structural design standpoint. The flow velocity should be factored as required by the structural engineer. A statement should be provided by the structural engineer confirming that they have included the effects of flooding in their design.

4.0 CLOSURE

Sections 919.1 and 920 of the Local Government Act contains provisions for a local government to request a report from a professional engineer with experienced relevant to the applicable matter to assist them in determining the conditions or requirements which may be required of a project prior to granting of a development permit. In the context of this report “used safely” is defined to mean that the direct effects of the flood itself are unlikely to cause structural damage so as to prevent egress from the building.

In consideration of the flood hazards described herein, and assuming that the hazard mitigation strategies described above are implemented, we consider that the land may be used safely for the use intended.

Prior to issuance of a building permit a Qualified Professional should be asked to review and confirm that the final design drawings have considered and taken into account the recommendations described in this report.

It must be appreciated by all that a risk of flooding exists. If the flood water elevation rises to depths greater than considered herein, for the 1 in 200-year event, or if flood flows are not as expected, damage to the property and any improvements could occur.

Frontera is pleased to be of assistance to you on this project. We trust the foregoing is sufficient at this time.

Yours truly,
Frontera Geotechnical Inc.

Reviewed by:

Will Gerrard, P.Geo.
Geoscientist

Jessica Gagne, P.Eng.
Geotechnical Engineer

DELANEY

the engagement people

Sea to Sky Community Services
Harrow Road Affordable Housing Project
Engagement Findings Report

March 2022

Table of Contents

Executive Summary

This report summarizes the engagement process and engagement findings on the Harrow Road Project. In March 2022, Sea to Sky Community Services (SSCS) will make an application to the Village of Pemberton for an Official Community Plan (OCP) amendment and Rezoning and Development Permit application to support the proposed development. It is important to note that this engagement process was conducted voluntarily by SSCS, prior to any application submissions to the Village of Pemberton. SSCS saw this engagement process as an early opportunity for the community voice to influence the application before it is submitted to the Village of Pemberton for review and decision by Mayor and Council.

The engagement was developed based on the International Association for Public Participation (IAP2) planning methodology and best practices. This report was prepared by Delaney, *the engagement people*, a neutral third party who supported engagement planning, implementation, and the analysis of engagement findings. The engagement process ran from January 2022 (pre-engagement) to February 2022 (public engagement). The two methods that were used in the engagement process were a public, online survey (651 respondents) and community dialogue sessions (33 participants). Between the two methods, 684 people participated in the engagement process. The purpose of the engagement was not to ask people their overall level of support for the project, but rather, to solicit feedback that could improve the application by ensuring the community voice influenced its contents. Specific areas of focus in the engagement included exploring opportunities related to the outdoor space and amenities, ground floor commercial space uses, and overall pros and cons of the proposed project.

Overall, respondents expressed overwhelming support for affordable housing, communicating a sense *of urgency around the need for affordable housing in this community at this moment in time*. For example, one respondent said: "*Pemberton needs more affordable housing for all demographics*" (respondents mentioned seniors, families and low-income individuals) and another said: "*reducing barriers to affordable housing [will] change people's lives [making Pemberton] a role model for creating stronger communities.*"

The main themes regarding outdoor space and commercial space priorities are as noted below.

- **Outdoor space priorities**: The top priority for outdoor space is to have adequate **tenant parking**, followed by the importance of **green space**, and then adequate **parking for visitors**. There are concerns about overflow parking into the neighbourhood; if there is adequate parking in the development, those concerns could be mitigated.
- **Commercial space priorities:** The highest level of overall priority was given to **childcare,** which was seen as a very high priority. Having the space occupied by a **community service provider** ranked second-most important; that said, many respondents opposed adding commercial space to the development.

The top three concerns for the project heard throughout the engagement process are:

- **Height and view impacts** | Several participants mentioned the height of the building, mentioning sight lines, blocked views, and the four-storey precedent in the community. Participants asked whether it would be possible to build wide instead of high. Participants also questioned the location.

- **Parking and traffic flow** | Participants were concerned with overflow parking into the surrounding neighbourhood and raised the importance for each resident to have more than one parking spot. Additionally, participants mentioned concerns about getting on and off the highway safely, as well as the need for added sidewalks.
- **Impact on neighbours and community services** | Participants raised concerns about property values, privacy, and view obstruction. Additionally, participants raised a variety of concerns related to community services for the proposed development, such as fire suppression, water usage and flood mitigation.

Context + Background

Sea to Sky Community Services (SSCS) is proposing to develop new affordable rental housing in Pemberton. The project will bring much needed affordable housing to the region for singles, couples, and families, including people with disabilities. SSCS has a long history of partnering with communities throughout the Sea to Sky Corridor and BC Housing to help address the housing shortage. For decades, SSCS has been working with people in Pemberton and surrounding areas to provide a wide range of services – from child development to crisis intervention to employment programs. This project would be the first SSCS housing project in Pemberton. The project is designed to provide ground floor commercial space, the majority of which will be for SSCS staff and programs so they can continue to provide community services in Pemberton.

This project will help seniors, local families and workforce find secure, stable, and affordable housing during a time of critical shortage of affordable housing in Pemberton and the surrounding communities. The project would have a mix of rents and incomes within a single building, providing affordable non-market rental housing to families, seniors, and persons with disabilities. Thirty percent of units will be market rentals (moderate incomes), 50% will be 'rent geared to income' (RGI) (subsidized units for households that meet BC Housing's Housing Income Limits), and 20% will be deep subsidy (low incomes). The housing program does not include housing with support services or residential care components. The proposed development will create 63 housing units for community members and ground floor commercial and community service space.

The planned location for the new building is a three-acre property at the corner of Harrow Road and Highway 99. The design is being finalized, and the team is committed to designing a building that will integrate with the environment, exceed energy efficiency standards, and complement the Village's spectacular setting. The information gathered during the engagement process will inform the project's development applications to the Village of Pemberton and will include: an amendment to the Official Community Plan (OCP) and Zoning Bylaw, and a development permit. Pending approvals, construction on the project would start in Summer 2023 with occupancy anticipated as early as 2025.

Engagement Process

Throughout this engagement process (comprised of an online survey and community dialogue sessions), members of the Pemberton community and surrounding area were invited to provide their feedback on the proposed development, sharing feedback about outdoor space amenities and ground floor commercial space opportunities and providing general feedback.

The Engagement and Communications Plan (ECP) was developed based on pre-engagement that took place throughout January 2022, including a series of interviews and a workshop for Village of Pemberton, BC Housing and SSCS staff.

Key Dates

Pre-engagement occurred in January 2022 and active community engagement occurred from February 14 – 28, 2022. Key milestones included:

Event	Dates
Pre-engagement Interviews (x 5)	January 10, 2022 – February 2, 2022
Workshop (SSCS staff, BC Housing, Village of Pemberton)	January 26, 2022
Online Survey	February 14, 2022 – February 28, 2022
Community Dialogue Sessions (x 2)	February 17, 2022 & February 23, 2022

* *Promotions and communications techniques and dates are outlined on page 7.*

Engagement Process Limitations

It is important to note that there are limitations that may impact the results of the engagement process. One such constraint is the ongoing COVID-19 pandemic, which impacted the team's ability to host in-person events; as such, engagement opportunities were held in the virtual space (online survey and virtual community dialogue sessions). To mitigate this constraint, the team provided printed paper surveys in central locations in the community, including the library, post office, Lions Villa Seniors Housing, Pemberton Foodbank, and SSCS program space and offices. An option was listed for respondents to call in survey results if they were unable to participate online or by paper. Another constraint is time, given the need to submit the applications for OCP and rezoning to move the process along.

Engagement Goals + Objectives

The engagement goal is the overarching purpose for the engagement and identifies the intention of SSCS in its engagement efforts with interested and affected parties. For this project, the engagement goal is:

To receive feedback on the draft project plan for the proposed affordable housing development so that feedback can help to inform an updated project submission to the Village of Pemberton.

The communications goal is the overarching communications purpose associated with this process and stage of the project. For this project, the communications goal is:

To share information which builds common understanding about the project and the engagement process so that all participants have the information they need to meaningfully participate in the engagement process.

The following **engagement and communications objectives** were developed based on the International Association for Public Participation Spectrum of Engagement (please see Appendix A for the IAP2 Spectrum).

Engagement objectives

1. **Consult** | To receive feedback from the community and interested and affected parties on the draft project plan for the site, so that the **merits and drawbacks of the draft project plan** can be well documented and considered as plans are updated.
2. **Involve** | To listen and learn from interested and affected parties to understand and document their **preferences for outdoor amenities** that may be considered for the project.
3. **Involve** | To listen and learn from interested and affected parties to understand their **preferences for the commercial space**, with a particular focus on community and social services.

Communications objectives

1. To **share information** with interested and affected parties about the draft project plans, key project considerations, and overall project timelines.
2. To **build common understanding** about how the proposed project addresses a critical housing need in the community.
3. To **promote engagement opportunities** for community members to offer their feedback.

Engagement Techniques

The engagement consisted of two community dialogue sessions, with a total of **33 participants**, and an online survey, with a total of **651 respondents**. The online survey and community dialogue sessions were promoted publicly through a roundabout sign featured prominently in the community, 500 printed postcards hand-delivered to neighbours and distributed to community institutions (including library, post office, Mount Currie gas station and grocery store, Pemberton Foodbank and SSCS offices), and through traditional and social media.

Online Survey

The online survey was developed by Delaney and hosted on Canadian-hosted SurveyMonkey. It was launched on February 14 and ran until February 28, 2022.

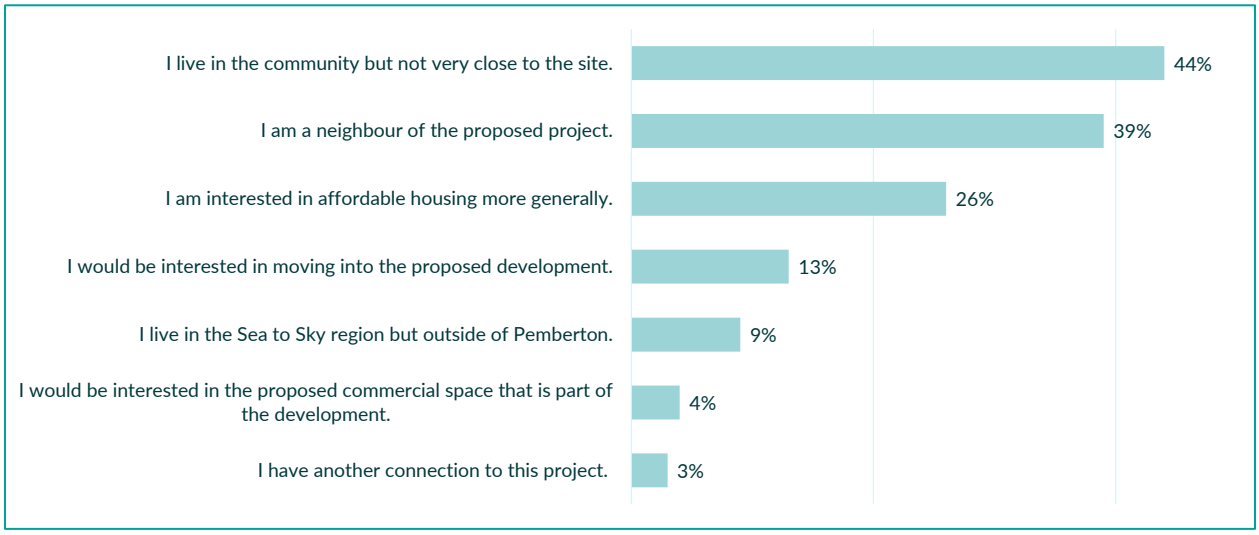
It is important to note this survey was conducted via an open link that was accessible to anyone. As the survey respondents were self-selected and not a random sample, and the results were not weighted to be reflective of a larger group (i.e., the public or community), the results should not be extrapolated to a larger community or group, nor can they be deemed representative of the broader community. We report, therefore, on what was heard from the respondents or survey participants and cannot say that findings reflect the opinions of anyone but this group. These findings provide a window of insights into perceptions of those who participated in the survey.

Please see Appendix B for the full text of the survey questionnaire.

A total of **651 people** participated in the survey. In the first question, respondents indicated their connection to the project.

Respondents were able to select any and all groups they belonged to, resulting in overlap. Just over four in ten (44%) indicated they live in the community but not necessarily close to the site, while four in ten (39%) classified themselves as a neighbour of the project. Another 9% lived in the region but outside Pemberton. As well, a quarter (26%) said they were generally interested in affordable

housing, with 13% interested in moving into the proposed development and 4% interested in the commercial space.



Participants who responded they would be interested in moving into the proposed development were asked the follow-up question: *What type of unit(s) would you be interested in?* Two-bedroom units were the most popular answer, with 71% (of the 13% interested in moving into the proposed development). Four in ten (39%) would be interested in a one-bedroom unit and a third (32%) would be interested in a three-bedroom unit:

# of bedrooms	% Indicating interest
1	20%
2	35%
3	9%
1 or 2	13%
2 or 3	17%
1 or 3	1%
1, 2, or 3	5%

For more detail on the demographic profile of survey respondents, please see Appendix C.

For the open text responses to the survey, please see Appendix D.

Community Dialogue Sessions

Two virtual community dialogue sessions were held – one on February 17, 2022, and the other on February 23, 2022. The first session had 15 participants and the second session had 18 participants, totalling 33 participants.

The community dialogue sessions allowed the project team to share information about the project and receive feedback on the proposed housing development. Feedback included general comments and concerns on the Harrow Road Project, as well as a more nuanced discussion regarding preferences for:

- Outdoor amenities that may be considered for the project.

- Ground floor commercial space, with a particular focus on community and social services.

Communications: Engagement Promotion

The communications approach was enacted collaboratively between the Sea to Sky Community Services project team and the engagement consultant team. Communications techniques were used to build awareness of engagement opportunities and encourage people to take the online survey and register for the community dialogue sessions.

The team utilized the following communication channels:

Channel	Date Promoted
SSCS project page/website (with informational video)	February 2022 and ongoing
Village of Pemberton newsletter	February 11, 2022
Postcard drop (500 postcards delivered to neighbours and centralized locations)	February 11, 2022
Village of Pemberton roundabout sign	February 14 – 28, 2022
Ad in The Pique	February 17, 2022
Social media (Twitter, Instagram, Facebook) • Facebook ads with 11,884 impressions • Posts by SSCS, Village of Pemberton	February 14 - 28, 2022
The Squamish Reporter	February 16, 2022

Key Findings: What Was Heard

Within the survey in particular, there was strong respondent recognition of the need for affordable housing in Pemberton. Specific to this project, there were three general areas of engagement: outdoor space, commercial space, and general feedback (pros/cons) for the project. The information below reports on these areas of engagement with the survey results shared first and then additional insights learned through the community dialogue sessions.

Outdoor Space

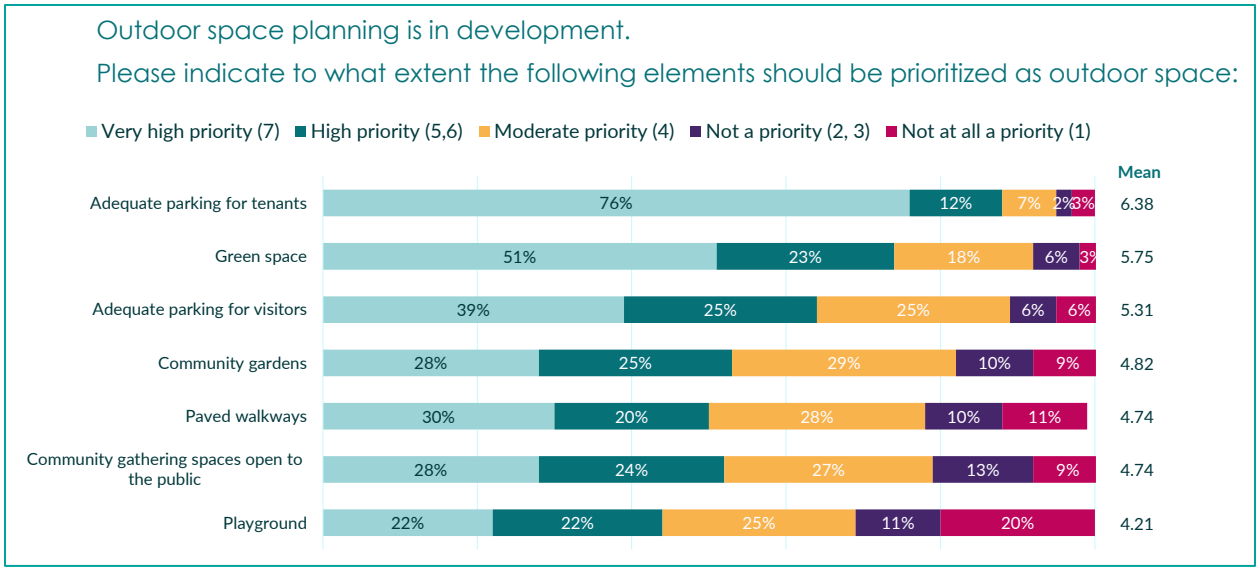
Survey Results

Regarding outdoor space planning, survey participants were asked to what extent they felt several potential elements should be prioritized.

The highest level of priority was given to **adequate tenant parking**, with three quarters (76%) indicating it should be a very high priority (rating it a seven on the seven-point scale) and with an average score of 6.38 out of a possible 7. Second-most important was **green space** (51% highest priority; 5.75), followed by **adequate visitors parking** (39%; 5.31).

The following three elements were seen as secondary priorities: **community gardens** (28%; 4.82), **paved walkways** (30%, 4.74) and **community gathering spaces open to the public** (28%; 4.74).

A **playground** was given the least priority overall, seen as a very high priority for 22% of respondents, with an average score of 4.21 out of 7.



Survey participants were then asked to answer the following open text question: *Do you have any additional input you would like to share on outdoor spaces, including ideas for other uses or amenities?*

To this question, there were several varied responses, with the most common themes being:

- *Adequate parking* | Of primary concern to participants was the need for adequate parking, especially for tenants, followed by visitors. Participants mentioned there is not enough public transit to support living without a car in Pemberton; as such, adequate parking for both tenants and visitors is important. Multiple participants mentioned concerns about overflow parking into the neighbourhood. Some respondents mentioned a desire for indoor or covered parking options.
- *Additional community amenities* | The second most common theme was around specific community amenities. Suggestions varied amongst respondents, reiterating the desire (as noted in the above question) for community gardens and a playground designed for all-abilities. Though there was no predominant response, the following items were raised: storage space and bike parking, spaces designed for tenants, weather protected gathering areas, benches, an area for pets, sports facilities, garbage/recycling area and a snow collection area.
- *Green space for beautification, privacy, and noise* | Several participants wrote of the need for a green buffer to create privacy and noise mitigation between the highway and the development, between existing properties and the development, and in the parking lot. Respondents mentioned that "outdoor spaces should afford current residents with privacy." Many respondents mentioned a desire for green space in general that is "adequate to serve the new residents." Some respondents suggested types of landscaping, including landscaping that "does not attract wildlife."
- *Less Common Themes:* Further themes that emerged from this open text question, though had fewer mentions were environmental considerations (rainwater, use of concrete), connection points to trails and sidewalks, safety measures and accessibility (for bikes, mobility, and visual impairment).

Community Dialogue Session Results

Community dialogue participants were asked to participate in a zoom poll, selecting their top priority for outdoor space. In both sessions, parking was the top priority (for residents, followed by visitors), mirroring the survey results. Green space came in a close second.

Additionally, participants were asked an open-ended question in small breakout groups, giving space for each participant to expand on: *What is your top priority for outdoor space? Is there anything missing?*

The primary themes evident in participants' responses included:

- *Overflow parking concerns* | Participants were concerned with overflow parking into the surrounding neighbourhood, as streets are already crowded (especially in the winter when paired with snow management). Participants raised that it is important for each resident to have more than one parking spot so that the neighbourhood does not flood with cars.
- *Green space and landscaping* | Participants expressed that it "looks like a big parking lot", and the importance of bringing greenery and trees into the space for visual impact. Participants also mentioned the desire for a green space barrier at the edge of the property.

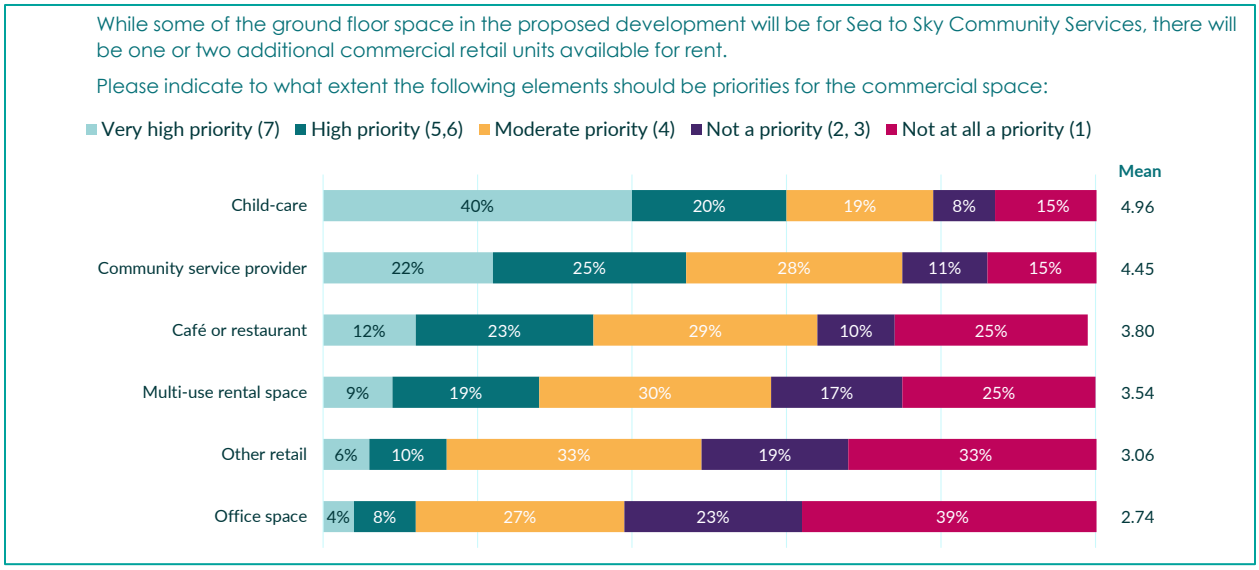
Ground Floor Commercial Space

Survey Results

Survey participants were also asked to assign levels of priority to several potential elements for the proposed commercial spaces.

The highest level of overall priority was given to childcare, which was seen as a very high priority for four in ten respondents (40%), with another two in ten (20%) assigning it a high priority. The average rating for this potential use was 4.96 out of 7. Having the space occupied by a community service provider ranked second-most important (average rating of 4.45). These top-two elements were chosen as a priority (ratings of 5, 6, or 7) more often than as not a priority (ratings of 1, 2, or 3); however, for all other proposed space uses, there was a larger proportion of respondents who said they should not be a priority, compared to those who felt they should be.

Using the space as café or restaurant was third-most popular (3.80), while a multi-use rental space followed in fourth place (3.45). Retail space (3.06) and office space (2.74) were the lowest priorities for respondents.



Survey participants were then asked to answer the following open text question: *Do you have any other ideas for what you would like to see in the ground level commercial spaces? Please be specific (i.e., type of service / retail, etc.)*

The lower levels of importance assigned overall (as indicated in the chart above) can be explained by the fact that participants often indicated hesitation or opposition to commercial spaces in general, as can be seen from the open-ended themes below.

To this question, there were several varied responses, with the most common themes being:

- *Childcare* | The primary request for the ground level commercial space was to host additional childcare. Even though there is a general hesitation to put in commercial space, comments recognized this and indicated the space's usefulness in alleviating the childcare shortage in town.
- *Community Space* | The second most popular opportunity noted was for an *adaptable* community space that could be used by multiple persons and community groups. Several people mentioned the need for group meeting space for seniors, youth, and other established community groups/teams. Others noted the potential for the space to become a business centre, coworking area, or community kitchen. Tied to a few of these comments were suggestions to involve public services.
- *Disapproval of Commercial Space* | Many respondents showed hesitation around having any commercial space in the development. Questions about the types of business selected for the space were raised and comments requested context for the location choice and its proximity to other business and services. There was concern that traffic would be affected or that businesses would lack the needed parking.
- *Fear of diversion from the village* | Another concern expressed by respondents was that commercial space outside of downtown would divert attention from established businesses in the village. It was suggested that refocusing attention to existing commercial entities would do more for the village than creating more commercial space.

Community Dialogue Session Results

Community dialogue participants were asked to participate in a zoom poll, selecting their top priority for commercial space. In both sessions, childcare was the top priority.

Additionally, participants were asked an open-ended question in small breakout groups, giving space for each participant to expand on: *What is your top priority for ground floor commercial space? Is there anything missing?*

The primary themes evident in participants' responses included:

- *Concerns about flooding* | Under this theme, participants spoke of ground floor flooding concerns, given that the proposed development is in a flood plain. Participants mentioned the need to raise electrical outlets to comply with the bylaws.
- *Desire for childcare* | Comments under this theme focused on the need for childcare in the area, and the benefit of having potential staff for a childcare facility living in the proposed development above the childcare facility (should it be considered).
- *Fear of diverting business away from the Village* | Some participants were against the idea of spreading commercial venues further away from the Village and diverting business from the Village. Other participants said that this may not be the best space for commercial venues moving forward.
- *Less common themes* | Further, though less common, themes that emerged in the discussions include general support for commercial business, walk-in clinic and earthquake considerations.

General Feedback on the Proposed Project

While the primary method for collecting general feedback was through the online survey and community dialogue sessions, the project team received a few written submissions as well. The themes from written feedback submissions are incorporated in the summaries below.

Survey Results

Survey participants were asked to answer two open-text questions related to general feedback.

The first open-text question was: *Sea to Sky Community Services is preparing to submit its application for an Official Community Plan amendment, rezoning, and development permits to the Village of Pemberton in the coming months. What are you most excited about when it comes to the proposed development?*

To this question, several themes emerged, the most prominent of which was excitement around the opportunity for affordable housing in the area. Below are the main themes that came through in the answers to this survey question.

- *Overwhelming need for affordable housing* | Nearly a third of total respondents noted the impact that affordable housing would have on Pemberton. Several respondents noted that affordable housing for families, single parents, low-income families, and families that can't afford current rents would be beneficial. There were a few comments that noted that childcare space would also be beneficial. There was also a significant number of replies about the importance of affordable and accessible housing for seniors. There were also several comments about the general lack of housing and the need for additional housing in the village. Respondents spoke about how affordable housing "will save local businesses" by offering housing for employees.
- *Dissatisfaction voiced* | While the majority of comments in response to this question expressed positivity and excitement around affordable housing, several respondents raised concerns. These respondents said that they were not excited or saw limited benefit to the project going forward. While there were several comments that voiced

general dissatisfaction, others noted the impact the proposed location would have on the surrounding neighborhood and the missed opportunity to place the development in the village's downtown. Much of the dissatisfaction noted was paired with comments about the building design in relation to the location.

The second open-text question was: *Sea to Sky Community Services is preparing to submit its application for an Official Community Plan amendment, rezoning, and development permits to the Village of Pemberton in the coming months. Do you have any other comments or concerns about the project that you'd like to share?*

To this question, several themes emerged, the most prominent of which was concern about the building height, increased traffic, and infrastructure constraints. Below are the main themes that came through in the answers to this survey question.

- *Building height and location* | The building height was the top concern raised. Respondents spoke about sight lines, sunlight obstruction and the four-storey precedent in the community. Several comments spoke about the need for a green buffer between the development and neighbours. Participants asked whether it would be possible to lower the building by one level to maintain consistency with the rest of Pemberton, building wide instead of high. Respondents also questioned whether this is the only possible location, stating that they would prefer that this be located elsewhere or closer to the Village.
- *Traffic, safety, and access* | The second most common theme was related to concerns about the increased traffic and noise from traffic that would result from the proposed development; additionally, many respondents raised concerns about getting on and off the highway safely, as well as the need for added infrastructure (such as lights and sidewalks).
- *Impact to surrounding neighbours* | Respondents mentioned impacts to property values, privacy, and mountain view obstruction; additionally, respondents were concerned about the loss of green space.
- *Concerns about infrastructure and community services* | Respondents raised a variety of concerns related to infrastructure and community services for the proposed development, such as flood mitigation, fire suppression, water usage, snow clearing (and dumping areas) and lack of public transit.
- *Overflow parking concerns* | Respondents were concerned with overflow parking into the surrounding neighbourhood.
- *Less common themes* | Further, though less common, themes that emerged in the discussions include specific flood plain concerns, accessibility, eligibility and affordability.

While the majority of respondents raised concerns in response to this question, several respondents spoke to the opportunities. These positive comments related to overall support for the project in general, and more specifically spoke to the need for affordable housing, mentioning "the need for this type of housing in our community is really urgent."

Community Dialogue Session Results

Community dialogue participants were asked two open-ended questions related to general feedback in small breakout groups. The results from these dialogues mirrored survey results.

The first question was: *What are you most excited about when it comes to the proposed development?*

The primary themes that were evident in participants responses included:

- *Need for affordable housing* | By far the most common theme, participants spoke of the need for affordable housing in the region.
- *Support for increase in housing supply* | In addition to the specific need for affordable housing, participants spoke of the housing supply in general, and their excitement for a project like this to increase the housing supply. Business owners commented on the need for rentals for employees to live and work in the local area.
- *Support for SSCS* | Participants mentioned the importance of SSCS programming, saying that it is critical for families in the region and that these populations are not currently being served.

The second question was: *What concerns do you have, when it comes to the proposed development that you'd like to share?*

The primary themes that were evident in participants responses included:

- *Building height and location* | Many participants raised concerns about the building height, mentioning sight lines, blocked views, and the four-storey precedent in the community. Participants asked whether it would be possible to build wide instead of high. Participants also asked whether this is the only possible location, stating that they would prefer that this be located closer to the Village.
- *Concerns about infrastructure and services* | Participants raised a variety of concerns related to infrastructure and services for the proposed development, such as fire suppression, water usage and flood mitigation.
- *Neighbourhood impacts* | Participants mentioned impacts to property values, privacy, and view obstruction; additionally, participants raised noise and light pollution concerns related to the proposed development.
- *Overflow parking concerns* | Participants were concerned with overflow parking into the surrounding neighbourhood, as streets are already crowded (especially in the winter when paired with snow management). Participants raised that it is important for each resident to have more than one parking spot so that the neighbourhood does not flood with cars.
- *Green space and landscaping* | Participants expressed the importance of bringing in greenery and trees into the space, so that it does not look like a large parking lot. Participants also mentioned the desire for a green space barrier at the edge of the property, which is of importance visually and to serve as a noise barrier.
- *Concerns about flooding* | Under this theme, participants spoke of ground floor flooding concerns and the need for water diversion to avoid flooding other properties.
- *Traffic, safety, and access* | Participants mentioned concerns about getting on and off the highway safely, as well as the need for added sidewalks. This concern tied into concerns related to increased traffic that would result from the proposed development. A few participants mentioned safety concerns for children being close to the highway.
- *Less common themes* | Participants mentioned concerns about potential construction impacts, the importance of access/pathways to the town by bike/foot, accessibility concerns for seniors, desire for bike storage and reiterating the need for childcare.

Next Steps

This report describes in detail all the engagement and communications efforts planned and implemented to inform the Harrow Road Project application submission for an Official Community Plan (OCP) amendment and rezoning to the Village of Pemberton in early 2022.

The planned approach to engagement and communications was informed by the International Association for Public Participation (IAP2) planning methodology and best practices. The next step is for the project and development team to review the findings of the engagement report and use those findings to inform the OCP and rezoning applications to the Village of Pemberton. Upon submission of the application, a formal engagement process will be directed by the Village of Pemberton. Pending approval, building construction would start in Summer 2023 with occupancy anticipated as early as 2025.

Appendix A: iap2 Spectrum of Engagement

IAP2 Spectrum of Public Participation

International Association for Public Participation

Increasing Level of Public Impact

	Inform	Consult	Involve	Collaborate	Empower
Public participation goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
Promise to the public	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.
Example techniques	▪ Fact sheets ▪ Web sites ▪ Open houses	▪ Public comment ▪ Focus groups ▪ Surveys ▪ Public meetings	▪ Workshops ▪ Deliberative polling	▪ Citizen advisory committees ▪ Consensus-building ▪ Participatory decision-making	▪ Citizen juries ▪ Ballots ▪ Delegated decision

Appendix B: Survey Questionnaire

Pemberton Harrow Road Project

Introduction

Welcome!

On behalf of Sea to Sky Community Services, thank you for your participation in this survey.

Sea to Sky Community Services (SSCS), in partnership with BC Housing and the Village of Pemberton, is leading an exciting new affordable housing project in Pemberton. The project will bring much needed affordable housing to the region for singles, couples, and families. The project will be for a mix of rents and incomes within a single building, providing affordable non-market rental housing to families, seniors, and persons with disabilities. Thirty percent of units will be market rentals (moderate incomes), 50% will be 'rent geared to income' (subsidized units for households that meet BC Housing limits), and 20% deep subsidy (low incomes). The housing program does not include housing with support services or residential care components. The proposed development will have 63 housing units for community members and ground floor commercial space, some of which will be for SSCS staff and programs so they can provide much needed community services in Pemberton.

The planned location for the new building is a 3-acre property at the corner of Harrow Road and Highway 99. The information to be gathered during the engagement process will inform the project's development applications to the Village of Pemberton which will include: an amendment to the Official Community Plan (OCP)and Zoning Bylaw, and a development permit (Spring 2022). Pending approvals, construction on the project would start in Summer 2023 with occupancy anticipated as early as 2025.

Questions

If you have any questions about this survey or need an alternative method of participating, please email or call Rebecca Recant at rebecca@rmdelaney.com or 778-879-5103.

The Survey

The survey will take approximately 10 minutes to complete. If you want to move back to a previous page or question, do not use your browser's back button, as that will result in a survey error. Use the survey's "previous" button at the bottom

of the page instead.

Anonymity

Your participation in this survey is completely voluntary. If you decide to take part, you can stop the survey at any time. No personal information will be collected. Your answers will be kept anonymous and confidential. The responses you provide will be combined with the responses of other survey participants and individual responses will not be identified.

Please do not include personal identifiable information, such as your name, email address, phone number, address, etc., in the comments.

Privacy

Your responses will be collected and analyzed by independent engagement firm Delaney for the purpose of this engagement process only and will not be used for any other purpose. Your responses will remain anonymous. This collection is authorized under section 26(e) of the Freedom of Information and Protection of Privacy Act (BC). If you have any questions about this data collection, you can contact Rebecca Recant, Specialist in Engagement and Communications, at rebecca@rmdelaney.com.

Thank you for completing this survey. What we learn from your input will inform the proposed Harrow Road affordable housing development.

* Which of the following describes your interest in this project? Please select all that apply.

- [ ] I am a neighbour of the proposed project.
- [ ] I live in the community but not very close to the site.
- [ ] I live in the Sea to Sky region but outside of Pemberton.
- [ ] I would be interested in moving into the proposed development.
- [ ] I would be interested in the proposed commercial space that is part of the development.
- [ ] I am interested in affordable housing more generally.
- [ ] I have another connection to this project. (Please specify)

Pemberton Harrow Road Project
Interest

[Note: Only asked if previous question = I would be interested in moving into the proposed development.]

What type of unit(s) would you be interested in?

- ☐ One-bedroom
- ☐ Two-bedroom
- ☐ Three-bedroom

Sea to Sky Community Services

Pemberton Harrow Road Project
Outdoor Spaces

Outdoor space planning is in development.

Please indicate to what extent the following elements should be prioritized as outdoor space, using a scale from 1 to 7, where 1 means not at all a priority and 7 means a very high priority.

	1 - not at all a priority	2	3	4 - a moderate priority	5	6	7 - a very high priority	N/A
Adequate parking for tenants	○	○	○	○	○	○	○	○
Adequate parking for visitors	○	○	○	○	○	○	○	○
Green space	○	○	○	○	○	○	○	○
Paved walkways	○	○	○	○	○	○	○	○
Community gathering spaces open to the public (such as areas with benches, picnic area, etc.)	○	○	○	○	○	○	○	○
Playground	○	○	○	○	○	○	○	○
Community gardens	○	○	○	○	○	○	○	○

Do you have additional input you would like to share on outdoor spaces, including ideas for other uses or amenities?

Sea to Sky Community Services

Pemberton Harrow Road Project
Ground Floor Commercial Space

While some of the ground floor space in the proposed development will be for Sea to Sky Community Services, there will be one or two additional commercial retail units available for rent.

Please indicate to what extent the following elements should be priorities for the commercial space, using a scale from 1 to 7, where 1 means not at all a priority and 7 means a very high priority.

	1 - not at all a priority	2	3	4 - a moderate priority	5	6	7 - a very high priority	N/A
Child-care	○	○	○	○	○	○	○	○
Multi-use rental space	○	○	○	○	○	○	○	○
Café or restaurant	○	○	○	○	○	○	○	○
Office space	○	○	○	○	○	○	○	○
Community service provider	○	○	○	○	○	○	○	○
Other retail	○	○	○	○	○	○	○	○

Do you have any other ideas for what you would like to see in the ground-level commercial spaces? Please be specific (i.e. type of service / retail, etc.)

Pemberton Harrow Road Project
Comments

Sea to Sky Community Services is preparing to submit its application for an Official Community Plan amendment, rezoning, and development permits to the Village of Pemberton in the coming months.

What are you most excited about when it comes to the proposed development?

Do you have any other comments or concerns about the project that you'd like to share?

Pemberton Harrow Road Project

About you

Now we just have a few questions about you, which helps us to ensure we gather input from a wide and diverse group of people.

Where do you live?

- ○ Pemberton
- ○ Pemberton Meadows, Mount Currie, Birken, D'Arcy and surrounding areas
- ○ Whistler
- ○ Squamish
- ○ Somewhere else (please specify)

Which of these options best describes your housing situation?

- ○ I rent my home
- ○ I own my home
- ○ Temporary housing (travel trailer, hotel/motel, couch surfing, emergency shelter or other temporary arrangement)

Do you identify as:

- ◯ Female
- ◯ Male
- ◯ Non-binary
- ◯ Prefer not to say
- ◯ I prefer to self describe (please share)

In what year were you born?

Do you identify as any of the following? Please select all that apply.

- ☐ First Nations
- ☐ Métis
- ☐ Inuit
- ☐ A visible minority
- ☐ A cultural minority
- ☐ A person with a disability
- ☐ None of the above

Including yourself, how many people live in your household? *[NOTE: Drop down]*

Pemberton Harrow Road Project
Almost done...

[Note: only asked if previous question >1]

* Do you have any children under the age of 18 in your household?

- ◡ Yes
- ◡ No
- ◡ Prefer not to say

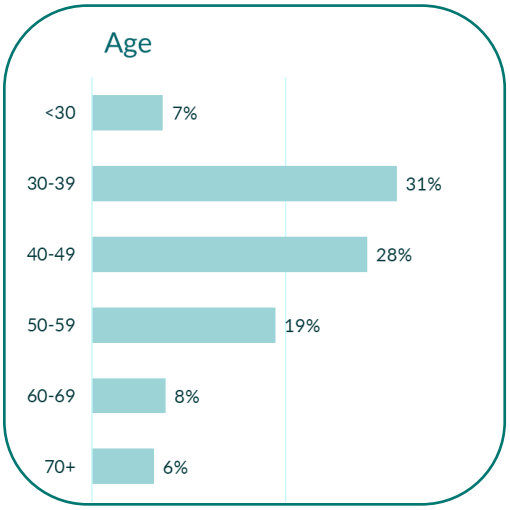
Pemberton Harrow Road Project
Children

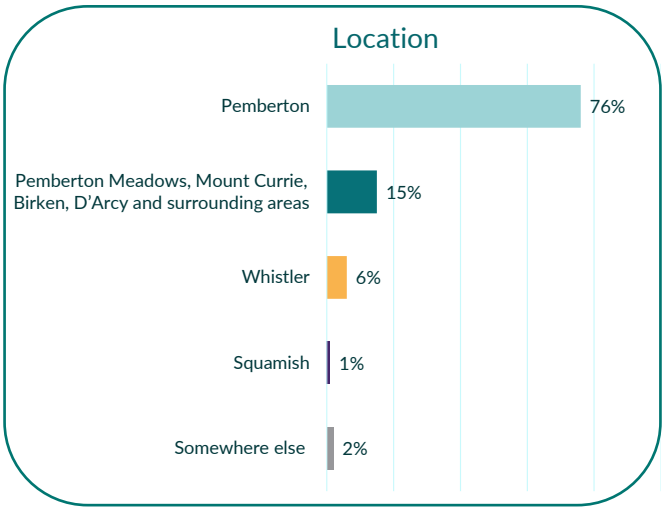
[Note: only asked if previous question =yes]

Please select the age(s) of your child/children.

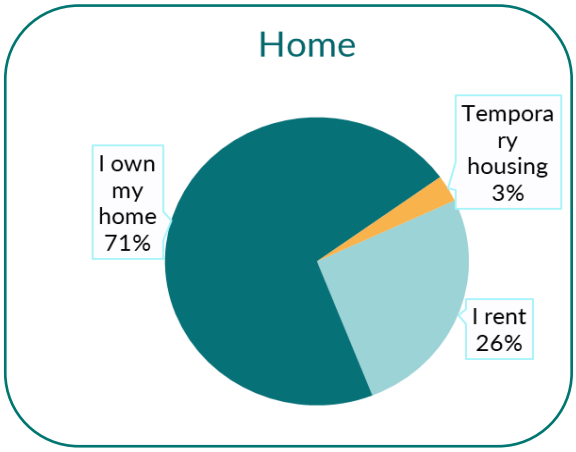
☐ under 1 year old	☐ 6	☐ 12
☐ 1	☐ 7	☐ 13
☐ 2	☐ 8	☐ 14
☐ 3	☐ 9	☐ 15
☐ 4	☐ 10	☐ 16
☐ 5	☐ 11	☐ 17

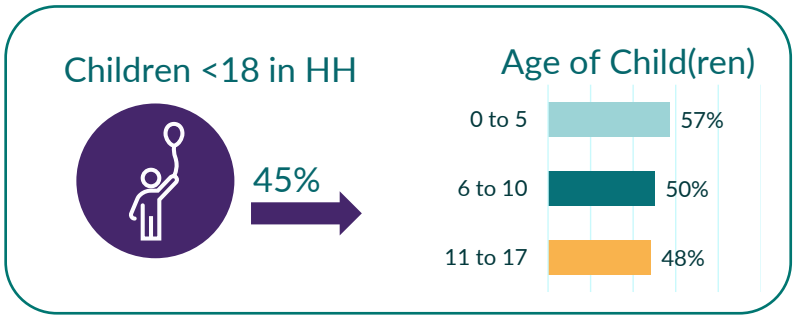
Appendix C: Demographic Profile of Survey Respondents





Self-identification	#	%
A person with a disability	20	3%
A cultural minority	16	2%
A visible minority	18	3%
First Nations	14	2%
Métis	10	2%





Ministry of Environment and Climate Change Strategy

SCHEDULE 1
SITE DISCLOSURE STATEMENT

Has the site been used for any industrial or commercial purposes or activities described in SCHEDULE 2 of the Contaminated Sites Regulation?

☐ Yes ☒ No

Exemptions (See the Contaminated Sites Regulation, Division 3 of Part 2):

Does the application qualify for an exemption from submitting a site disclosure statement?

☒ Yes ☐ No

If yes, indicate which exemption applies: No reason to believe there is contamination.

I. CONTACT INFORMATION

A: SITE OWNER(s) or OPERATOR(s)

LAST NAME	FIRST NAME(s)
Abraham	Jessie

COMPANY (if applicable): Sea to Sky Community Services

ADDRESS - STREET	CITY
38024 Fourth Ave,	Squamish

PROVINCE/STATE	COUNTRY	POSTAL CODE
BC	Canada	V8B 0A7

PHONE	E-MAIL
604-892-5796 ext 245	jessie.abraham@sscs.ca

B: PERSON COMPLETING SITE DISCLOSURE STATEMENT (Leave blank if same as above)

☒ Agent authorized to complete form on behalf of the owner or operator

LAST NAME	FIRST NAME(s)
Harlos	Devon

COMPANY (if applicable): CPA Development Consultants

C: PERSON TO CONTACT REGARDING THE SITE DISCLOSURE STATEMENT

LAST NAME	FIRST NAME(s)
Harlos	Devon

COMPANY (if applicable): CPA Development Consultants

ADDRESS - STREET	CITY
100-283 E 11	Vancouver

PROVINCE/STATE	COUNTRY	POSTAL CODE
BC	Canada	V5T 2C4

PHONE	E-MAIL
604-446-0035	devon@cpadevelopment.ca

II. SITE INFORMATION

Coordinates (using the North American Datum 1983 convention) for the centre of the site:

Latitude			Longitude		
DEGREES	MINUTES	SECONDS	DEGREES	MINUTES	SECONDS
50	18	58	47	37	2

☐ **Attach a map of appropriate scale showing the location and boundaries of the site.**

For Legally Titled, Registered Property

SITE ADDRESS (or nearest street name/intersection if no address assigned)	
Hwy 99 and Harrow Rd.	
CITY	POSTAL CODE
Pemberton	V0N 2L1

PID	*Land Decription*	Add	Delete
023-384-018	LOT 2 DISTRICT LOT 203 LILLOOET DISTRICT PLAN KAP56640	+	-

For Untitled Crown Land

PIN numbers and associated Land Description (if applicable)

PIN	*Land Decription*	Add	Delete
		+	-

And if available

Crown Land File Numbers	Add	Delete
	+	-

III. INDUSTRIAL OR COMMERCIAL PURPOSES OR ACTIVITIES

In the format of the example provided, which of the industrial or commercial purposes or activities have occurred or are occurring on this site.

EXAMPLE

Schedule 2 Reference	Description
E1	appliance, equipment or engine maintenance, repair, reconditioning, cleaning or salvage
F10	solvent manufacturing, bulk storage, shipping or handling

Schedule 2 Reference	Description	Add	Delete
		+	-

IV. ADDITIONAL INFORMATION

1. Provide a brief summary of the planned activity and proposed land use at the site.

63 Units of rental housing and 9,000 sf of commercial space.

2. Indicate the information used to complete this site disclosure statement including a list of record searches completed.

Phase 1 Preliminary Site Assessment

3. List any past or present government orders, permits, approvals, certificates or notifications pertaining to the environmental condition of the site. *(Attach extra pages, if necessary):*

V. DECLARATIONS

Where a municipal approval is not required, please indicate the reason for submission directly to the registrar:

☐ Under Order ☐ Foreclosure ☐ CCAA Proceedings ☐ BIA Proceedings

☐ Decommissioning ☐ Ceasing Operations

By signing below, I confirm that the information in this form is complete and accurate to the best of my knowledge:

[redacted]

2022-02-23

DATE SIGNED (YYYY-MM-DD)

APPROVING AUTHORITY CONTACT INFORMATION	
NAME	AGENCY
ADDRESS	
PHONE	E-MAIL

Reason for submission (Please check one or more of the following):

☐ Building Permit ☐ Subdivision ☐ Zoning ☐ Development Permit

DATE RECEIVED (YYYY-MM-DD)

DATE SUBMITTED TO REGISTAR (YYYY-MM-DD)

BC LAND SURVEYOR'S SITE PLAN

ON LOT 2, DISTRICT LOT 203,
LILLOOET DISTRICT, PLAN KAP56640.

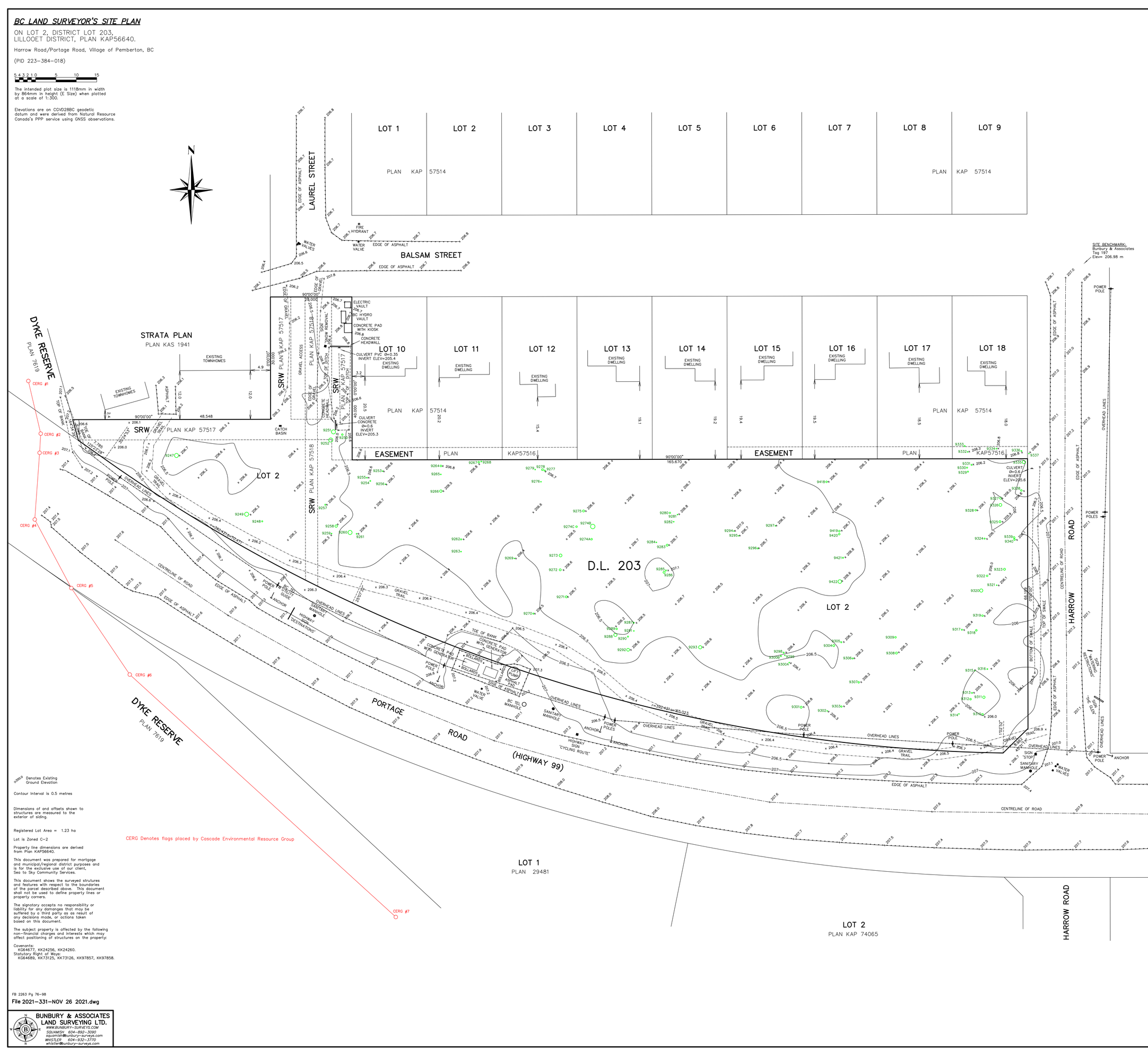
Harrow Road/Portage Road, Village of Pemberton, BC

(PID 223-384-018)

5 4 3 2 1 0 5 10 15

The intended plot size is 1118mm in width by 864mm in height (E Size) when plotted at a scale of 1:300.

Elevations are on CGVD28BC geodetic datum and were derived from Natural Resource Canada's PPP service using GNSS observations.



TREE NUMBER	TREE TYPE	DIAMETER cm
9247	COTTONWOOD	100
9248	COTTONWOOD	30
9249	PINE x2	100
9250	COTTONWOOD	40
9251	COTTONWOOD x3	100
9252	COTTONWOOD x3	100
9253	COTTONWOOD	20
9254	COTTONWOOD	25
9255	COTTONWOOD	25
9256	COTTONWOOD	20
9257	COTTONWOOD	30
9258	COTTONWOOD x2	60
9259	COTTONWOOD	20
9260	COTTONWOOD	100
9261	PINE	25
9262	COTTONWOOD	30
9263	COTTONWOOD	20
9264	PINE	40
9265	COTTONWOOD	20
9266	COTTONWOOD x4	60
9267	PINE x2	40
9268	PINE	25
9269	COTTONWOOD	20
9270	COTTONWOOD x3	30
9271	COTTONWOOD	50
9272	COTTONWOOD	50
9273	PINE	70
9274A	PINE	40
9274B	COTTONWOOD	110
9274C	COTTONWOOD	40
9275	COTTONWOOD	50
9276	COTTONWOOD	20
9277	COTTONWOOD	30
9278	COTTONWOOD	45
9279	PINE	20
9280	COTTONWOOD	35
9281	COTTONWOOD	20
9282	PINE	20
9283	COTTONWOOD	50
9284	COTTONWOOD	20
9285	COTTONWOOD	30
9286	COTTONWOOD	50
9287	COTTONWOOD	30
9288	COTTONWOOD x2	80
9289	COTTONWOOD	40
9290	COTTONWOOD	30
9291	PINE	20
9292	COTTONWOOD x2	70
9293	COTTONWOOD x2	80
9294	PINE	20
9295	PINE	20
9296	PINE	30
9297	COTTONWOOD	20
9298	PINE	30
9299	PINE	20
9300A	PINE	20
9300B	PINE	30
9301	PINE	50
9302	PINE	20
9303	PINE	35
9304	COTTONWOOD	50
9305	PINE	30
9306	PINE	30
9307	PINE	40
9308	COTTONWOOD	50
9309	PINE	40
9310	PINE	40
9311	PINE	60
9312	COTTONWOOD	40
9313	COTTONWOOD	30
9314A	PINE	20
9315	PINE	20
9316	PINE	25
9317	PINE	30
9318	COTTONWOOD	40
9319	COTTONWOOD	40
9320	COTTONWOOD x2	80
9321	PINE	20
9322	PINE	40
9323	COTTONWOOD	50
9324	PINE	30
9325	COTTONWOOD	50
9326	COTTONWOOD	70
9327	COTTONWOOD	50
9328	PINE	40
9329	COTTONWOOD	30
9330	COTTONWOOD	30
9331	PINE	30
9332	PINE	20
9333	PINE	30
9334	COTTONWOOD	25
9335	COTTONWOOD	80
9336	COTTONWOOD	25
9337	COTTONWOOD	20
9338	COTTONWOOD	40
9339	COTTONWOOD	45
9340	COTTONWOOD	40
9418	PINE	40
9419	PINE	40
9420	PINE	40
9421	PINE	30
9422	PINE	90

+205.0 Denotes Existing Ground Elevation

Contour Interval is 0.5 metres

Dimensions of and offsets shown to structures are measured to the exterior of siding.

Registered Lot Area = 1.23 ha

Lot is Zoned C-2

Property line dimensions are derived from Plan KAP56640.

This document was prepared for mortgage and municipal/regional district purposes and is for the exclusive use of our client, Sea to Sky Community Services.

This document shows the surveyed strutures and features with respect to the boundaries of the parcel described above. This document shall not be used to define property lines or property corners.

The signatory accepts no responsibility or liability for any damanges that may be suffered by a third party as as result of any decisions made, or actions taken based on this document.

The subject property is affected by the following non-financial charges and interests which may affect positioning of structures on the property:

Covenants:
KG64677, KK24256, KK24260.
Statutory Right of Ways:
KG64689, KK73125, KK73126, KK97857, KK97858.

CERG Denotes flags placed by Cascade Environmental Resource Group

FB 2263 Pg 76-98

File 2021-331-NOV 26 2021.dwg

BUNBURY & ASSOCIATES
LAND SURVEYING LTD.
WWW.BUNBURY-SURVEYS.COM
SQUAMISH 604-892-3090
squamish@bunbury-surveys.com
WHISTLER 604-932-3770
whistler@bunbury-surveys.com

Certified Correct this
6th day of October, 2021.
Martin R. Jones, BCLS #762

(Not valid unless originally signed and sealed, or digital signature applied)

March 18, 2022
04-21-0441

Devon Harlos
Development Coordinator
CPA Development Consultants Inc.
100-283 East 11th Avenue
Vancouver, BC
V5T 2C4

VIA EMAIL: devon@cpadevelopment.ca

Dear Devon:

Re: Pemberton Affordable Housing Development (Lot 2 Harrow Road)
Transportation Review

As requested, Bunt & Associates Engineering Ltd. (Bunt) has conducted a Transportation Review for the proposed affordable housing development at Lot 2 Harrow Road in Pemberton, BC. This study is required as part of the project approval process with the Village of Pemberton. The purpose of Bunt's review was to provide a high-level study of the development's traffic impact and to assess the adequacy of the proposed parking supply.

We trust that the attached information will be of assistance. Please do not hesitate to contact us should you have any questions or comments.

Yours truly,
Bunt & Associates

James Lee, P.Eng., MBA, PMP
Associate, Senior Transportation Engineer

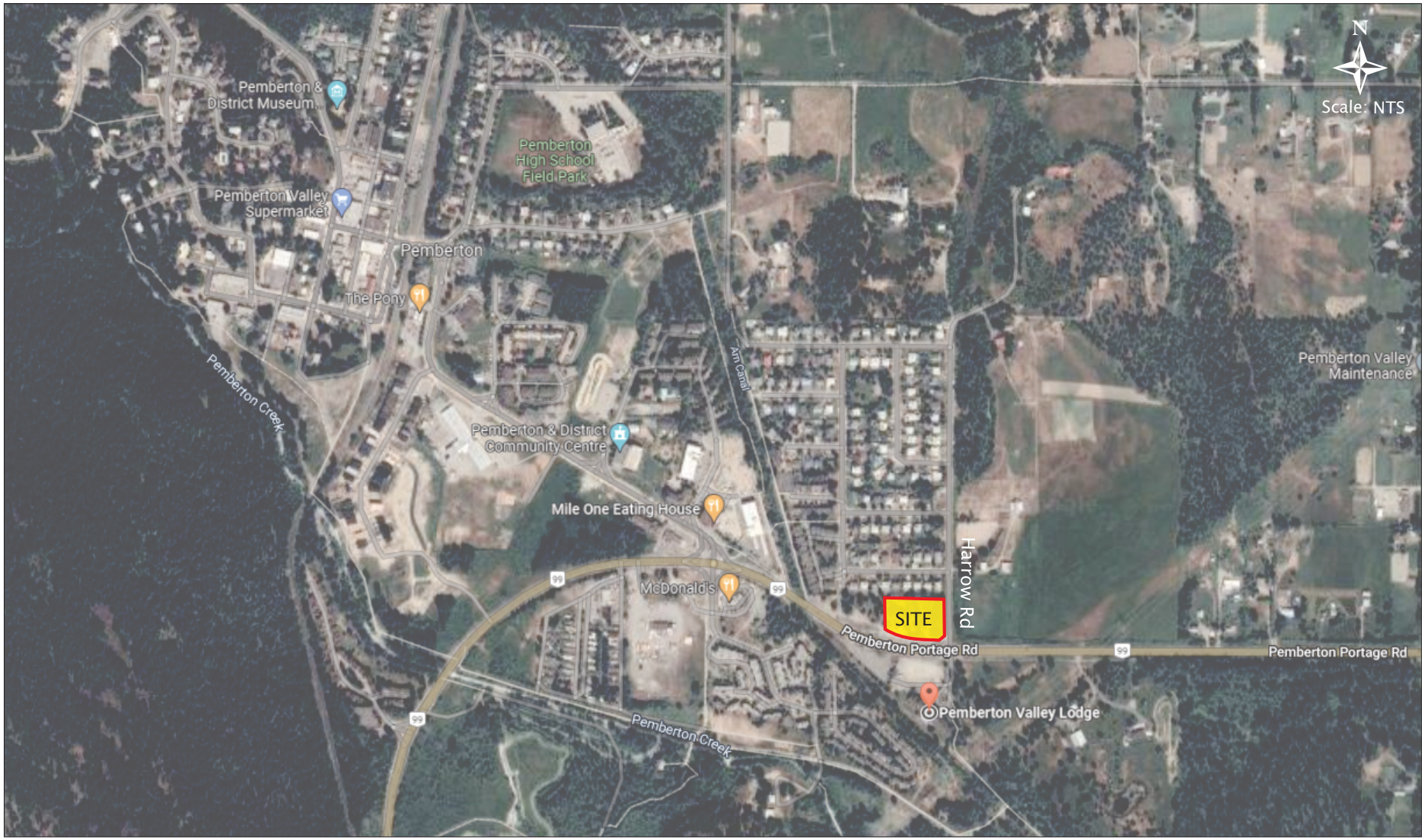
1. INTRODUCTION

Sea to Sky Community Services (SSCS) is proposing an affordable multi-family residential housing development at Lot 2 Harrow Road in the northwest corner of Pemberton Portage Road (Hwy 99) & Harrow Road in Pemberton, BC. To support the project, CPA Development Consultants (CPA) is acting as the project's Development Manager. The site location is shown in **Exhibit 1.1**.

The development plan includes 63 rental units, comprised of a mix of 1, 2, and 3-bedroom units. As the development will be a BC Housing Community Housing Fund project, the development will include 30% market rental units and 70% non-market rental units, consistent with the program's requirements. In addition, the development will also include 7,685 sq.ft. (714 sq.m.) of SSCS programming space and 1,386 sq.ft. (129 sq.m.) of general market retail space.

To help maintain housing affordability and better match the anticipated parking demand for the proposed housing types, the project is proposing a reduced off-street parking supply compared to what is required by the Village of Pemberton (VoP) Zoning Bylaw. In response to the proposed reduced parking rates and as a requirement for project approval, the VoP requires that a Transportation Review be conducted to rationalize and confirm the adequacy of the planned parking supply, as well as to provide a high-level traffic impact assessment for the development.

In response to this requirement, CPA, on behalf of SSCS, retained Bunt & Associates Engineering Ltd. (Bunt) to conduct the required study. The following document provides the key findings of Bunt's Transportation Review.



M:\Operations\Dept BC\Projects\2021\04-21-0441 Lot 2 Harrow Rd Transporation Review\5.0 Deliverables\5.1 Draft Report\Graphics

Exhibit 1.1

Site Location

Pemberton Affordable Housing Development
04-21-0441 February 2022

bunt & associates

2. PROPOSED DEVELOPMENT

2.1 Existing Site Context

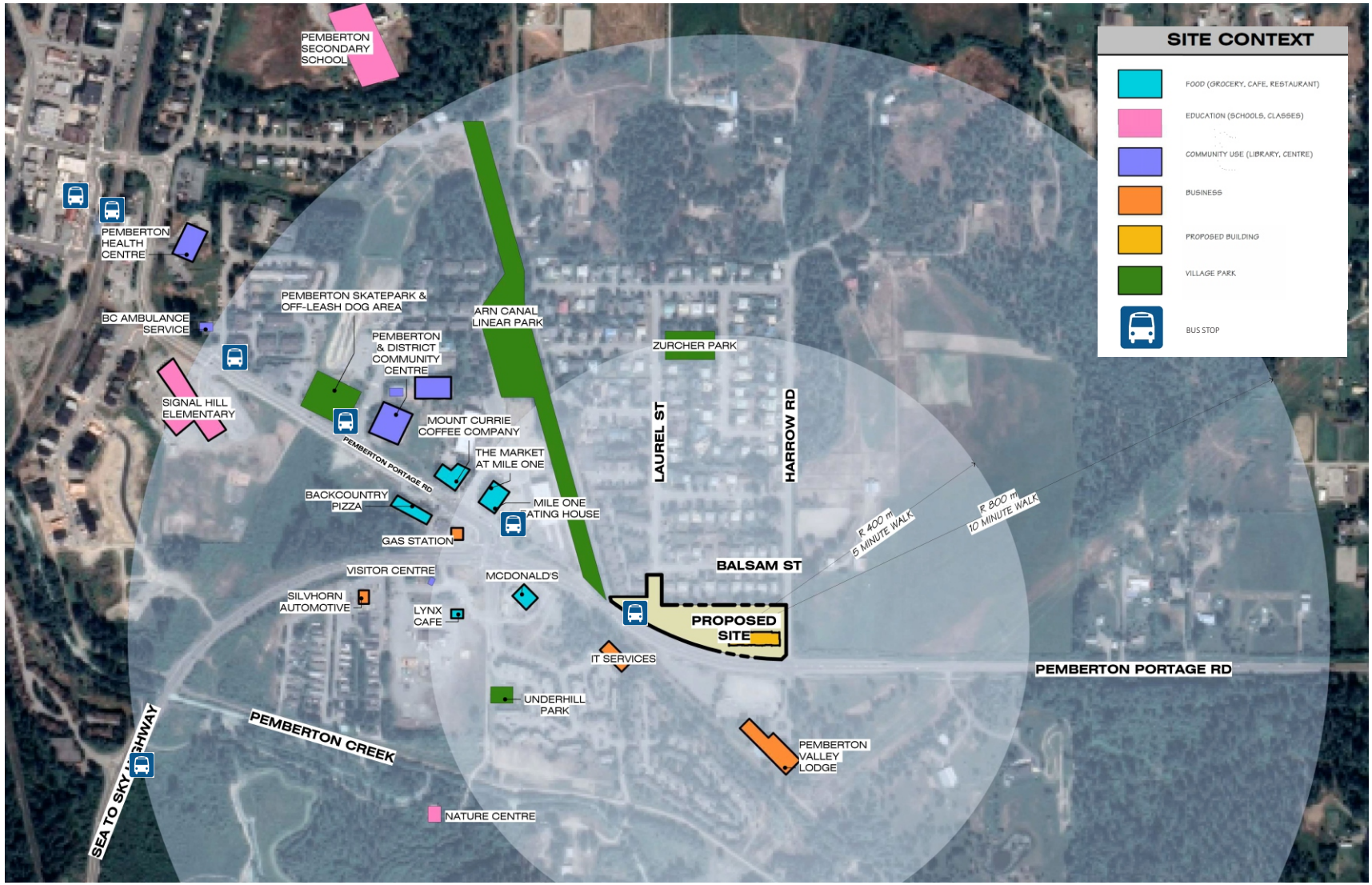
Under existing conditions, the development site is unoccupied and largely forested. The site sits near the eastern edge of the Village and is located immediately south of a single-family housing residential neighbourhood. Within 800m of the site (i.e., about a 10-minute walk) are several local amenities including restaurants, schools, parks, and a community centre. Furthermore, while transit service within Pemberton is limited, a bus stop is located on Pemberton Portage Road (Highway 99) immediately southwest of the site which is serviced by the *100 Pemberton Local* bus route. In addition, although there are currently no on-street cycling facilities provided within Pemberton, VoP is currently conducting a Cycling Network Plan study. Preliminary plans for this study have indicated a proposed future Neighbourhood Bikeway along Harrow Road on the east side of the site and a Multi-Use path along the south side of the site running parallel with Pemberton Portage Road (Highway 99). **Exhibit 2.1** illustrates the existing local site context.

2.2 Development Plan

Table 2.1 provides a detailed breakdown of the proposed development plan.

Table 2.1: Development Plan

LAND USE	CATEGORY	SUB-CATEGORY	SIZE
Residential (Rental)	Affordable Market Rental (30%; 18 units)	1-Bedroom	9 units
		2-Bedroom	7 units
		3-Bedroom	2 units
	Rent Geared to Income (50%; 32 units)	1-Bedroom	16 units
		2-Bedroom	12 units
		3-Bedroom	4 units
	Deep Subsidy/ Shelter (20%; 13 units)	1-Bedroom	6 units
		2-Bedroom	5 units
		3-Bedroom	2 units
Community Use	SSCS Programming Space	-	7,685 sq.ft. (714 sq.m.)
Commercial	Market Retail	-	1,386 sq.ft. (129 sq.m.)
TOTAL	RESIDENTIAL TOTAL	1-BEDROOM	31 UNITS
		2-BEDROOM	24 UNITS
		3-BEDROOM	8 UNITS
		TOTAL	63 UNITS
	COMMUNITY USE TOTAL	SSCS PROGRAMMING SPACE	7,685 SQ.FT. (714 SQ.M.)
	COMMERCIAL TOTAL	RETAIL	1,386 SQ.FT. (129 SQ.M.)



Source: Station One Architects

M:\Operations\Dept BC\Projects\2021\04-21-0441 Lot 2 Harrow Rd Transporation Review\5.0 Deliverables\5.1 Draft Report\Graphics

Exhibit 2.1

Existing Site Context

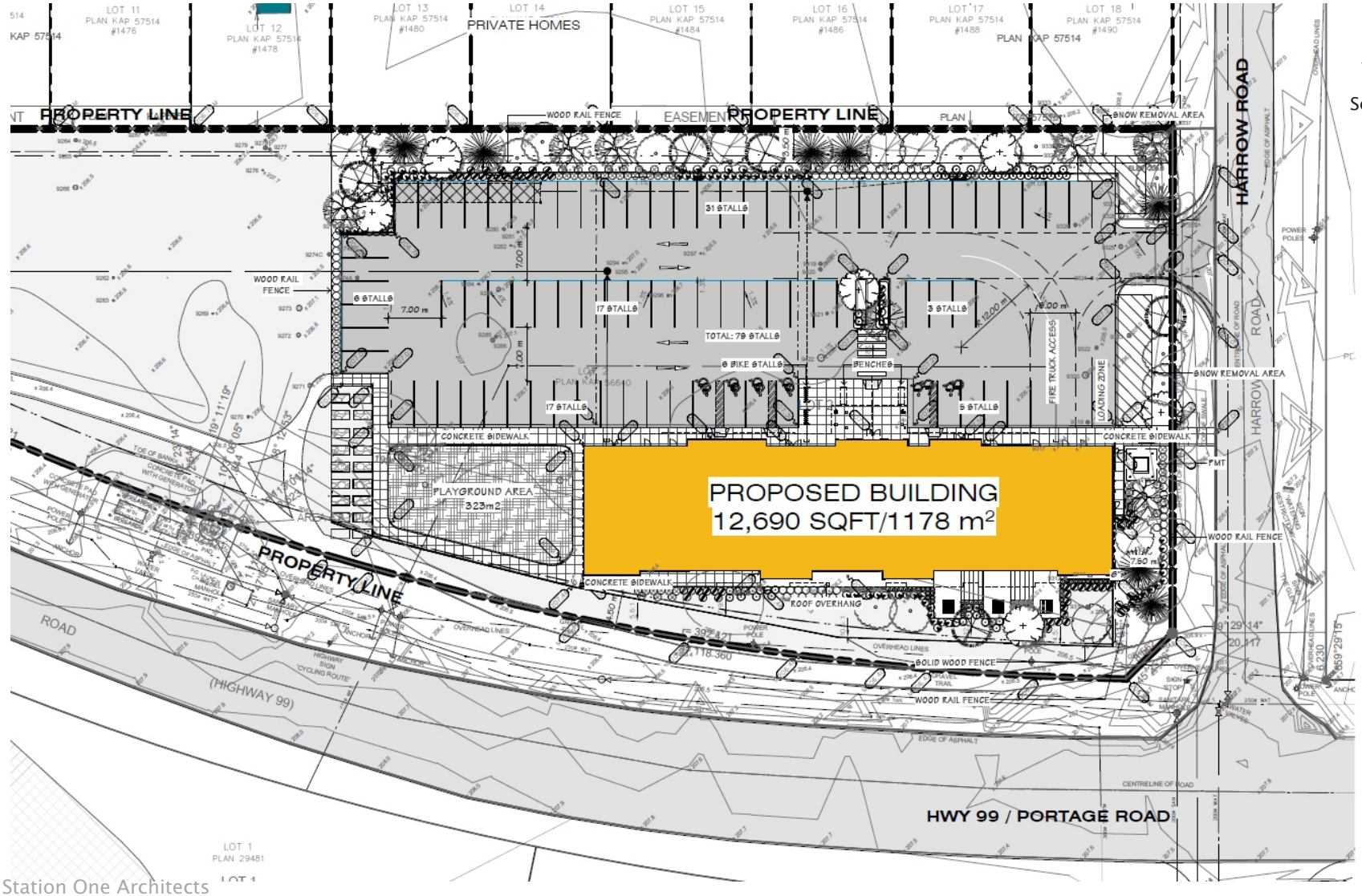
Pemberton Affordable Housing Development
04-21-0441 February 2022

bunt & associates

As the table indicates, the proposed development includes a mix of residential units (30% market, 70% non-market), community use space, and commercial retail space. For the residential space, the development will include 31 1-bedroom units, 24 2-bedroom units, and 8 3-bedroom units, with all 1-bedroom units being targeted towards Seniors. In terms of the income eligibility levels for the units, the 30% (18) market rental units will be "affordable market rental", which are designed for people who have low-to-moderate incomes. The 70% (45) non-market units will include 50% (32) rent-geared-to-income (RGI) units and 20% (13) deep subsidy/shelter units. RGI units have rent partially subsidized and set to be 30% of a household's total gross income, which is required to be no more than the Housing Income Limits (HILs) for gross household income set by BC Housing. Deep subsidy/shelter units are heavily subsidized and targeted toward low-income individuals and families.

In addition to the residential space, the development will include 7,685 sq.ft. (714 sq.m.) of programming space purpose-built for SSCS and 1,386 sq.ft. (129 sq.m.) of general market retail space comprised of two commercial retail units (CRUs). The programming space will be used for SSCS support services, which would include programs such as counselling, one-on-one social services, community living group programs, child/parent programming, etc. For SSCS programs, SSCS staff will often pick up clients or meet them where they are. While this is not guaranteed for every client or program, SSCS staff try to accommodate the needs of the client as best they can.

Exhibit 2.2 illustrates the proposed site plan concept. As shown, vehicular access to the development will be on the east side of the site on Harrow Road approximately 60m north of the Harrow Road & Pemberton Portage Road intersection.



Source: Station One Architects

M:\Operations\Dept BC\Projects\2021\04-21-0441 Lot 2 Harrow Rd Transporation Review\5.0 Deliverables\5.1 Draft Report\Graphics

Exhibit 2.2
Site Plan

Pemberton Affordable Housing Development
04-21-0441 March 2022

bunt & associates

3. TRAFFIC IMPACT ASSESSMENT

3.1 Trip Generation Estimate

To estimate the number of vehicle trips to be generated by the proposed development during the critical weekday AM and PM peak hours, Bunt applied standard vehicle trip rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Ed.). **Table 3.1** summarizes the assumed trip rates and resulting trip generation estimates.

Table 3.1: Peak Hour ITE Vehicle Trip Rates

LAND USE	SIZE (NET NEW UNITS)	DESCRIPTION	AM PEAK HOUR			PM PEAK HOUR			SOURCE
			IN	OUT	TOTAL	IN	OUT	TOTAL	
Multi-Family Residential	63 units	Trip Rate[1]	23%	77%	0.37	61%	39%	0.39	ITE: Multifamily Mid-Rise (221)
		Vehicle Trips	5	18	23	15	10	25	
SSCS Programming Space	7,685 sq.ft.	Trip Rate[2]	66%	34%	1.91	47%	53%	2.50	ITE: Recreational Community Centre (495)
		Vehicle Trips	10	5	15	9	10	19	
Market Retail	1,386 sq.ft.	Trip Rate[2]	60%	40%	0.94	50%	50%	6.59	ITE: Strip Retail Plaza (<40k sq.f.t) (822)
		Vehicle Trips	1	1	2	5	5	10	
			16	24	40	29	25	54	

1. Trip rate is calculated in "vehicle trips per dwelling unit"
2. Trip rate is calculated in "vehicle trips per 1,000 sq.ft."

The estimated vehicle trip generation is approximately 40 (16 in, 24 out) trips in the AM peak hour and 54 (29 in, 25 out) trips in the PM peak hour. This level of trip generation translates to fewer than 1 new vehicle trip per minute on average during either peak hour.

3.2 Anticipated Traffic Impact

Typically, peak hour trip generation of 100 vehicle trips or fewer is not expected to have a material impact on the adjacent street network. As shown above, the anticipated trip generation is considerably lower than this threshold during both of the busy peak hour periods, and thus even lower during all other hours of the day.

For this reason, the anticipated site trips are not expected to materially impact intersection traffic capacity and therefore a detailed traffic operations analysis was not considered necessary for this study.

4. PARKING SUPPLY REQUIREMENT

4.1 Vehicle Parking

Table 4.1 provides a comparison of the development's required off-street vehicle parking supply based on the Village of Pemberton's Zoning Bylaw to the proposed supply.

Table 4.1: Vehicle Parking Supply

LAND USE	SUB USE	SIZE	BYLAW RATE[1]	PROPOSED RATE	REQUIRED (SPACES)	PROPOSED (SPACES)	DIFFERENCE (SPACES)
Residential (Rental)	1-Bedroom	31	0.75 spaces per dwelling unit (DU)[2]	*Discussed in Section 5.3*	23	51	-22
	2-Bedroom	24	1.5 spaces per DU[2]		36		
	3-Bedroom	8	1.75 spaces per DU[2]		14		
	Visitor	63	0.25 spaces per DU	0.06 spaces per DU	16	4	-13
Community Use	SSCS Programming Space	7,685 sq.ft. (714 sq.m.)	1 space per 37 sq.m. of GFA	1 space per 37 sq.m. of GFA	19	19[3]	0
Commercial	Market Retail	1,386 sq.ft. (129 sq.m.)	1 space per 28 sq.m. of GFA	1 space per 28 sq.m. of GFA	5	5[4]	0
				RESIDENTIAL TOTAL	89 TOTAL 73 RESIDENT 16 VISITOR	55 TOTAL 51 RESIDENT 4 VISITOR	-34 TOTAL -22 RESIDENT -12 VISITOR
				COMMUNITY USE: SSCS PROGRAMMING SPACE TOTAL	19	19	0
				COMMERCIAL: MARKET RETAIL TOTAL	5	5	0
				COMBINED TOTAL	113	79	-34

1. Source: Village of Pemberton Zoning Bylaw – Section 8.3 & 8.4
2. Apartment rates account for 0.25 space/ unit reduction from the regular Apartment rates for Affordable Rental and Rental Housing
3. The SSCS parking will be shared with residential visitor parking on weekday evenings and all day weekends.
4. The market retail parking will be shared with residential visitor parking on weekday evenings and weekend evenings.

As the table indicates, the required parking supply for the development is 113 spaces, including 89 residential (73 resident, 16 visitor), 19 SSCS programming, and 5 retail spaces.

While the Developer plans to meet the Bylaw requirement for the SSCS programming space and commercial retail space, to better meet the anticipated residential parking demand, the Developer proposes to provide 55 residential spaces, consisting of 51 resident and 4 visitor spaces. To supplement the visitor parking, the SSCS programming space parking is also planned to be shared with residential

visitors on weekday evenings and all day weekends, while the market retail parking is proposed to be shared with residential visitors on weekday evenings and weekend evenings. In total, the proposed supply would fall 35 spaces short of the total parking requirement, translating to a required 31% variance from the overall parking supply requirement.

Given this shortfall, to assess whether the proposed residential parking supply would be adequate to meet the actual parking demand, a parking supply analysis for the residential component was conducted. The findings of this assessment are summarized in the following section.

5. RESIDENTIAL PARKING SUPPLY ASSESSMENT

5.1 Overview

The Village of Pemberton's Zoning Bylaw (Section 8.7) allows a reduction of 0.25 spaces per unit to the regular Apartment Dwelling rate when a multi-family building is used for affordable purchased or rental housing, such as the subject development. This reduced parking rate was reflected in the parking supply table in the previous section. As both industry studies and Bunt's own collected parking data have indicated that income level and tenure (i.e., rental vs strata-owned) are two factors that significantly impact vehicle ownership levels at residential developments, offering a reduction for these factors is appropriate.

Upon closer review of the VoP Zoning Bylaw, however, it is Bunt's opinion that even after applying the allowable discount, the off-street parking requirement would still overstate the anticipated residential parking demand given the specific attributes of the proposed development. Based on industry studies, there is a distinct and significant difference in the parking demand characteristics between strata-owned, market rental, and non-market rental housing. Given the findings of these studies, the allowable rate discount of 0.25 spaces per unit is likely not adequate for many of the unit types proposed for this project.

In addition, while the rate discount acknowledges that income level and tenure have an impact on vehicle ownership levels, it does not properly account for the spectrum of housing income levels that exist. In other words, by having only a single discount rate, it implies that all "affordable" housing is the same from a parking demand perspective. In reality, there is a significant difference in the vehicle ownership levels associated with different income levels within the "affordable" housing category. Furthermore, the parking requirement for the development does also not take into account the age of the expected tenants, which also impacts vehicle ownership levels.

Given that the proposed affordable housing development is planned to include a spectrum of income levels and the fact that all 1-bedroom units will be targeted toward Seniors, the Zoning Bylaw requirement is likely not appropriate for many units within this development. The following sections further elaborate on how these factors would be expected to influence vehicle ownership.

In addition to resident parking, based on both data collected for previous projects and the findings of local industry studies, it is also Bunt's opinion that the Zoning Bylaw's visitor parking rate of 0.25 spaces per unit would overstate the actual demand. As such, further discussion on visitor parking is also provided below.

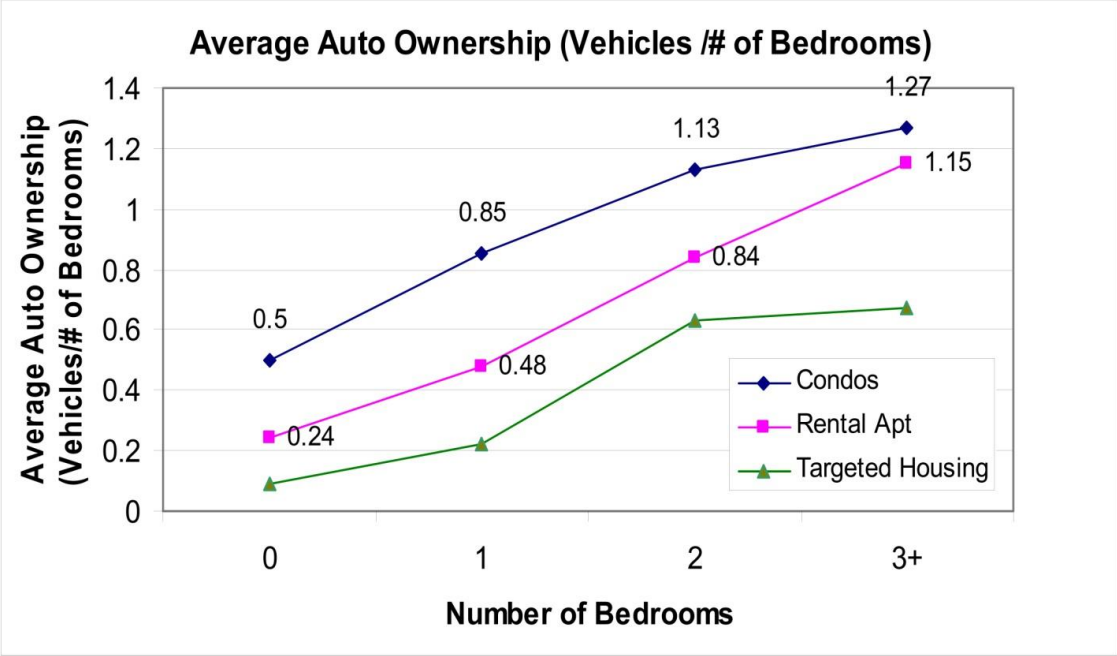
5.2 Resident Parking

The following sections include information on how the factors noted above impact resident parking demand based on the findings of industry studies. From these studies, a recommended parking rate is provided.

5.2.1 Effect of Tenure and Income

In terms of tenure, rental units tend to have lower auto ownership levels compared to strata-owned units. This contention is supported by the findings of a large 2007 City of Toronto study that studied the ownership levels of residents of approximately 4,700 apartment buildings. The findings are illustrated in **Figure 5.1,** which clearly demonstrate the relationship of vehicle ownership versus both tenure and income.

Figure 5.1: 2006 Average Auto Ownership by Housing Type and No. of Bedrooms



Source: City of Toronto Parking Standards Review – Phase Two Apartment Building/Multi-Unit Block Developments Component, New Zoning Bylaw Project, Cansult Limited, February 2007

As the figure indicates, regular strata "Condos" were found to have vehicle ownership rates ranging from 0.5 to 1.27 vehicles per unit, depending on the unit size. In comparison, market "Rental" units were shown to have vehicle ownership rates ranging from 0.24 to 1.15 vehicles per unit, translating to rates 10% to 50% lower than the strata units. Finally, non-market "Targeted" rental units were found to have vehicle ownership rates of 0.10 to 0.65 vehicles per unit, which equates to a reduction of 40% to 80% compared to strata units.

In terms of more local studies, the findings from the 2018 Regional Parking Study (RPS) conducted by Metro Vancouver and TransLink further support the notion that tenure and auto ownership are interrelated. The study included: (1) a comprehensive Household Survey program of over 1,500 strata and rental apartment households in Greater Vancouver, (2) a Parking Facilities Survey at over 70 apartment sites, and (3) a Street Parking Survey on streets near the selected apartment sites. This study was an update to a similar comprehensive parking study, the Metro Vancouver Apartment Parking Study (MVAPS) released in September of 2012.

For reference, the 2018 Regional Parking Study can be found at the following link:

http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RegionalParkingStudy-TechnicalReport.pdf

In addition, the 2012 Metro Vancouver Apartment Parking Study can be found at:

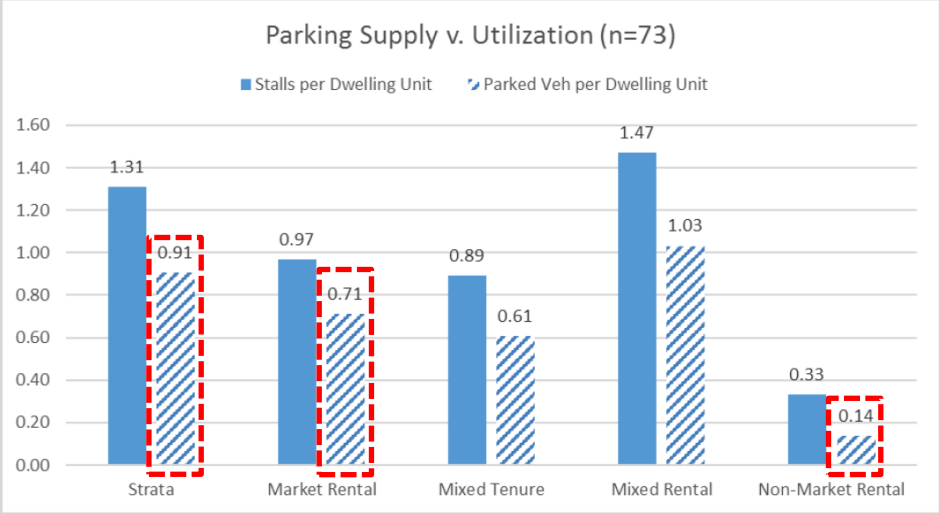
http://www.metrovancouver.org/services/regional-planning/PlanningPublications/Apartment_Parking_Study_TechnicalReport.pdf

Key findings of the 2018 RPS included:

- The Household Survey indicated that strata units have average auto ownerships of 1.30 vehicles per household. In comparison, market rental units were shown to have auto ownership levels of 1.07 vehicles per household, while non-market rental units indicated 0.54 vehicles per household. These levels translate to 18% and 58% lower ownership rates for market rental and non-market rental units, respectively, compared to strata units.

- The Parking Facilities survey found that the average parking demand at strata-owned sites was 0.91 vehicles per unit. In contrast, market rental units were shown to have parking demand levels of 0.71 vehicles per unit, while non-market rental units indicated a demand of 0.14 vehicles per unit. These levels translate to 22% and 85% lower parking demand rates for market rental and non-market rental units, respectively, compared to strata units. This comparison is shown in **Figure 5.2**.

Figure 5.2: Parking Demand by Tenure Type Comparison



Source: Progress Update on the 2018 Regional Parking Study Memo, Figure 1

While these specific rates would not necessarily be appropriate for the proposed development, this data suggests that in general, market rental units are expected to experience parking demand rates ranging from 18% to 22% lower than strata units, while non-market rental units are expected to generate demand ranging from 58% to 85% lower than strata units.

In comparison, the VoP's 0.25 space per unit discount rate for affordable rental housing translates to reductions ranging from 12.5% to 25% from the regular Apartment Dwelling strata rate, depending on the unit size. These discounts are summarized in **Table 5.1** below.

Table 5.1: Village of Pemberton Zoning Bylaw Affordable Rental Housing Discount

UNIT TYPE	BYLAW RATE[1] (SPACES/ UNIT)	DISCOUNT (SPACES/ UNIT)	ADJUSTED RATE[2] (SPACES/ UNIT)	% REDUCTION
1-Bedroom	1.0	0.25	0.75	**25%**
2-Bedroom	1.75	0.25	1.50	**14%**
3-Bedroom	2.0	0.25	1.75	**12.5%**

1. Regular "Apartment Dwelling" parking rate for strata housing (Bylaw 8.3)
2. Adjusted "Apartment Dwelling" parking rate after "Affordable Rental Housing" discount is applied. (Bylaw 8.7)

As shown, the percent reductions applied to the regular VoP Zoning Bylaw rates for affordable rental housing (i.e., 12.5%-25%) are similar to the percent reductions found between strata and market rental

housing in the RPS study (i.e., 18%-22%). For this reason, the discounted Bylaw rates may in fact be appropriate for the affordable market rental units of the proposed development.

In terms of the proposed non-market rental housing, however, the discount applied may not be adequate, as the RPS indicated that the reduction in vehicle ownership levels between strata units and non-market rental units is significantly greater. This conclusion was further substantiated by the findings in the Toronto study. The following section provides additional information on how different income levels for non-market housing are shown to impact vehicle ownership.

5.2.2 Vehicle Ownership by Income Level

Both industry studies and the findings of Bunt's own data collection have indicated a strong relationship between income levels of residents and expected vehicle ownership. In other words, as income decreases, auto ownership and use decrease. This intuitively makes sense, as many of the residents in a non-market housing development simply do not have the financial resources necessary to pay for a private vehicle, insurance, gas, and maintenance. This is particularly true for those residents living in units with the highest subsidy levels, i.e., deep subsidy/shelter units.

In addition to the data shown above, the Canada Mortgage and Housing Corporation (CMHC) (Research Highlight, Socio-Economic Series Issue 50- Revision 2) also concluded that household income is the second-best predictor of auto ownership. A study reported in the Australia Transportation Forum (2007) confirmed a strong correlation between vehicle ownership and household income. A study published by Pushkar et al (TRB 2000) based on a survey of 115,000 households in Toronto indicated that higher income households owned more vehicles. A study conducted by Bunt & Associates in the Vancouver area in the early 1990s and in the Calgary area in 2003 also supported a positive, almost linear relationship between income and auto ownership.

The City of Mississauga conducted a study of over 4,600 non-profit rental housing units by various income stratifications and by unit size. **Figure 5.3** summarizes the proposed minimum parking guidelines resulting from the survey findings from this study for market rental units, "shallow" (lower) subsidy units, and "deep" (higher) subsidy units.

Figure 5.3: Proposed Minimum Parking Guidelines for Non-Seniors Apartments

Subsidy Category	Unit Size	Vehicle Ownership Rate
Market	One Bedroom	0.75
	Two Bedroom	0.90
	Three Bedroom	1.14
	Four Bedroom	1.21
Shallow	One Bedroom	0.40
	Two Bedroom	0.60
	Three Bedroom	0.74
	Four Bedroom	1.10
Deep	One Bedroom	0.31
	Two Bedroom	0.50
	Three Bedroom	0.70
	Four Bedroom	0.97

Source: City of Mississauga Policy & Planning Division, Parking Guidelines for Public and Private Non-Profit Housing, March 2005

Again, a clear relationship can be seen that supports Bunt's contention that the lower the income level, the lower the auto ownership will be, and subsequently, the lower the parking requirement should be.

5.2.3 Effect of Age

As the age of a resident increases, the likelihood of that resident owning a vehicle and actively driving decreases. In general, people often move to a Seniors Housing development in part because they either no longer want or are able to drive themselves to purchase groceries, engage in social activities, etc., and therefore take advantage of the amenities and services offered at these developments. Subsequently, the vehicle ownership of these residents is considerably lower than that of residents at non-Seniors developments.

While the proposed development will not be formally registered as a Seniors Housing development, all 1-bedroom units will be targeted toward Seniors and will be designed and operated accordingly. Based on conversations with the Developer, eight of the 1-bedroom units will be designed as accessible, while the remainder of all units in the development (regardless of size) will be designed as adaptable.

As mentioned previously, the site is located within 800m (~10-minute walk) of several amenities such as restaurants, parks, and a community centre, and has a bus stop serviced by the *100 Pemberton Local* bus route located immediately southwest of the site (although service frequency is limited). In addition, SSCS operates a "Better at Home Program" which operates within Pemberton and the surrounding area which offers transportation services to Seniors to attend appointments, pick up medications or groceries, and/or perform other necessary errands.

In combination, these factors would enable Seniors to access many essential amenities without relying on owning a private vehicle. For these reasons, it is expected that the 1-bedroom units for the proposed

development will experience a lower parking demand than if the units were not targeted at this specific age group.

5.3 Recommended Resident Parking Rates

As noted earlier, the data from the industry studies suggest that the Village of Pemberton's current discounted parking rate may in fact be appropriate for the affordable market rental units of the proposed development. However, given the relationship between income level and vehicle ownership, it is likely that residents of the non-market units (i.e., RGI and deep subsidy/shelter units) would have considerably lower vehicle ownership levels, with the residents of the deep subsidy/shelter units likely not owning any vehicles at all.

As such, when developing recommended parking rates, for the affordable market rental units, the current discounted Bylaw rates were simply used. For the RGI units, Bunt applied a blanket reduction factor to the discounted Bylaw rates equivalent to the difference between the "shallow" and "market" subsidy categories shown earlier in Figure 5.3, which was approximately 30% (i.e., average difference for all unit sizes). Finally, for the deep subsidy/shelter units, as the Developer has indicated that residents for these units are not expected to own their own vehicles, Bunt did not recommend any designated resident parking for these units. Using this approach, **Table 5.2** below summarizes Bunt's recommended parking rates and subsequent supply, and compares the recommended supply to the proposed supply.

Table 5.2: Recommended Resident Parking Rates by Income Level and Size

DESCRIPTION	QTY (DWELLING UNITS (DU))	RECOMMENDED RATE (SPACES/DU)	RECOMMENDED (SPACES)	PROPOSED (SPACES)	DIFFERENCE (SPACES)
AFFORDABLE MARKET RENTAL					
1 Bedroom	9	0.75[1]	7		
2 Bedroom	7	1.50[1]	11		
3 Bedroom	2	1.75[1]	3		
Sub-Total	**18**	-	**21**		
RENT GEARED TO INCOME					
1 Bedroom	16	0.50	8		
2 Bedroom	12	1.05	13		
3 Bedroom	4	1.23	5		
Sub-Total	**32**	-	**26**		
DEEP SUBSIDY/SHELTER					
1 Bedroom	6	0	0		
2 Bedroom	5	0	0		
3 Bedroom	2	0	0		
Sub-Total	**13**	**0**	**0**		
OVERALL					
1 Bedroom	31	0.48	15		
2 Bedroom	24	0.96	23		
3 Bedroom	8	1.00	8		
RESIDENT TOTAL	63	0.75	47	51	+4

1. Rates reflect the discounted Village of Pemberton Zoning Bylaw rates for Affordable/Rental Apartment Dwellings
2. Rates reflect the discounted Bylaw rates reduced by 30%.

As the table indicates, Bunt's recommended parking rates, which vary by income level and unit size, result in a recommended resident parking supply of 47 spaces. In comparison, the Developer proposes to provide 51 spaces, which equates to just over 1 space per unit for all units, except for the deep subsidy/shelter units. As the proposed supply exceeds Bunt's recommendation by 4 spaces, the resident parking for the development is expected to be adequate to accommodate the anticipated parking demand.

5.4 Residential Visitor Parking

In addition to the resident parking rates, it is Bunt's opinion that the VoP's visitor parking rate would also be higher than the anticipated demand rate given data collected for previous Bunt parking studies and the findings of general industry studies.

5.4.1 Previous Bunt Parking Studies

Table 5.3 below provides a summary of the peak visitor parking rates observed at several multi-family residential towers in Metro Vancouver. At these locations, peak visitor parking demand data was collected over the course of one to four days.

Table 5.3: Visitor Parking Studies by Bunt

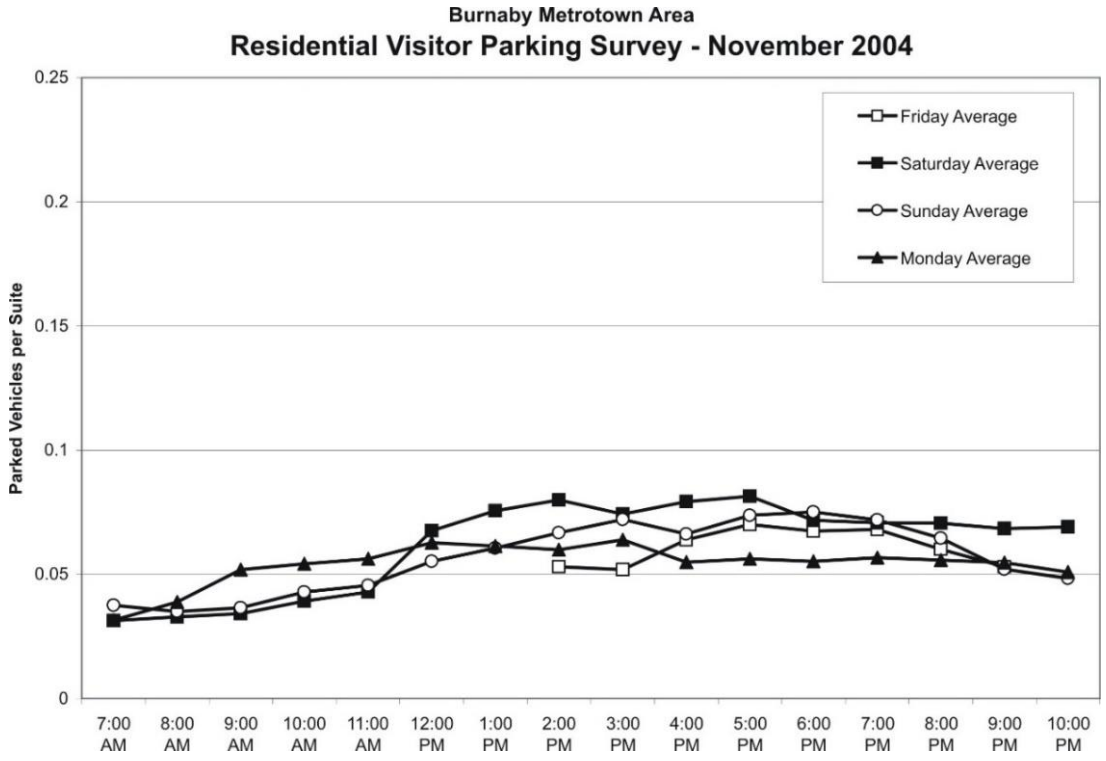
DESCRIPTION	MUNICIPALITY	# DAYS OF DATA	PEAK VISITOR PARKING DEMAND RATE (SPACES/UNIT)
One Lonsdale Corridor Rental Tower	City of North Vancouver	1 Day	0.05
Two Guildford Town Centre Apartment Towers	City of Surrey	4 Days	0.08
Six Metrotown Area Apartment Towers	City of Burnaby	2 Days	0.08

The peak visitor parking demand rate observed ranged from 0.05 to 0.08 spaces per unit. This visitor parking demand falls well under the 0.25 spaces per unit required by the Village of Pemberton.

It should be noted that during the Guildford Towers visitor parking surveys, which covered Friday and Saturday afternoon and evening periods at two high-rise towers, Bunt interviewed the drivers who were using the designated visitor parking spaces. Over 50% of these users indicated that they were residents using the visitor parking for short-term convenience parking. As such, it is Bunt's view that this may be a common occurrence, leading to higher than required visitor parking rates when such rates are based solely on direct observation.

To provide an indication of how visitor parking demand varies over the course of a day, **Figure 5.4** provides the average observed parking demand profile from the six Metrotown area apartment towers included in Table 5.3. As the figure indicates, visitor parking demand is generally highest on weekend afternoons, with the highest demand found to be on Saturday afternoon with a demand rate of 0.08 spaces per unit.

Figure 3.4 Residential Visitor Parking Survey – November 2004



5.4.2 Metro Vancouver Apartment Parking Study (2012) & Regional Parking Study (2018)

One of the key findings of the 2012 MVAPS was that visitor parking may be oversupplied throughout the region. Specifically, observed parking demand rates were below 0.10 space per apartment unit, compared to the typical municipal requirement of 0.20 visitor spaces per apartment unit. In comparison, the Village of Pemberton's visitor parking rate is even higher at 0.25 spaces per unit.

In addition, interviews undertaken with apartment developers as part of this study indicated that a visitor parking rate of 0.20 spaces per unit was found to be excessive in their experience. As such, in some instances, surplus visitor spaces have been sold to tenants as privately assigned spaces rather than retained as designated visitor parking.

While the 2018 RPS did not explicitly collect on-site visitor parking supply and demand data, the study did find from a Household Survey that available on-site visitor parking was reported to be most difficult to find during weekends, holidays, and on special occasions, indicating that these are the busiest periods of demand. This is consistent with Bunt's data presented in the figure above, which indicated that Saturday afternoons experienced the greatest demand.

5.4.3 Proposed Visitor Parking Supply

While the VoP's Zoning Bylaw requires that 16 dedicated visitor parking spaces (i.e., 0.25 spaces per unit) be supplied, given the data above, to provide a more appropriate supply and more efficient arrangement, the visitor parking supply for the development is proposed to be 4 spaces (i.e., 0.06 spaces per unit) combined with a shared parking arrangement with both the SSCS programming space and commercial retail parking supply. Specifically, on weekday evenings and all day on weekends, the 19 SSCS programming space parking spaces will be shared with residential visitors. In addition, on weekday evenings and weekend evenings, the 5 commercial retail parking spaces will be shared with residential visitors.

This proposed arrangement is meant to take advantage of the fact that the parking demand for these uses tends to peak at different times of the day and on different days. For example, residential visitor parking tends to peak both during the daytime on weekends and in the early evening on weekdays. Generally speaking, the parking demand for the SSCS programming space is expected to be highest during the weekday daytime, but be lowest or non-existent (i.e., at times when the SSCS programming space is closed) during the weekday evenings and weekends. Furthermore, the commercial retail parking demand is expected to be highest during the daytime on both weekdays and weekends, but lower or non-existent during the evenings when the retail stores are closed. By sharing the non-residential parking with residential visitors during off-peak times for these commercial and community uses, peak visitor demand will be accommodated without needing to construct excessive parking that may sit vacant at most times of the day.

Given the data above, the peak visitor parking demand is expected be in the range of 0.05 to 0.08 and no more than 0.10 spaces per unit, which translates to a peak demand of 6 spaces, occurring on weekends and on weekday evenings. As such, the ability for visitors to use the SSCS programming space and commercial retail parking during these times, resulting in an effective supply of 28 spaces during weekday and weekend evenings and 23 spaces during weekend daytimes, is expected to enable the site to accommodate the peak visitor parking demand despite having only 4 dedicated full-time visitor spaces.

6. SUMMARY

Sea to Sky Community Services (SSCS) is proposing an affordable multi-family residential development at Lot 2 Harrow Road in the northwest corner of Pemberton Portage Road (Hwy 99) & Harrow Road in Pemberton, BC. The development plan includes 63 rental units, consisting of 31 1-bedroom units, 24 2-bedroom units, and 8 3-bedroom units, with all the 1-bedroom units being targeted towards Seniors. The development will include 30% affordable market rental units and 70% non-market rental units. In addition to the residential space, the development will also include 7,685 sq.ft. (714 sq.m.) of SSCS programming space and 1,386 sq.ft. (129 sq.m.) of general market retail space.

In terms of site traffic, the development is expected to generate approximately 40 and 54 vehicle trips in the AM and PM peak hours, respectively. This translates to fewer than 1 new vehicle trip per minute on average during either peak hour. Typically, peak hour trip generation of 100 vehicle trips or fewer is not expected to have a material impact on the adjacent street network. As the anticipated trip generation is considerably lower than this threshold, the development is not expected to result in any traffic operations issues at the nearby intersections.

In terms of parking, to better suit the anticipated demand and to maintain housing affordability for the development, the Developer proposes to provide off-street parking for the residential space at rates lower than those outlined by the Village of Pemberton's Zoning Bylaw. Given that the development is planned to consist of entirely rental units targeted at lower-income Seniors and families, the bylaw rate would likely result in an oversupply of parking, even after applying the allowable rate discount for affordable/rental housing. As such, while the required residential parking supply is 89 spaces (73 resident, 16 visitor), the Developer proposes 55 spaces (51 resident, 4 visitor), representing a shortfall of 34 spaces (22 resident, 12 visitor).

Research as presented herein on the factors influencing auto ownership (i.e., tenure, income levels, and age), combined with the fact that the proposed supply exceeds Bunt's recommended supply (which is based on a rational breakdown of rates specific to the size, target demographic, and subsidy level of the units), strongly supports the proposed reduced resident parking supply. In terms of visitor parking, data collected by Bunt for previous projects and the findings of local industry studies, combined with a proposed shared parking arrangement that allows the SSCS programming space and commercial retail parking to be used by residential visitors during off-peak time for the non-residential uses, support a reduced visitor parking rate.

For these reasons, it is Bunt's opinion that the proposed resident and visitor parking rates are appropriate for the development and will be able to accommodate the expected parking demand. Furthermore, it is worth acknowledging that the parking demand is expected to be accommodated on-site and not rely on the usage of on-street parking.