



# PLANNING AND COMMUNITY DEVELOPMENT COMMITTEE

**Thursday, December 12, 2019**  
**SCRD Boardroom, 1975 Field Road, Sechelt, B.C.**

## AGENDA

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**CALL TO ORDER**            **9:30 a.m.**

### AGENDA

1. Adoption of Agenda

### PRESENTATIONS AND DELEGATIONS

2. William Charlton, Pender Harbour and Area Residents Association (PHARA)            Annex A  
Regarding Request for Letter of Support – Amendments to the Pender Harbour            pp 1 – 2  
Dock Management Plan (DMP)
3. Marta Green, Professional Geoscientist, Associated Environmental Consultants            Verbal  
Regarding Groundwater Investigation Phase 3

### REPORTS

4. General Manager, Infrastructure Services and Manager, Capital Projects –            Annex B  
Groundwater Investigation Phase 3 – Church Road Results            pp 3 - 152  
**(Voting – A, B, D E, F, Sechelt)**
5. Senior Planner – Sunshine Coast Regional District Zoning Amendment Bylaw No.            Annex C  
337.121, 2019 (Thomson) Consideration of First Reading            pp 153 - 161  
**Electoral Area A (Rural Planning) (Voting – A, B, D, E, F)**
6. Senior Planner – Frontage Waiver FRW00006 (Rockford)            Annex D  
**Electoral Area F (Rural Planning) (Voting – A, B, D, E, F)**            pp 162 - 165
7. Senior Planner – Development Variance Permit Application DVP00049 (Watson)            Annex E  
**Electoral Area E (Rural Planning) (Voting – A, B, D, E, F)**            pp 166 - 171
8. Planning Technician – Development Variance Permit Application DVP00052 (Van            Annex F  
Hatten)            pp 172 - 206  
**Electoral Area A (Rural Planning) (Voting – A, B, D, E, F)**
9. Planner – Provincial Referral CRN00094 for Private Moorage 2412231 (Bessie)            Annex G  
**Electoral Area B (Rural Planning) (Voting – A, B, D, E, F)**            pp 207 - 234
10. Planner – Provincial Referral CRN00093 for Private Moorage 2412264 (Shortt)            Annex H  
**Electoral Area A (Rural Planning) (Voting – A, B, D, E, F)**            pp 235 - 260
11. Planner – Provincial Referral CRN00092 for Private Moorage 2412002 (Kelemen)            Annex I  
**Electoral Area B (Rural Planning) (Voting – A, B, D, E, F)**            pp 261 - 289
12. Parks Superintendent – Agreement Renewals – Pender Harbour Living Heritage            Annex J  
Society Sublease for Sarah Wray Hall            pp 290 - 315  
**Community Parks (Voting – A, B, D, E, F)**

- |   |                         |
|---|-------------------------|
| 13. Parks Planning Coordinator – Agamemnon Channel (Daniel Point Park) Foreshore Licence No. 240719 Renewal<br><b>Community Parks (Voting – A, B, D, E, F)</b>  | Annex K<br>pp 316 - 318 |
| 14. General Manager, Planning and Community Development – Request for Proposal RFP 19 399 Youth Centre Service Award Report<br><b>Regional Recreation Programs (Voting – All)</b>                           | Annex L<br>pp 319 - 321 |
| 15. General Manager, Planning and Community Development – Request for Proposal RFP 1934504 Halkett Bay Dock Upgrade Repairs<br><b>Ports Services (Voting – B, D, E, F)</b>                                  | Annex M<br>pp 322 - 325 |
| 16. Manager, Utility Services – Vehicle Replacements: RFQ 1937007 Award Recommendation<br><b>Regional Water Service (Voting – A, B, D, E, F, DoS)</b><br><b>Waste Water Plants (Voting – A, B, D, E, F)</b> | Annex N<br>pp 326 - 328 |
| 17. Executive Assistant – 2020 BC Council of Forest Industries (COFI) Convention<br><b>General Administrative &amp; Legislative Services (Voting – All)</b>   | Annex O<br>pp 329 - 333 |
| 18. SCRD and Islands Trust Joint Meeting Minutes of November 19, 2019<br><b>General Administrative &amp; Legislative Services (Voting – All)</b>  | Annex P<br>pp 334 - 337 |
| 19. Natural Resource Advisory Committee Minutes of November 20, 2019<br><b>Regional Planning (Voting - All)</b>   | Annex Q<br>pp 338 - 340 |
| 20. Agricultural Advisory Committee Minutes of November 26, 2019<br><b>Regional Planning (Voting - All)</b>   | Annex R<br>pp 341 - 343 |
| 21. Electoral Area A (Egmont/Pender Harbour) APC Minutes of November 27, 2019<br><b>Electoral Area A (Rural Planning) (Voting – A, B, D, E, F)</b>  | Annex S<br>pp 344 - 346 |
| 22. Electoral Area B (Halfmoon Bay) APC Minutes of November 26, 2019<br><b>Electoral Area B (Rural Planning) (Voting – A, B, D, E, F)</b>   | Annex T<br>pp 347 - 349 |
| 23. Electoral Area D (Roberts Creek) APC Minutes of November 18, 2019<br><b>Electoral Area D (Rural Planning) (Voting – A, B, D, E, F)</b>  | Annex U<br>pp 350 - 351 |
| 24. Electoral Area E (Elphinstone) APC Minutes of November 27, 2019<br><b>Electoral Area E (Rural Planning) (Voting – A, B, D, E, F)</b>  | Annex V<br>pp 352 - 355 |
| 25. Electoral Area F (West Howe Sound) APC Minutes of November 26, 2019<br><b>Electoral Area F (Rural Planning) (Voting – A, B, D, E, F)</b>  | Annex W<br>pp 356 - 359 |

## COMMUNICATIONS

- |  |                   |
|--|-------------------|
| 26. <u>Jason Cyr, Chair, Fircom/Sunset Owners Society, dated November 25, 2019</u><br>Regarding Request to consider renaming Halkett Bay dock<br><b>Ports Services (Voting – B, D, E, F)</b> | Annex X<br>pp 360 |
|--|-------------------|

## NEW BUSINESS



## **IN CAMERA**

That the public be excluded from attendance at the meeting in accordance with Section 90 (1) (a) and (e) of the Community Charter – “personal information about an identifiable individual who holds or is being considered for a position as an officer, employee or agent...” and “the acquisition, disposition or expropriation of land or improvements...”

## **ADJOURNMENT**

## **The Pender Harbour and Area Residents' Association (PHARA)**

**3 December 2019**

Regarding PHARA Delegation to the Sunshine Coast Regional District Planning and Development Committee on December 12, 2019

### **EXECUTIVE SUMMARY**

This briefing will provide background information and context to the suggested changes to the current Pender Harbour Dock Management Plan (PHDMP)

#### **Focus Areas**

Proposed administrative and substantive amendments to the PHDMP as informed by new information supplied by Qualified Professional Engineers and Biologists.

Complete the Area A OCP and update Bylaw 337 to include Tidal waters Foreshore Zoning and Land Use Regulations.

Our objective is to have all dock owners be in compliance and our local community members of the shíshálh swiya work together to build the trust and working relationships as envisioned by the Foundation Agreement.

#### **Changes to Engineering and Environmental Requirements**

Engineering analysis of the PHDMP found it contains legislated hazards related to float buoyancy and stability plus the 43% light transmission criteria is not achievable. It further states that the PHDMP must be amended to reflect proper engineering design of all the elements of any new dock system. Additionally, redesign/replacement of existing docks to meet new criteria would be unprecedented.

Recent Environmental Review by Balanced Environmental Services Inc. found among other things that the reports and studies used in the creation of the PHDMP do not support the stated objectives of the PHDMP and that it does not provide any information justifying the use of zones for dock management.

Our hope is that the professional staff of the shíshálh Nation, Province and the SCRD will review the PHDMP and associated documents and update them through the Shared Decision Making process as outlined in the Foundation Agreement to adequately represent legislated requirements and the will of the communities affected.

#### **Requests of the SCRD**

- 1) Request support for proposed amendments to the PHDMP
- 2) Request completion of the Area A OCP and update Bylaw 337 to include Tidal Waters Foreshore Zoning and Land Use Regulations

Respectfully,

William (Bill) Charlton

Sean McAllister

Directors Pender Harbour and Area Residents Association (PHARA)

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Copy to Peter Robson - President PHARA

Supplemental materials can be viewed at the following website:

<http://www.penderharbourdockplan.com/>

1. PHDMP Proposed Amendments 3 Dec 2019 Rev5
2. Crown Land Use Policy file 12565-00, January 21 2019
3. Safety Concerns with the Pender Harbour Dock Management Plan, Ref 01-00, Rev 3, December 21, 2018
4. Pender Harbour Dock Management Plan, Engineering Review, 18055-100-rpt-001, April 25, 2019
5. Pender Harbour Dock Management Plan Environmental Review, 5879-R-01.1, February 26, 2019
6. Pender Harbour Dock Management Plan Opportunities & Alternative Strategies , March 11, 2019
7. PH DMP Guidance For QP's on Conducting Foreshore Surveys - no date, no file number
8. Letter, Pacific Advisory Services to Kevin Haberl, Director Resource Authorizations, South Coast, Penner Report - Review of Draft Pender Harbour Dock Management Plan, November 8 2015

**SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT**

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**TO:** Planning and Committee Development Committee – December 12, 2019

**AUTHOR:** Remko Rosenboom, General Manager, Infrastructure Services  
Stephen Misiurak, Manager, Capital Projects

**SUBJECT:** GROUNDWATER INVESTIGATION PHASE 3 – CHURCH ROAD RESULTS

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**RECOMMENDATION(S)**

**THAT the report titled Groundwater Investigation Phase 3 – Church Road Results be received;**

**AND THAT a budget proposal for \$8,270,000 for a Groundwater Investigation Phase 4 with respect to the development of a well field at Church Road be brought forward to the 2020 Round 2 Budget.**

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**BACKGROUND**

On January 24, 2019, the Infrastructure Services Committee received the results of the [Phase 2 Test Drilling of the Groundwater Investigation](#). At its January 31, 2019 meeting the Board adopted the following recommendations:

015/19      **Recommendation No. 2**      Groundwater Investigation Phase 2 Results (in part)

THAT a 2019 Round 1 budget proposal with respect to the permitting phase for a well field in the Church Road area be brought forward;

The scope of this permitting phase (Phase 3) as presented at the January 24 Infrastructure Services Committee meeting included:

- Drilling of a pilot test well within the Church Road area and determination of water quality and well yield for use as a future supplemental water well;
- Application for a Water License under the *Water Sustainability Act* (including completion of any associate assessments);
- Communication with the public, local governments, Skwxwú7mesh Nation;
- Assessment of the tie in options to the current water infrastructure;
- Preliminary construction cost estimates;
- Confirmation of funding options.

It was estimated that the development of a well field and all associated infrastructure could be completed by 2022 and completion and commissioning of the well(s) would be completed under a future Phase 4 Groundwater project.

The formal 2019 budget was approved by the SCRD Board on March 28, 2019, which allocated \$300,000 for Phase 3 of the Groundwater Investigation.

At the December 13, 2018 Planning and Community Development Committee meeting, the report titled 2018 Water Demand Analysis was received. This report presented an outlook of the annual shortfall in the amount of water to satisfy the water supply objective as outlined in the Water Sourcing Policy – Framework. This shortfall is called the Water Supply Deficit.

The table presented below is taken from that report and presents the Water Supply Deficit (in Million cubic meters) for three levels of effectiveness of water conservation initiatives and a 2% average annual population growth within the area supplied by the Chapman Creek System.

<b>Effectiveness of water conservation initiatives (per capita, compared to 2010)</b>	<b>Water supply deficit (Million m<sup>3</sup>)</b>		
	<b>2025</b>	<b>2035</b>	<b>2050</b>
Service Area Population	26,000	32,000	43,000
10% reduction	2.01	2.83	4.35
20% reduction	1.65	2.39	3.76
33% reduction	1.22	1.82	2.98

The purpose of this report is to provide the Board with the results of Phase 3 of the project to develop a well field at Church Road and to seek direction on proceeding with Phase 4.

## **DISCUSSION**

The results from Phase 3 of the development of a well field at Church Road are captured in a report that is attached in Attachment A.

### *Site selection well field*

The proposed location of the existing neighborhood park was determined to be the best location for the well field as this location was the least intrusive to the drilling operation. Several other nearby locations were extensively reviewed, but all of those locations were heavily treed and steeply sloped. Heavy grading and tree removal would have been required in order to allow of a suitably sized drill rig to enter and maneuver upon the site. The residents will be briefed on the details of the well field and the nearby pump station adjacent to the Grantham's well at a future public meeting to present the preliminary design to the residents in order to address any resident concerns as to the well house and final pump station aesthetics.

### *Drilling of new test well and results pumping test*

The test well drilled as part of this project is about 58 meter deep and is 8 inch in diameter. This diameter was selected as this allowed for a more accurate results from the pumping test to be obtained and would allow for the well to be developed into a production well, if the decision is made to actually develop a well field at this location.

It can be concluded from the pumping tests results that the long-term sustainable yield of one production well is 28.8 liters per second, which is slightly higher then then 25.7 liters per second that was calculated based on the 6 inch test well drilled in 2018. Based on these findings the

recommendation is to drill one addition 8 inch production well in close proximity to the recently drilled one which would result in a total long-term sustainable yield from this well field of 57.6 liters per second.

The groundwater from the recently drilled well meets the Guidelines for Canadian Drinking Water Quality standards. Due to its elevation and distance from the coast, the proposed well field it's unlikely that salt water intrusion would became a concern at this location, even if sea-level rise due to climate change would be considered.

*Impact on Water Supply Deficit and connection to Chapman Creek water system*

The expected reduction in the Water Supply Deficit during drought situations with the development of the well field are summarized in the table below:

<b>Effectiveness of water conservation initiatives (per capita, compared to 2010)</b>	<b>% reduction of supply defecit</b>		
	<b>2025</b>	<b>2035</b>	<b>2050</b>
10% reduction	46	32	21
20% reduction	55	38	24
33% reduction	75	50	31

Given the results of the pumping test the potential capacity of a well field at this location would exceed the water consumption of the current Grantham's water system and of the neighboring Zone 3 of the Chapman Creek system. Therefore it's recommended to construct a dedicated supply main to the Reed Road pump station which would allow the water to be distributed over the entire southern Sunshine Coast, including the entire Elphinstone area, Roberts Creek and in an emergency situation also to the Town of Gibsons.

*Potential impact to other groundwater users and the environment*

One of the requirements to obtain a Water Licence is that any new groundwater diversion is not impacting any current well owners ability to continue to use their wells in a similar way as they are using it know. The only know wells in the vicinity of the proposed well fields are private wells and the existing Grantham's well.

During the pump test, the consultant monitored impacts on the closest known private well and extrapolated the data to a situation where the well field would be used for several months at full capacity. This analyses concluded that the potential impact would be marginal and not impact the resident's ability to use water now and in the future. Based on these findings no impacts to other private wells are expected from the use of the well fields.

The pump test also confirmed that the natural spring along Soames creek located just upstream of the Grantham's well will dry up due to ongoing use of the well field. Staff are currently in the process of confirming the extent to which this reduction is impacting the ecological values present in the sections of the creek downstream of this spring. This includes habitat assessments, fish monitoring and stream flow monitoring. This analyses is underway and expected to be concluded in Q2 2020 and will form the basis of the Environmental Flow Needs (EFN) assessment that is required to be submitted to the Province in support of the Water Licence Application.

Based the data collected to date it's anticipated that augmentation of the stream flow at the location of the spring would be required to guarantee that the downstream ecological values are not significantly impacted. This flow augmentation could be provided by redirecting water from the proposed well field or from the Soames well to the creek. It's anticipated that this would require a flow of 7 liters per second or less.

Decommissioning of the existing Grantham's Well is required if this well is taken out of commission and could be initiated at least one year after the new well field is commissioned.

#### *Regulatory requirements*

Following is a summary of the anticipated authorizations required for this project:

- Water License for a new groundwater use,
- Water Supply System Construction Permit,
- Water Supply Operating Permit,
- Utility Application for Primary 3 phased power from BC Hydro.
- SCRD Building Permit for new water treatment plant building and pump house.
- Ministry of Transportation Road Construction permits.

The Water Licence application was submitted in October 2019 and will submit additional information supporting this application in the upcoming couple of weeks.

Staff will update the Board if the timeline for obtaining any of these authorizations could impact the anticipated timeline for the commissioning of the proposed new well field.

#### *Engagement with residents and Skwxwú7mesh Nation*

Staff ensured that residents in close proximity of the site were informed well in advance on the drilling activities and pump testing. Staff did so by hand delivering information to those residents and providing contact information of key staff to contact if any concerns would arise.

Staff also met with staff from the Skwxwú7mesh Nation to inform them on the rationale and scope of this project and requested a response on the potential that this project could impacts their interests.

#### *Financial implications*

The estimated costs and proposed funding sources for the remaining work associated with the development of this well field are:

<b>Project component</b>	<b>Cost estimate</b>	<b>Proposed funding</b>
Water Licence application support (incl. EFN-analyses)	\$60,000	Capital Reserves
Drilling and testing of second production well	\$200,000	Capital Reserves
Remaining design work, construction and commissioning approval management and construction management	\$740,000	Capital Reserves / Long-term Loan
Construction of well 3, pump station and water mains	\$4,900,000	Long-term Loan
Grantham's Well Decommissioning	\$350,000	Long-term Loan
Construction Contingency allowance (40%)	\$1,960,000	Long-term Loan
Staff resources	\$60,000	
<b>Total</b>	<b>\$8,270,000</b>	

At the end of Phase 2 the costs for only the well field development were estimated at \$4.65 Million if the 50% contingency allowance is included or \$3.1 Million if it was excluded.

The following items were not included in this estimate and are now included in the Phase 3 estimate:

- the cost for the decommissioning of the existing Grantham's well,
- the cost for augmenting flows in Soames Creek, and
- the costs associated with the installation of the infrastructure to pump the water from the current Grantham's reservoir site to the Reed Road pump station.

These additional costs are estimated at about \$4.4 Million (incl. 40% contingency allowance).

Considerable cost savings could be achieved by coordinating the construction of water mains on Reed Road and Elphinstone Avenue with the construction of new water mains by the SCRD and the Town of Gibsons on Reed Road, both proposed for the fall of 2020.

Given that the current reserves balances do not allow from the remainder of this project to be entirely funded from the reserves for the [370] Regional Water System, an alternative funding source would be required to proceed in an expedited manner with the development of this well field. To avoid an unsustainable depletion of these reserves, it is recommended that only the activities to support the Water Licence application be funded from capital reserves.

This project would qualify as an eligible project under the Investing in Canada Infrastructure Program Green Infrastructure Environmental Quality funding stream. Applications are currently being accepted for the second intake under this program with a deadline of February 26, 2020. One of the key eligibility requirements for the grant is that construction cannot begin and tenders cannot be awarded prior to final approval. This would potentially delay the commissioning date for this project by at least a half year to fall 2021. Therefore it is recommended to fund the vast majority of the remaining components of this project thru a long-term loan. Staff will continue to look for potential grant funding that would not result in a delay in the timeline of commissioning of this well field.

Staff considered the two options to receive electoral approval for a long term loan (Alternative Approval Process (AAP) and referendum), and suggest that an AAP would be the preferred option where a referendum could be considered if an AAP would happened to fail.

Assuming a maximum term 30 year loan, \$8,000,000 principal and a 2.5% interest rate, the annual debt servicing costs would total \$382,221. The resulting increase to parcel tax rates is estimated at 12.6% which would equates to a \$33.66 increase for a parcel up to one acre in size



as compared to 2019 rates. At a very high level, the present value of the total payments over the term of the loan would be approximately \$787 per parcel based on a 2% discount rate.

*Timeline for next steps*

Advancing the development of this well field would include the activities:

- a. Completion of Environmental Flow analyzes and ongoing engagement with FLNRORD regarding the Water Licence application.
- b. Procurement of consultant for preliminary design, final design and construction management.
- c. Development of detailed design and cost estimates (Class B).
- d. Electoral approval process for long term loan for remaining design and construction work
- e. Obtaining of all the required permits for construction.
- f. Procurement of contractor for infrastructure construction.
- g. Development of final design and cost estimates (Class A).
- h. Actual construction of well field and associated infrastructure
- i. Obtaining of all the required permits for commissioning.
- j. Commissioning of well field.
- k. Decommissioning of exiting Grantham's well.

The consultant prepared two potential construction schedules: a normal and an accelerated one with associated commissioning timeline of respectively winter 2022 or early summer 2021. Achieving the accelerated timeline would require an expedited detailed design phase and all required authorizations to be obtained in an expedited manner. This would also require the AAP to be held early summer of 2020.

Staff considers that meeting the accelerated timeline would indeed be possible and would be very beneficial from a community perspective. Therefore staff recommends to pursue this option.

*Organizational and Intergovernmental Implications*

Significant staff resources from several departments would be required to organize an AAP. The Board' expressed a desire to combine this AAP with one for the Phase 3 water meter install project would significant reduce the overall pressure on staff resources.

There will be a minimal requirement for additional staff time and some additional budget required to operate and maintain the new well field and associated infrastructure. These requirements will be quantified once the operation and maintenance plans is developed and will be brought forward in as part of the 2021 budget process.

*Communication Strategy*

The results of this project phase will be used to update the website, printed outreach materials and will be distributed thru social media.

A communication plan will be developed in support of the AAP to secure electoral approval for the required long-term loan to proceed with the construction of the well and associated infrastructure. This communication plan would be aligned with other water supply and conservation outreach and education initiatives, such as the Water Summit.

## **STRATEGIC PLAN AND RELATED POLICIES**

The Groundwater Investigation Project is identified as a supply project in the Comprehensive Regional Water Plan.

The project also supports many aspects of the 2019-2023 Strategic Plan. It supports strategy 2.1 to plan for and ensure year round water availability now and in the future and specifically the tactic to “investigate and/or develop water supply plans/sources for North and South Pender, Langdale, Soames, Grantham’s, Eastbourne, Cove Cay, Egmont and Chapman Creek water systems”. Since climate change is straining the water system, the raw water reservoir will contribute to the development and implementation of adaptation strategies and measure for priority risk areas.

## **CONCLUSION**

In summary the results from the Groundwater Investigation Phase 3 – Church Road project are that:

- A well field at the Church Road location could produce up to 57.6 liters per second
- This could reduce the 2025 Water Supply Deficit by between 55 present if the water consumption per capita is reduced by 20% compared to 2010 levels.
- There are no impacts expected to other wells in the area.
- There is a reduction in flows in Soames Creek expected that will be mitigated by artificial flow mitigation to the creek.
- A dedicated supply main to the Reed Rd pump station is required to maximize the potential of this well field and allow for the water to be distributed over the entire southern part of the Sunshine Coast.
- The costs for the remaining design, permitting and construction work is estimated at \$8,270,000 which is recommended to be funded thru a combination of capital reserves and a long-term loan.

Staff recommend that a 2020 budget proposal for remainder of the activities to develop this well field (Phase 4) will be brought forward to Round 2 budget.

## **ATTACHMENTS**

Attachment A: Preliminary Engineering Design Phase 3 Groundwater Investigation

Reviewed by:			
Manager		Finance	X – B. Wing
GM		Legislative	
A/CAO	X - T. Perreault	Other	

## REPORT

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### Sunshine Coast Regional District

### Preliminary Engineering Design Phase 3 Groundwater Investigation



NOVEMBER 2019

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# 1 INTRODUCTION

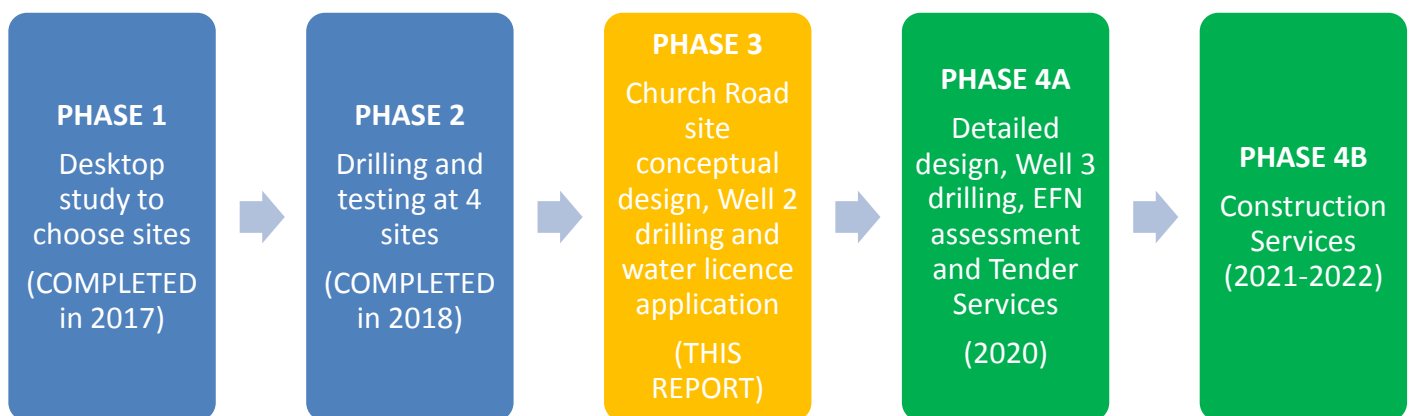
## 1.1 Background

The Sunshine Coast Regional District (SCRD) operates several water systems, the largest of which is the Chapman Water System supplying approximately 23,000 people. The Comprehensive Regional Water Plan completed in 2013 recommended that the SCRCD undertake a groundwater investigation to determine the feasibility of supplying groundwater to meet part of the long-term water source requirements (ODK 2013).

A Water Demand Analysis study has been completed by Integrated Sustainability (Integrated Sustainability 2018) to model projected future water demands to the year 2050. Based on an annual population growth of 2%, a supply deficit of 5,114 ML per year is estimated for 2050 assuming there is zero reduction in water demand compared to the 2010 demand. This is equal to 322 L/s (5,099 USgpm) over the 184-day drought period that the calculations are based on. If there was a high reduction in water demand (i.e., a 33% reduction from the 2010 demand) there would be a supply deficit of 2,988 ML per year (equivalent to 188 L/s or 2,979 USgpm for 184 days). If groundwater supply was to make up all of the difference, six to ten 200-mm (8-inch) diameter wells, each capable of providing flows of about 31.5 L/s (500 USgpm) would be required, depending on the size of the supply deficit.

As a result of recommendations from the Comprehensive Regional Water Plan, coupled with recent drought conditions across many areas of southern BC (i.e., summer 2015, 2017 and 2018), the SCRCD is actively investigating the feasibility of supplementing the Chapman Water System with a reliable source of groundwater. The groundwater investigation has involved three phases so far, with fourth and fifth phases, including construction, to be completed in 2020-2022 as shown in Figure 1-1. The SCRCD retained Associated Environmental Consultants Inc. (Associated) to conduct the third phase of the groundwater investigation (this report).

**Figure 1-1**  
**Phases of the Groundwater Investigation Project**



## 1.2 Objectives

The ultimate objective of the groundwater investigation is to reduce the dependency on water from Chapman and Edwards Lakes during the dry summer months by supplementing flow from groundwater supply wells. Building upon the Phase 1 and 2 investigations, the objectives of Phase 3 were to:

1. assess whether the Church Road Wellfield site is suitable for municipal supply considering both water quality and quantity; and
2. develop design concepts to a level upon which the SCRD can plan construction and develop next steps building up to construction.

## 1.3 Scope of Work

Phase 3 involved three tasks as summarized in Table 1-1. This report presents the methods and results of Church Road Well 2 drilling and testing (Task 2) and preliminary engineering design (Task 3). One of the constraints with the project is that a new groundwater use licence application must be received prior to use of the groundwater, and a technical assessment must accompany the licence application. A separate New Groundwater Use Licence Application has been submitted to the Province as part of Phase 3, and a Technical Assessment Report, developed to meet the Province's Guidance for Technical Assessment Requirements in Support of an Application for Groundwater Use in BC (herein referred to as the Technical Assessment Guideline) is being prepared concurrently (Associated 2019c). During the pumping test, a reduction in flow in Soames Creek was observed. As a result, after the pumping test, conceptual design of mitigation works related to augmenting flow in Soames Creek was added to the scope.

**Table 1-1**  
**Scope of Work of Phase 3**

#	Task	Description	Report Section
1	Water Licence Application and related assessments	Soames Creek habitat assessment, hydraulic connection assessment, regulatory overview and meeting with regulators, new groundwater use licence application, and Technical Assessment report in support of the licence application.	New Groundwater Use Licence Application and technical assessment report were delivered separately.
2	Church Road Well 2 Drilling and Testing	<b>Water supply:</b> Select drill site, design drilling and testing program, oversee the drilling of a 200-mm diameter well (Well 2) to 60 m and a 48-hour pumping test, and estimate sustainable well yield and well interference. <b>Water quality:</b> Collect water samples to assess potability, complete preliminary aquifer protection planning, and assess the well for groundwater-at-risk-of-containing-pathogens (GARP) to support treatment design.	Sections 2 (water quantity) and 3 (water quality). More detailed results on water quantity are presented in the Technical Assessment Report (Associated 2019c).
3	Preliminary Design	Site visit, survey and base plan preparation, preliminary geotechnical investigation, design criteria confirmation, design parameters, preliminary design for structural, electrical, instrumentation and control, mechanical and civil aspects of the work to a 30% level of design, and preparation of a preliminary design cost estimate for the next phase (Phase 4A) and construction phase (to Class C).	Sections 4-10
4	Added scope	Conceptual design (and Class D costs) for any construction works related to augmenting flow in Soames Creek.	Parts of Sections 4-10

## 2 WATER SUPPLY

Results of drilling and testing completed in 2019 indicated the development of a successful well (Church Road Well 2). The well is 200 mm (8 inch) in diameter, with a final depth of 57.9 metres below ground level (mbgl). The top of the screen assembly is at 48.8 mbgl, and static water level was measured at 15.5 mbgl on July 22, 2019. A well log is provided in Appendix A. Based on the results of the 48-hour pumping test, the long-term sustainable well yield of Church Road Well 2 was calculated to be 28.8 L/s. During the pumping test, a reduction in the flow in Soames Creek was observed. Two springs were located upstream of where the flow reduction was observed, suggesting that the springs are connected to the confined aquifer within which the well is installed. Augmentation of the loss of flow in Soames Creek is planned to mitigate this impact.

Based on the results of the drilling and testing, Table 2-1 presents the future Church Road Wellfield supply configuration. Soames Well is a neighbouring well that supplies a small portion of homes in the area. The well is installed with a pump that has a pumping capacity of up to 16.7 L/s, and the current average pumping rate is 1 L/s. Based on preliminary water modelling, the pipes in the area can allow for pumping of up to 13 L/s into Pressure Zone 1 (80m HGL). We recommend additional water modelling be completed to assess whether the infrastructure can be updated to allow for pumping up to 16.7 L/s into Pressure Zone 2 (160m HGL) through Pressure Zone 2, where the water demand is higher. Closure of the Granthams Landing Well is not included in this project. Closure of the Granthams Landing Well needs to be well planned out, as it is an uncontrolled flowing artesian well, and dewatering of the area will be needed. At least one year of monitoring of Church Road Wells 2 and 3 and the Granthams Landing Well is needed, to assess whether Wells 2 and 3 can be used as dewatering wells. Church Road Wells 2 and 3 are connected to the same confined aquifer where groundwater in Granthams Landing Well originates, so the customers can expect very similar water quality.

**Table 2-1**  
**Future water supply configuration of the Church Road Wellfield**

Common Well Name	Maximum Pumping Rate			Comments
	(L/s)	(USgpm)	(m <sup>3</sup> /year)	
Soames Well (existing)	16.7	264	526,651	Additional water modelling (included in Phase 4A) is needed to confirm this flow into Pressure Zones 1 and 2.
Granthams Landing Well (existing)	0	0	0	Currently average pumping rate is 2.3 L/s. This well will be closed after the completion of the construction of the Church Road Wellfield project.
Church Road Well 1 (existing)	n/a			This well is 150 mm (6 inch) in diameter. The optimal maximum rate for this diameter is <9.4 L/s (150 USgpm). As a result, this well is not suitable to be used as a production well for the calculated long-term sustainable well yield. In addition, a monitoring well is needed near the pumping wells to continuously monitor the response in the aquifer to pumping. Therefore, we recommend this well to be used as a monitoring well.

Common Well Name	Maximum Pumping Rate			Comments
	(L/s)	(USgpm)	(m <sup>3</sup> /year)	
Church Road Well 2 (existing) and Church Road Well 3 (proposed)	57.6	913	1,816,510	Well 2 produces 28.8 L/s. Proposed Well 3 is assumed to be a twin of Well 2. If Soames Creek augmentation is needed during parts of the year (using untreated water), the flow for augmentation will come from these wells.

### 3 WATER QUALITY

To help inform treatment options and start source protection planning, Associated collected water samples to assess water quality and potability, calculated preliminary aquifer protection areas, identified any hazards to drinking water, and completed a GARP screening.

#### 3.1 Water Quality Results

##### 3.1.1 General

The results of the water samples analysed by CARO are presented in Appendix B. The groundwater from Church Road Well 2 meets the Guidelines for Canadian Drinking Water Quality (GCDWQ) for both the health-based maximum acceptable concentrations (MAC) and aesthetic objectives (AO)<sup>1</sup>. Key parameters are shown in Table 3-1.

Table 3-1  
Key water quality parameters

Parameter	Unit	GCDWQ	Church Road Well 2
Hardness (total as CaCO <sub>3</sub> )	mg/L	NG <sup>1</sup>	29.2
Conductivity	µS/cm	NG	90.9
pH	pH units	7.0 – 10.5 <sup>2</sup>	7.62
Turbidity	NTU	See Note 3	<0.10
Nitrate (as N)	mg/L	1.0 <sup>4</sup>	<0.010
Iron (total)	mg/L	0.3 <sup>2</sup>	0.031
Manganese (total)	mg/L	0.12 <sup>4</sup> 0.02 <sup>2</sup>	0.00374
Sodium (total)	mg/L	200 <sup>2</sup>	5.12
Arsenic (total)	mg/L	0.01 <sup>4</sup>	0.00186
<i>E. coli</i> (counts)	CFU/100 mL	0 <sup>4</sup>	<1

**Notes:**

GCDWQ – Guidelines for Canadian Drinking Water Quality.

1. NG – No Guideline value

<sup>1</sup> It is important to note that only one water sample has been collected from Church Road Well 2, so the results should be treated with some caution as they could change over time during pumping or seasonally. However, the results from this first sampling round is encouraging and indicate very good quality water. In addition the samples are similar to samples collected from Church Road Well 1 as part of Phase 2, and given the confined nature of the aquifer, little change to water quality over time is expected.

2. Aesthetic Objective
3. For systems that use groundwater, turbidity should generally be below 1.0 NTU
4. Maximum Acceptable Concentration

It should also be noted that this water will be blended with the existing Chapman Water System at the Reed Road Pump House tie-in location, which has a separate source. As such, this blending will need to be investigated during detailed design as a separate task to ensure water quality is not compromised.

### 3.1.2 Corrosivity

Langelier Index is an approximate measure of the degree of saturation of calcium carbonate. Under-saturated water (noted by a negative result on the index) will tend to be corrosive, while over-saturated water will tend to deposit calcium carbonate. The results from the Caro laboratory report indicate that the groundwater in Church Road Well 2 is undersaturated so may be corrosive to the pipework. This affects various pipe materials differently, which can be further studied at the detailed design stage.

### 3.1.3 Saltwater Intrusion

The Ministry of Environment recommends monitoring for specific conductance when drilling in coastal areas (MOE 2016). Field measurements were taken throughout the pumping tests to monitor changes in specific conductivity and confirmed by a lab test. The laboratory result was 90.0  $\mu\text{S}/\text{cm}$  (wells with a concentration  $>1000 \mu\text{S}/\text{cm}$  would be considered to be affected by saltwater intrusion), and the readings remained consistent throughout with no increase indicating that pumping did not induce saline water into the well. The Church Road Wells are 170 m from the coast, which conforms to the Ministry of Environment suggestion of avoiding drilling locations within 50 m. Based on the well locations, the water quality monitoring to date, and the aquifer water level above sea level, it is unlikely that salt water intrusion will be an issue at any of the Church Road Wells. However, pumping tests during future phases should include conductivity measurements to confirm, and conductivity should be monitored during operation to identify any changes (i.e., increasing concentrations) that may indicate saline intrusion. See Section 11 for Recommendations.

## 3.2 Preliminary Aquifer Protection Plan

Associated assessed potential drinking water hazards as follows:

1. Estimated the capture zone, or the area within which rain or snow melt would eventually be captured by the well during pumping over a certain timeframe, following standard equations.
2. Assessed hazards to the drinking water source within each capture zone. This was completed by reviewing the results of the existing Well Protection Plan for Granthams and Soames Wells (Associated 2017), interviews during site visits and by reviewing publicly available air photos.
3. Completed a preliminary risk assessment for the hazards based on water quality results and aquifer setting.
4. Developed preliminary recommendations that will make up the preliminary aquifer protection plan, including a long-term monitoring program.

### 3.2.1 Delineation of Capture Zones

Delineation of capture zones for the Church Road Wellfield are described in the Technical Assessment Report (Associated 2019b). For this study, capture zones are based on the maximum calculated (sustainable) well pumping rate, not the actual well pumping rate. Two production wells are proposed for the Church Road Wellfield. Based on the pumping test results of Church Road Well 2, each well has a calculated maximum sustainable yield of 28.7 L/s (456 USgpm) for a combined total of 57.6 L/s (912 USgpm). Given the proximity of the two wells and their orientation

parallel to groundwater flow, for the purpose of developing a capture zone, the combined pumping rate is from one well. Following this approach, we mapped different zones because different types of contaminants will persist for different lengths of time in groundwater. The three zones are a 200-day, 5-year, and 20-year<sup>2</sup>, as follows:

- A 200-day capture zone. The area within this boundary is used to protect against pathogenic contaminants (viruses, bacteria, and protozoa) and all chemical contaminants. This time of travel represents the survival time of pathogens and is consistent with the new version of the BC Ministry of Health's Guideline for Determining Groundwater at Risk of Containing Pathogens (MOH 2017)<sup>3</sup>.
- A 5-year capture zone. The area within this boundary but outside of the 200-day capture zone is used to protect against all chemical contaminants (e.g.: petroleum contaminants, and persistent, mobile contaminants). This is the time frame typically needed to allow for a remediation program of a hydrocarbon spill or leak to occur (Province of Ontario 2017).
- A 20-year capture zone. The area within this boundary but outside of the 5-year capture zone boundary is used to protect against only the most persistent and mobile contaminants (e.g.: chlorinated solvents and nitrates) (Province of Ontario 2017).

An overview of the delineated capture zones is shown on Figure 3-1. Table 3-2 lists the parameters that were used to delineate the capture zones. These capture zones are preliminary at this stage; additional hydrogeological information will allow better delineation of the extent and shape of the capture zones.

**Table 3-2**  
**Parameters used to delineate the capture zones**

		Church Road Wells 2 & 3
Aquifer description based on well logs		Confined sand and gravel aquifer
Analytical equation used	200-day	Centric Circular Capture Zone
	5-year	Eccentric Circular Capture Zone
	20-year	Boat Shaped
Hydraulic conductivity <sup>1</sup>		1.4x10 <sup>-4</sup> m/s
Aquifer thickness <sup>2</sup>		32.5 m
Porosity <sup>3</sup>		0.25
Hydraulic gradient <sup>4</sup>		0.0045
Pumping rate <sup>5</sup>		57.6 L/s
Changes to analytical equation results based on hydrogeological mapping		The capture zone was adjusted to take into account bedrock outcropping to the north of the wellfield.

Notes:

<sup>1</sup> The hydraulic conductivity was calculated by dividing the aquifer transmissivity by aquifer thickness. Values calculated are typical for medium grained sand unconsolidated deposits (Freeze and Cherry, 1979).

<sup>2</sup> Based on geology encountered during drilling.

<sup>3</sup> Typical porosity for sand and gravel (from BC Well Protection Toolkit).

<sup>4</sup> Calculated based on well water level at Esperanza Road monitoring well and water level at Church Road Well 2 in 2019.

<sup>5</sup> Calculated 100-day sustainable yield from the August 2019 pumping test at Church Road Well 2 (Associated 2019b) and assumes the same rate for Church Road Well 3.

<sup>2</sup> The capture zones for 5, and 20 year are based on rationales from an Ontario Guideline. No similar rationale could be found from BC Guidelines.

<sup>3</sup> Pathogens are disease-causing organisms. There are three types of water-borne pathogens of concern to humans: viruses, bacteria, and protozoa, each with different sizes, life cycles, and characteristics.





### 3.2.2 Potential Hazards

Groundwater can enter a water supply well through:

1. groundwater flow from an upgradient aquifer,
2. overland flow and then infiltration near the wellhead,
3. geological fractures, annular spaces along improperly closed boreholes, and other larger openings in an aquifer, and
4. direct entry to the well if the wellhead completion is not sealed properly.

Hazards can be both human-related or natural. Examples of hazards are:

- Naturally occurring: pathogens from wildlife including bacteria (*E. coli*), and protozoa such as *Giardia lamblia*
- Agricultural: nitrates, phosphates, pesticides
- Forestry-related: turbidity
- Municipal: fertilizers and pesticides from fields/parks, stormwater runoff from roads
- Commercial: contaminants from airports, auto repair shops, dry cleaners
- Industrial: specific contaminants from specific industrial land uses
- Residential: pathogens and nitrates from septic tanks, pesticides, and/or solvents

The following are potential hazards for Church Road Wellfield and distances to the hazard where known:

- Private septic tanks (closest private dwelling and septic tank is 26 m cross-gradient to southwest)
- Industrial area (1.5 km to northwest)
- Hydrocarbon and chemical storage: above and below ground storage, private, commercial and industrial (closest private dwelling is 20 m to west)
- Road drainage (5 m to south)
- Disused landfill (2.1 km to northwest)

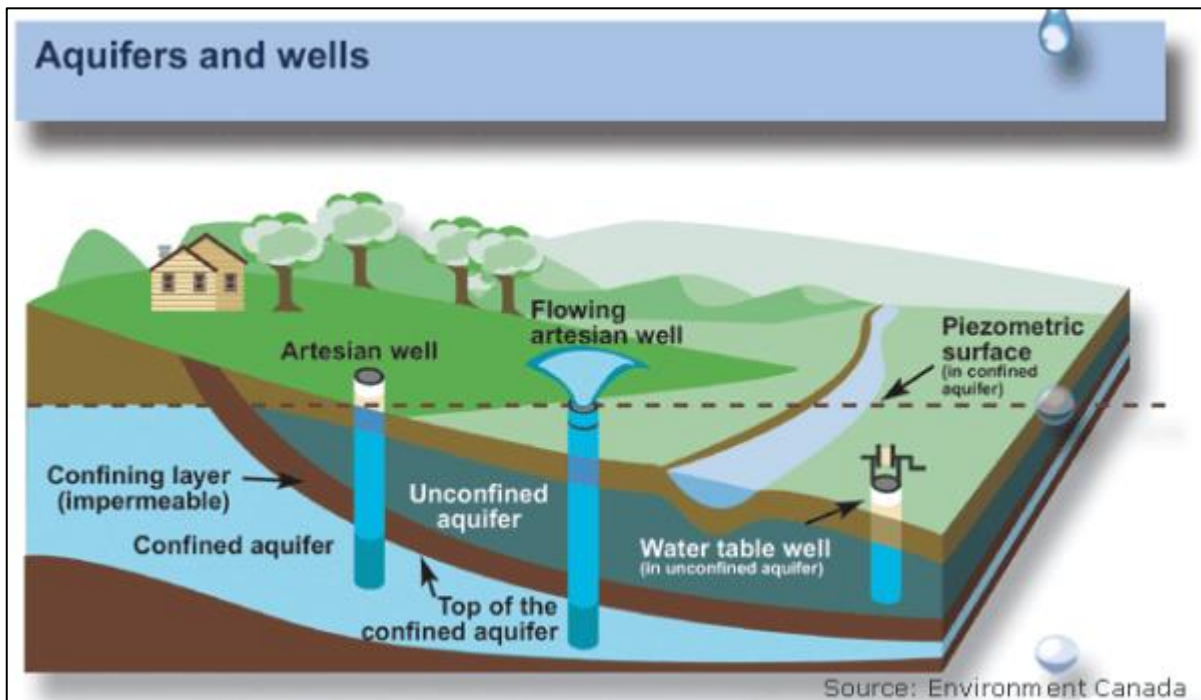
### 3.2.3 Preliminary Risk Assessment

A review of the water quality does not indicate any unusual parameters of concern; however, the pumping tests were short term while long-term pumping draws water in from a larger area. Therefore, the water quality is only representative of existing water quality in the area under non-pumping conditions.

The aquifer setting in which water supply wells are installed will dictate the vulnerability of the wells to contamination from surface, and the time it will take for contaminants to transport through the aquifer. In confined aquifers, there is a layer of less permeable material, such as clay or silt, overlying the aquifer (Figure 3-2). This layer helps to protect the aquifer from contamination directly above because contaminants will take a very long time to percolate through. Low permeability clay and till formations exist over the aquifers in which the Church Road Wells were drilled, and this layer will provide a measure of protection from contaminants migrating into the aquifer and reduce the risk of contamination. However, there may be zones where this low permeability layer is thin or non-existent; therefore, pathways could still exist for contaminants to migrate downwards into the aquifers, but the likelihood of contamination occurring is low (Figure 3-2).



Figure 3-2  
Schematic diagram of confined and unconfined aquifers (Geological Survey Canada, 2017)



### 3.2.4 Recommended Action Items and Long-term Groundwater Monitoring Program

Once the wells and system have been constructed, a Source Protection Plan following the Ministry of Health's Source to Tap Modules 1, 2, 7, and 8 is recommended (MHLS 2010). This identifies hazards, ranks them according to risk (i.e., a combination of likelihood of occurrence and magnitude of consequence), and develops action items to reduce the risk of contamination from each hazard if it is a manageable risk, or improve the emergency response if it is a risk difficult to manage (e.g., out of SCRD jurisdiction). However, based on the preliminary risk assessment, once the system is installed, action items should include at a minimum:

- Keep the well area tidy and complete regular inspections around the well heads.
- Keep the public informed about the use of the aquifers in their neighbourhoods as drinking water supplies.
- Add information about the Church Road Wells to the SCRD Emergency Response and Recovery Plan (SCRD 2017) and add contact information for the SCRD consulting hydrogeologist to the list of responders.
- Sample for the following parameters:
  - Turbidity every 4 hours
  - Specific conductance every 4 hours (wells with a concentration  $>1000 \mu\text{S}/\text{cm}$  would be considered to be affected by saltwater intrusion)
  - *E. coli* and total coliforms at a frequency as per the Drinking Water Protection Regulation
  - Metals and nutrients once a quarter for the first year, once a year thereafter
  - Pesticides, hydrocarbons, and radiological parameters once every five year.

### 3.3 GARP Screening

A GARP screening and assessment was completed and determined the Church Road Well 2 is non-GARP (Appendix C). This allows for a goal of secondary disinfection only with the goal of limiting regrowth of biofilm within the pipe

distribution network. Also, this water will be combined with chlorinated water in the Chapman Water System so providing a similar chlorine residual is appropriate.

Meeting the treatment objectives for “GARP-viruses only” is relatively straight forward and given that regulations could change over time providing primary disinfection to this water source would allow for flexibility into the future. The design team recommends that treatment provided from the new WTP be completed to a GARP-virus only level. This will be explained further in the water treatment section of the report to follow.

## 4 DESIGN PARAMETERS

### 4.1 Permits and Licences

The following approvals (and associated agencies) are required and have been incorporated into Phase 4A and the schedules (Table 4-1). Environmental approvals associated with construction are described in Section 8. The construction permit, which is issued by Vancouver Coastal Health, drives many of the design parameters and is discussed further in Section 4.3.

**Table 4-1**  
**Approvals needed**

Approval Name	Agency	Turnaround Time	Comments
Water Licence for a new groundwater use	FLNR	One year	Submitted October 2019
Water Supply System Construction Permit	Vancouver Coastal Health	4-6 weeks	Submit for comments at 90% design.
Water Supply System Operating Permit	Vancouver Coastal Health	4-6 weeks	The SCRD to apply near the end of construction phase, before final commissioning.
Utility Application for 3 Phase Power	BC Hydro	4-6 weeks (estimated)	Submit at 60% design to start application process.  Obtain an accurate quote for utility installation costs from BC Hydro as apart of application.  Incorporate comments from BC Hydro into draft Tender.
Building Permit (for water treatment plant building)	Sunshine Coast Regional District	4-6 weeks (estimated)	Submit application at the same time as the VCH construction permit application
Road ROW Construction Permits	MoTI	Varies	Permits required for all works constructed on Road ROW

## 4.2 VCH Construction and Operation Permits

Construction and operation of a public water supply system in this area is regulated by Vancouver Coastal Health Authority (VCH 2018). The SCRD would need to apply for a construction permit, and then an operating permit. The construction permit will require the following items:

- Two complete sets of construction plans (and specifications when requested);
- A letter explaining the purpose;
- Key Plan/map;
- Plans to show all proposed supply, transmission, storage, pumping, treatment and distribution works;
- Plans and profiles to show high and low spots;
- Confirmation that:
  - both the water quality and the capacity of the waterworks will be adequate to accommodate existing, committed and proposed new service requirements; and
  - the water system meets all local government bylaws.

In addition, since there is a new groundwater source involved, the following information should be included:

- Chemical, physical, and bacteriological water quality data;
- Well log that shows the well is constructed to meet the Groundwater Protection Regulation;
- Recommendations on water quality protection including a description of any risks/confining/protective layers, time of travel radius, wellhead protection, and water quality and quantity monitoring including parameters and frequencies;
- A comment on whether or not the groundwater source is at risk of containing pathogens, and if at-risk, disinfection treatment would be required;
- Water licence (this is being applied for and is described in a separate report);
- Mechanical and instrumentation/control facilities at wellhead, or pumphouse; and
- Method of disinfection, and proposed treatment, if applicable.

Associated has completed a pathogen risk assessment (Associated 2019d) and concluded that locating a well 26 m away from a septic field is at low risk of becoming contaminated with pathogens from the septic field due to the confined aquifer setting and positioning of the well relative to the septic field. Associated has received written confirmation from VCH that the well will not contravene the Health Hazards Regulation, based on the results of this study.

## 4.3 Drinking Water Regulations and Design Standards

The project will follow VCH design criteria for new community water systems described in Water Supply System Construction Permit Guidelines and Application Form (VCH 2018).

# 5 WATER TREATMENT CAPACITY AND PROCESS DEFINITION

## 5.1 System Overview

Church Road Wells 2 and 3 will produce approximately 58 L/s of water into the Granthams Landing reservoir through a proposed Water Treatment Plant (WTP) on the existing Granthams Landing Reservoir site. The WTP will treat the

raw well water upstream of the reservoir before proposed booster pumps move the new supply of water to the Chapman Water System through a proposed dedicated transmission main. The proposed transmission main will tie into the Chapman Water System Pressure Zone 2 at the existing Reed Road Pump Station. The Granthams Landing Water System will continue to be gravity fed by the Granthams Landing reservoir. A detailed analysis of the hydraulics of the proposed changes to the existing water systems, as well as sizing of the water infrastructure, is provided in Appendix D.

## **5.2 Design Water Treatment Flow Rates**

The proposed WTP will be designed to accommodate a maximum flow rate of 58 L/s based on the maximum future well yield from the Church Road Wellfield. Flow mitigation will be required periodically throughout the year (Section 5.4). The mitigation flow is proposed to be directed into the WTP, so the flow rate can be controlled, but this portion of flow will not be treated with chlorine. There are periods when flow mitigation will not be required so therefore the plant will be sized for the full 58 L/s.

## **5.3 Well Pumping**

Church Road Wells 2 and 3 will be equipped with submersible well pumps tied into a drop pipe complete with two check valves, pitless adaptor, and well level transmitter. The proposed pumping rate of each pump will be 29 L/s each. Each pump will be variable frequency drive (operated to allow for lower pumping rate for flow mitigation - see section 5.4) and 50 hp with power supplied from the new WTP service. The pumps can be operated independently and simultaneously through a dedicated raw water main running along Elphinstone Avenue to the proposed WTP.

## **5.4 Soames Creek Flow Mitigation Scheme**

Flow mitigation water for Soames Creek may be required from the source aquifer from which the proposed wells draw water from. The required mitigation flow may be up to 7 L/s, dependent on the results of an EFN assessment to be completed by the end of May 2020 and subsequent creek flow conditions set by the regulators. To provide this flow, a 100mm well mitigation line is proposed to run from the WTP east towards the proposed wells in the 250 mm raw water supply main trench. The mitigation line will then divert north towards Soames Creek where it will discharge through a concrete headwall and onto a riprap bulb.

The requirement for creek flow augmentation will be dependent on the environmental flow needs of the creek and only when pumping has an impact on flows and the natural flow in the creek cannot meet the EFN requirements. There may be occasions when the Church Road Wells are not required to provide potable water supply, however due to a lag time in the spring flows fully recovering following a reduction/cessation of pumping, creek flow mitigation will still be required. Variable frequency drive pumps will allow lower pumping rates to meet flow mitigation requirements as necessary.

Creek flow will be monitored using a data logger installed within a stilling well at a downstream hydrometric station to measure creek water levels. A telemetry system will be used to send data from the hydrometric site to a computer, email address, or cell phone. Once the creek water level that corresponds to a trigger flow rate is reached, an alert can be sent to operations indicating that augmentation flow to the creek is required.

## **5.5 Soames Point Small Water System Integration**

The required mitigation flow into Soames Creek reduces the amount of water that can be sent to the Chapman Water System from the Church Road wells. To offset the loss of the mitigation flow, the integration of the existing Soames

Point Water System into the Chapman System was proposed by the SCRD. It has been confirmed by the District that there is existing infrastructure in place to connect Soames Point to Granthams Landing water systems (T. Rutley, personal communication, 2019); which in turn would connect to the Chapman Water System Pressure Zone 2 after the proposed works are completed. This has been confirmed by the water model. Currently, Soames Well feeds the Soames service area with an average demand of 1 L/s. The proposed Church Road Wells are designed to be run at their calculated sustainable yield while Soames Well is providing 16.7 L/s of flow, which is the maximum pumping capacity of the pump. Therefore, there is opportunity to send more water from the Soames Well to the Granthams Landing service area.

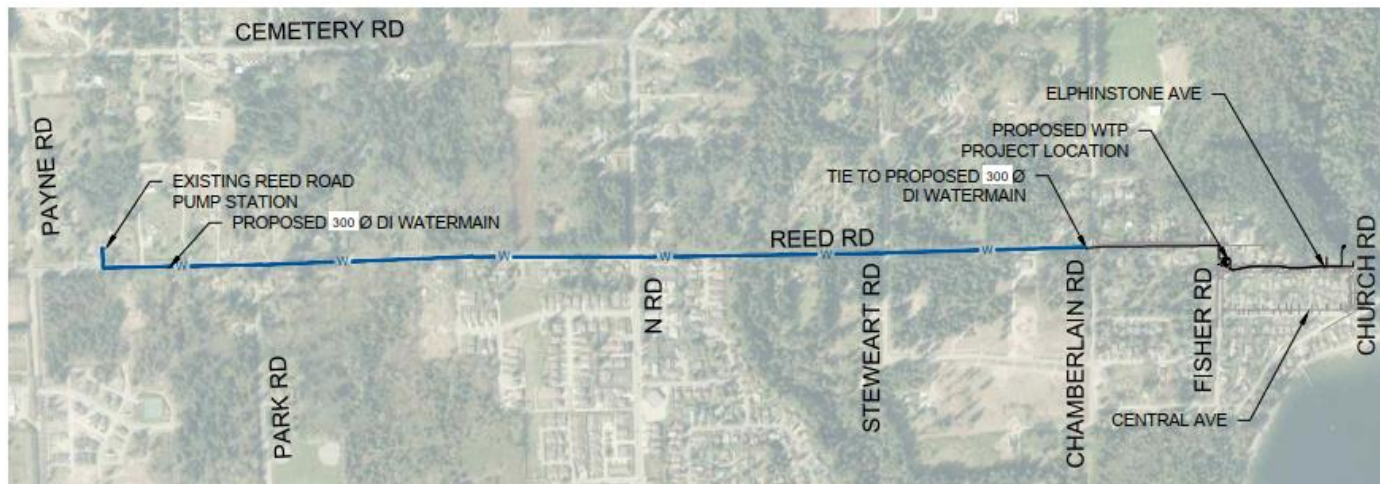
This option will however require further investigation and modelling to determine the feasibility of sending water from Soames Point through Granthams Landing and into the Chapman Water System Pressure Zone 2. This investigation is included as part of the scope for detailed design.

## 5.6 Distribution Pumping Capacity

Two duty and one standby 50 hp booster pumps are proposed to convey treated water from the Granthams Landing reservoir to the Reed Road Pump Station approximately 2.5 km away through a proposed dedicated transmission main. While this dedicated supply main will have significant construction costs attached to it, it will also benefit the system in the following ways:

- Provide redundancy in the Chapman Water System Pressure Zone 2 (160m HGL) by supplying additional flow back towards Roberts Creek during periods of peak flow as well as providing supplemental fire flow.
- Reduce the power consumption and operation and maintenance requirements on the proposed booster pumps, as they will only need to overcome the smaller head in Pressure Zone 2 at the dedicated main tie-in location, as opposed to the larger head in Pressure Zone 3 (210m HGL) if tie-in were at the Chamberlin Road PRV Station.
- Reduce pressures in the area surrounding the Chamberlin Road PRV Station. If the tie-in were at the Chamberlin Road PRV Station, pressures in the vicinity would increase to unacceptable levels.

Figure 5-1 shows an overview of the proposed dedicated transmission main. The booster pumps will be housed in the proposed WTP.



**Figure 5-1**  
Plan view of proposed dedicated transmission main along Reed Road

The proposed booster pumps will provide a maximum flow of 55 L/s and be equipped with variable speed drives to accommodate varying pressures in the existing Chapman transmission main at the Reed Road Pump Station tie-in location. The hydraulic grade at the tie-in location varies from approximately 175 metres during low demand seasons, to approximately 160 metres in high demand season.

## 5.7 Pipeline Materials

The SCRD typically uses Ductile Iron (DI) pipe in its water distribution systems, and most of the pipes in the surrounding area of the project are DI. Ductile Iron is a robust material and extensively used in water distribution systems and is therefore generally familiar among contractors.

While the SCRD may prefer the use of DI for the proposed pipelines, another potentially suitable pipeline material is high-density polyethylene (HDPE). This material is jointless and requires minimal bends or thrust blocks. HDPE pipe is seismically restrained, which is a benefit in the SCRD. HDPE DR9 has a pressure rating of 200 PSI, which is sufficient for the proposed works.

## 5.8 Pavement Removal and Replacement

Since the raw water supply main and dedicated transmission mains will be placed under roadways, pavement removal and replacement will be necessary. As previously mentioned, the 250mm raw water supply main and 300mm dedicated transmission main will be installed in the Elphinstone Avenue and Reed Road right-of-way, respectively. Given the existing condition of Elphinstone Avenue, the SCRD has advised that the full width of the roadway should be re-paved following watermain installation, while only a half width of the roadway along Reed Road requires re-paving.

## 5.9 Water Quality

As described in Section 3.1, the groundwater from Church Road Well 2 currently meets the CDWQG.



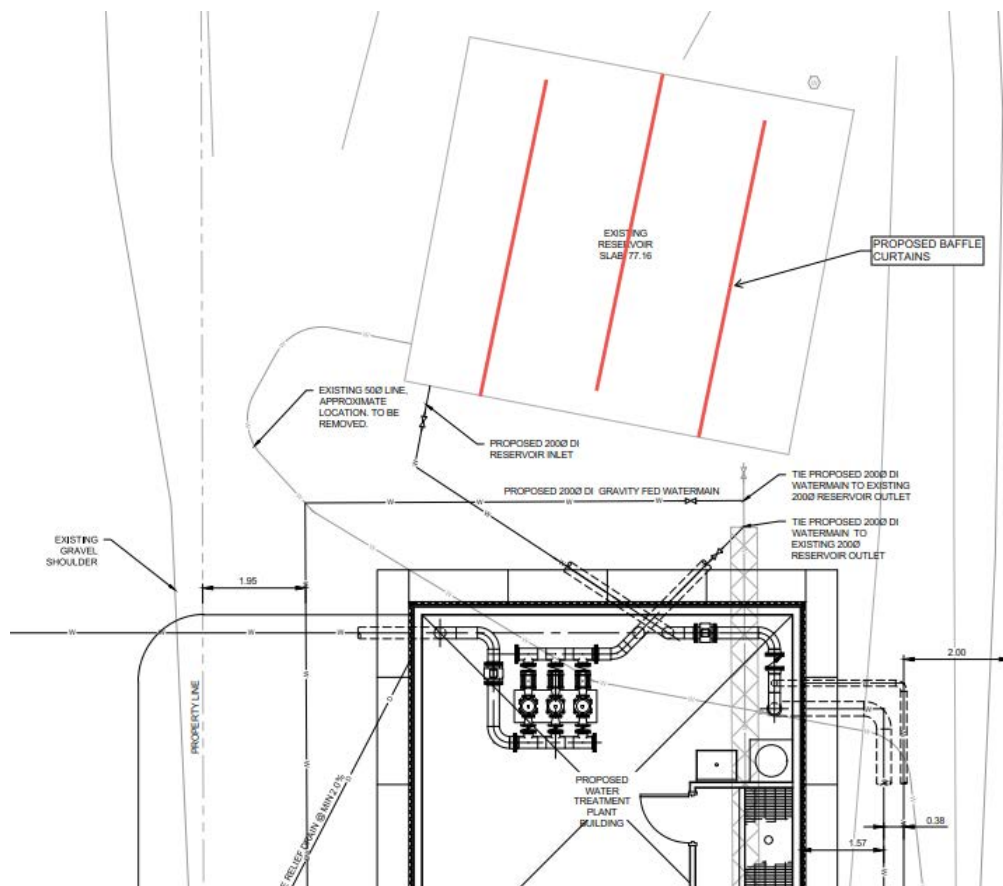
## 5.10 Water Treatment Objectives

While Church Road Well 2 is not considered GARP, it is recommended that “GARP - viruses only” treatment objectives be met to incorporate flexibility into the design for the future. As such, the water requires treatment that provides 4-log inactivation of viruses. The other raw water parameters were screened and compared to the CDWQG and met all Maximum Acceptable Concentrations and Aesthetic Objectives.

## 5.11 Water Treatment Process

To achieve the above-mentioned water treatment objective, a chlorination system is proposed. A sodium hypochlorite solution (SHS) dosing system is proposed to be housed in the WTP and designed to provide a minimum of 1.0 mg/L free chlorine residual in the system at the WTP design capacity. This chlorine residual is set to match the typical chlorine residual set for the Reed Road Pump Station where the treated water will mix with the Chapman system water. A duty/standby peristaltic style metering pump skid with a day tank is proposed within a separate room that will have 110% secondary containment for the day tank and a 210L drum of SHS. The drum is anticipated to last approximately one week at full design capacity. Single barrels can be dropped off outside the WTP and moved using a dolly or pallet jack and stored in the hypochlorite room where they can be transferred to the day tank using a transfer pump.

With the proposed flow from the new wells, the existing unbaffled reservoir does not provide adequate chlorine contact time. The required chlorine contact time for the 4-log inactivation of free viruses is 8.0 mg/L-min based on a pH of 6-9 and a minimum water temperature of 5°C. To ensure adequate chlorine contact time is provided in the system, it is proposed that three baffling curtains be retrofitted into the existing reservoir as shown in Figure 5-2.



**Figure 5-2**  
**Existing reservoir baffle curtain retrofit**

This arrangement would increase the baffling factor up to 0.3. The retrofitted reservoir, in combination with the length of distribution pipe before the first domestic service within Granthams distribution service would then provide 8.8 mg/L-min of contact time. Table 5-1 presents the chlorine contact time calculation assuming a 1.0 mg/L residual chlorine at the outlet of the reservoir and assuming the reservoir will be kept at minimum 80% full acting as a clearwell for the pump station. The water that is pumped into the Chapman Water System through the proposed new dedicated transmission main would have adequate contact time available without the additional baffling.



**Table 5-1**  
**Chlorine contact time provided before first domestic service**

System Component	Flow - Q (L/s)	Useable Storage Volume - V (L)	Baffle Factor - BF	Chlorine Residual - R (mg/L)	Detention Time - V/Q (min)	CT - TDT x BF (mg/L-min)
Retrofitted reservoir	58	90,290	0.3	1.0	26.1	7.8
System Component	Water Velocity - v (m/s)	Length of Pipe - D (m)		Chlorine Residual - R (mg/L)	Detention Time - V/D (min)	CT - TDT x BF (mg/L-min)
Pipe before first service	0.33	20	1 (Plug Flow)	1.0	1.0	1.0
<b>Total</b>						<b>8.8</b>

## 5.12 Water Quality Monitoring

We recommend that an online turbidity meter be installed in the WTP, with monitoring at least every four hours. This is useful to continue to confirm the GARP-viral only determination over time. We also recommend long-term monitoring of a variety of parameters that can be present in the environment, as part of the Aquifer Protection Plan (Section 3.2).

The Drinking Water Protection Regulation requires sampling of total coliforms and *E. coli* at a certain frequency. The frequency depends on the size of the population served, and will be further investigated during detailed design.

Chlorine monitoring is proposed downstream of the chlorine injection point to adjust dosing flow rates as required to meet the chlorine setpoint. Additionally, chlorine is proposed to be monitored on the reservoir outlet to measure the residual chlorine provided to the system.

## 5.13 Outstanding Issues to be Resolved During Detailed Design

Hydraulics of the existing Chapman transmission main will be finalized to dictate the booster pump sizing and VFD requirements.

# 6 WATER TREATMENT PLANT PRELIMINARY DESIGN

## 6.1 Design Goals

Associated Engineering proposes the following design goals for the proposed WTP:

- That robust design and construction be provided with a focus on reliable, cost-effective operation and maintenance;
- That the facilities design should consider a 50-year design life for structures and an appropriate design life for mechanical, electrical and instrumentation and controls systems.
- That efficient cost-effective operation be provided, while meeting water quality requirements; and

- That the facilities be designed, constructed and made fully operational within the budget and scheduling constraints established by the SCRD and regulatory agencies.

Refer to Appendix E for preliminary design drawings of the proposed WTP and related works.

## 6.2 Site Layout

The proposed WTP is located on the northeast corner of Elphinstone Avenue and Fisher Road on the existing Granthams Landing reservoir site, directly south of the reservoir (Figure 6-1). The road access is proposed to be from Fisher Road, and a paved asphalt surface will surround the west and south faces of the proposed building to serve as a turnaround and parking area for operations staff. The main door to the building is proposed to be on the south face of the building, while a separate door to the hypochlorite room will be located beside the main door to the east. Given the topography of the existing site, a substantial cut and fill for the building footprint is required including a lock block retaining wall (maximum height of 1.5m) proposed along the southeast corner of the parking lot.



Figure 6-1  
Conceptual sketch of proposed site layout.

## 6.3 Utilities and Site Services

### 6.3.1 Building Service Water

Treated water will be provided from downstream of the booster pumps for building service water. A pressure-reducing valve (PRV) will regulate the pressure of the building service water, and a backflow preventer will be provided to protect the treated water from any contaminants that may be introduced from the building services. Building services will include a sink, hose bib, and emergency eyewash and shower.

### 6.3.2 Emergency Eyewash and Shower

An emergency eyewash and shower station will be provided in the sodium hypochlorite room and will be fed by a hot water heater and thermostatic mixing valve.

### 6.3.3 Building Process Drainage

All process and floor drains in the building will be directed to a buried de-chlorination chamber on site before being discharged into the existing ditch running south on Fisher Road, through a proposed buried 150 mm PVC storm drain.

## 6.4 Process Piping and Valving

For all above-grade water process piping (i.e., raw water, treated water, distribution piping), stainless steel piping and fittings are proposed to ANSI 304L. Stainless steel piping will be typically Schedule 10S wall thickness except where additional wall thickness is required for pipe couplings, through wall connections or threaded connections. Schedule 80 PVC process piping will be used for chlorine solution. For building service plumbing lines, Type L Copper piping will be used.

Primary and large diameter water process isolation valving will be butterfly valves. Materials for these valves will be lined and coated ductile or cast iron bodied with bronze or stainless steel trim. Check valves and other types of valves will use similar construction materials as appropriate. Smaller diameter process valves will be ball valves of stainless steel construction, while for PVC chemical piping systems, PVC ball valves and other valve types will be used as appropriate.

A pressure relief valve downstream of the distribution pumps will protect the piping from water hammer that could occur during a sudden stoppage or power outage affecting the pumps. This relief valve will discharge to a process drain that will tie into the dichlorination chamber.

## 6.5 Site Preparation

Given the proposed WTP site contains the existing Granthams Landing reservoir, the site is already mostly cleared of vegetation and requires little preparation in terms of clearing and grubbing. However, sub-excavation of the top 1.5 metres of soil is required for the construction of the building foundation, as it has been deemed unsuitable material by the geotechnical engineer.

## 6.6 Stormwater Drainage

Stormwater runoff from the WTP site will match existing overland flow patterns as closely as possible and be directed southeast toward Elphinstone Avenue. The proposed lock-block wall will be constructed with a weeping tile drainage system, which will daylight to the southern portion of the property and flow off site towards Elphinstone Avenue. The outlet of the weeping tile system will be lined with riprap to provide erosion control.

## 6.7 Geotechnical Design

Arya Engineering Inc. issued a draft geotechnical report dated September 10, 2019. The report (Appendix F) included the following recommendations:

- Continuous strip footings should be used with a minimum footing width of 400 mm, placed on an undisturbed compact to dense sand or an approved engineered fill.

- Footings should be placed a minimum of 450 mm below final grade for frost protection requirements and to provide adequate bearing capacity.
- Strip footings and pad footings can be designed for an allowable bearing pressure of 100 kPa.
- An excavation depth of approximately 1.5m is required on site to seat the footings on undisturbed, compact to dense sand, with excavation slopes no steeper than 2H:1V.

Given that the structural design of the WTP requires a wall footing thickness of 300 mm and that the frost protection depth is 450 mm, it would not be practical to cast an additional 150 mm thick footing wall. As such, the use of a raft slab foundation, with a thickness of 450 mm at the perimeter and 200 mm at the center, is proposed for this building.

## 6.8 Structural

The WTP building is designed as a single-storey, wood-frame structure supported on a cast-in-place concrete raft slab foundation. The building is conventionally framed with plywood-sheathed wood stud walls and prefabricated wood roof trusses. The building is supported laterally by nailed plywood diaphragm at the roof level and with nailed plywood shear walls in both the transverse and longitudinal direction. The interior and exterior wood stud walls are anchored to the top of the raft slab foundation on a raised concrete curb. The raft slab is 450 mm thick at the perimeter for frost protection and tapers down to a thickness of 200 mm at the center of the raft slab. The sub-base underneath the raft slab is undisturbed compact to dense sand or approved engineered fill as per the Geotechnical Engineer's requirements. The existing ground is excavated down 1.5 m to the native ground and filled with compacted engineered fill to achieve adequate bearing capacity and soil slope stability.

The following loading parameters are used in the design of the WTP building:

### Live Loads

The Live Loads for the floor and roof uses are as follows:

Building	Floor/Roof Use	Pressure
Treatment Plant Building	-	4.8 kPa

### Snow Loads

Snow loads shall be based on provisions from BCBC 2018, Cl. 4.1.6.2, using SCRD Building Bylaw No. 687 values:

	Return Period	Pressure
Snow, $S_s$	1/50	3.4 kPa
Rain, $S_r$	1/50	0.4 kPa

The specified snow is calculated using the formula:

$$S = I_s \cdot [S_s \cdot (C_b \cdot C_w \cdot C_s \cdot C_a) + S_r]$$

$I_s$  = Importance Factor for snow load, 1.25 for ULS and 0.9 for SLS (BCBC 2018, Table 4.1.6.2.)

$S_s$  = 1-in-50-year ground snow load, 3.4 kPa

$S_r$  = 1-in-50-year ground snow load, 0.4 kPa

$C_b$  = Basic snow load factor, 0.8 (BCBC 2018, Cl. 4.1.6.2. (2))

$C_w$  = Wind exposure factor, 1.0 (BCBC 2018, Cl. 4.1.6.2. (3))

$C_s$  = Slope factor, 1.0 (BCBC 2018, Cl. 4.1.6.2. (5))

$C_a$  = Shape factor, 1.0 (BCBC 2018, Cl. 4.1.6.2. (8))

### Wind Loads

Wind loads shall be based on provisions from BCBC 2018, Cl. 4.1.7.1, using SCR D Building Bylaw No. 687 values:

	Return Period	Pressure
Wind, q	1/10	0.36 kPa
Wind, q	1/50	0.53 kPa

The specified external wind pressure or suction is calculated using the formula:

$$p = I_w \cdot q \cdot C_e \cdot C_g \cdot C_p$$

$I_w$  = Importance Factor for wind load, 1.25 for ULS and 0.9 for SLS (BCBC 2018, Table 4.1.7.1.)

$q$  = 1-in-50-year reference velocity pressure, 0.53 kPa

$C_e$  = Exposure factor, 0.9, based on a reference height,  $h = 6\text{m}$   
(BCBC 2018, Cl. 4.1.7.1. (5))

$C_g$  = Gust effect factor, 2.0 (BCBC 2018, Cl. 4.1.7.1. (6))

$C_p$  = External pressure coefficient, varies

### Site Response Spectrum

The 5% damped spectral acceleration for a 2% probability of exceedance in a 50-year probability level is determined using the Earthquake Hazard Calculator from National Resources Canada using coordinates of 49.4140 North and - 123.4980 West (National Resources Canada 2018).

The seismic hazard values as per National Building Code of Canada 2015 are as follows:

$S_a(0.2)$	$S_a(0.5)$	$S_a(1.0)$	$S_a(2.0)$	$S_a(5.0)$	$S_a(10.0)$
0.833	0.746	0.425	0.259	0.083	0.029

In accordance to the Geotechnical Report from Arya Engineering Inc., dated September 10, 2019, the site is classified as Site Class D – Stiff Soil. The foundation factors or site coefficients for Site Class D are  $F(0.2) = 0.96$  and  $F(0.5) = 1.16$ .

### Seismic Design Parameters

For Post-Disaster Structures, the structures must be designed for the following criteria:

- $I_E$  = Importance Factor for earthquake loads, 1.5 for ULS and 1.0 for SLS (BCBC 2018, Table 4.1.8.5)
- $R_d = 2.0$  or greater (BCBC 2018 Cl. 4.1.8.10. (2))
- Not have any irregularities conforming to Types 1, 3, 4, 5, 6 and 7 as described in BCBC 2018 Table 4.1.8.6
- Interstorey drift at any level limited to  $0.01 h_s$  (BCBC 2018 Cl. 4.1.8.13. (3))

The seismic force resisting system is designed as nailed shear walls with an  $R_d = 3.0$  and an  $R_o = 1.7$  in both directions. The restraint of non-structural items including piping and major process equipment is designed using BCBC 2018 Cl. 4.1.8.18.

## 6.9 Architectural

The WTP building is designed as a square, one-storey, wood-frame building with an approximate area of 54 m<sup>2</sup> and a clear height of approximately 3 m. The three main areas of the building are the Pump Room, Electrical Area, and Hypochlorite Room. The Electrical Area is situated at the corner of the Pump Room, whereas the Hypochlorite Room is partitioned off from the Pump Room in a separate enclosed room. There is a double-leaf insulated steel door for general access into the Pump Room and a separate exterior door for external access to the Hypochlorite Room. Other than openings for building services, there are no additional door openings or windows located on the exterior of the building.

The structure is a stick-built building with wood stud walls and a prefabricated wood truss gable roof pitched at a 4:12 slope. The gable roof extends 600 mm from the face of the building to form an overhang around the perimeter of the building. The roof is designed as a 'cold' roof system and can accommodate gable vents at the gable ends of the roof and soffit vents at the overhang locations for ventilation. The potential installation of solar panels on the roof has been considered and can be further investigated during detailed design. Rainwater is collected on the roof with rain gutters and downspouts at the roof eaves. The water from gutter system discharges from the downspout to a splash pad sloped away from the building. Slipping snow and ice are retained by snow guards mounted on the standing seam metal roof. The roofing assembly consists of painted standing seam metal roof over battens, roofing membrane, plywood, batt insulation within the attic space, 6 mil (0.15 mm) vapour barrier, and a painted gypsum wall board ceiling finish. The wall assembly consists of painted metal cladding with strapping and continuous rigid insulation over plywood, batt insulation in the stud wall cavity, 6 mil (0.15 mm) vapour barrier, and an interior fibreglass reinforced plastic (FRP) wall panel finish.

The concrete raft slab is exposed in the interior of the building and sloped towards an internal floor drain in the Pump Room and the Hypochlorite Room. The exterior walls and the interior partition walls are raised from the top of the concrete floor with a 200-mm high concrete curb. The chemicals in the Hypochlorite Room are stored on a prefabricated drum still pallet. The concrete slab is sealed with chemical resistant epoxy coating in the Hypochlorite Room for additional durability and sealed with a transparent penetrating concrete sealer in the remaining areas of the building.

## 6.10 Building Mechanical HVAC

For this type of building, electric point source heating (i.e., unit heater, baseboard heater) is a suitable option. If a heat pump system were to be used, refrigerant piping, and an outdoor condensing unit would be required.

The typical design of using fans for ventilation and cooling is a suitable option as well. If heat pumps were used for cooling, the mentioned refrigerant piping, and outdoor condensing unit are required. In addition, fans are still required for ventilation, as heat pumps only provide heating/cooling.

The Hypochlorite Room will be provided with its own ventilation fan, operating at 6 air changes/hour when unoccupied and 12 air changes/hour when occupied.



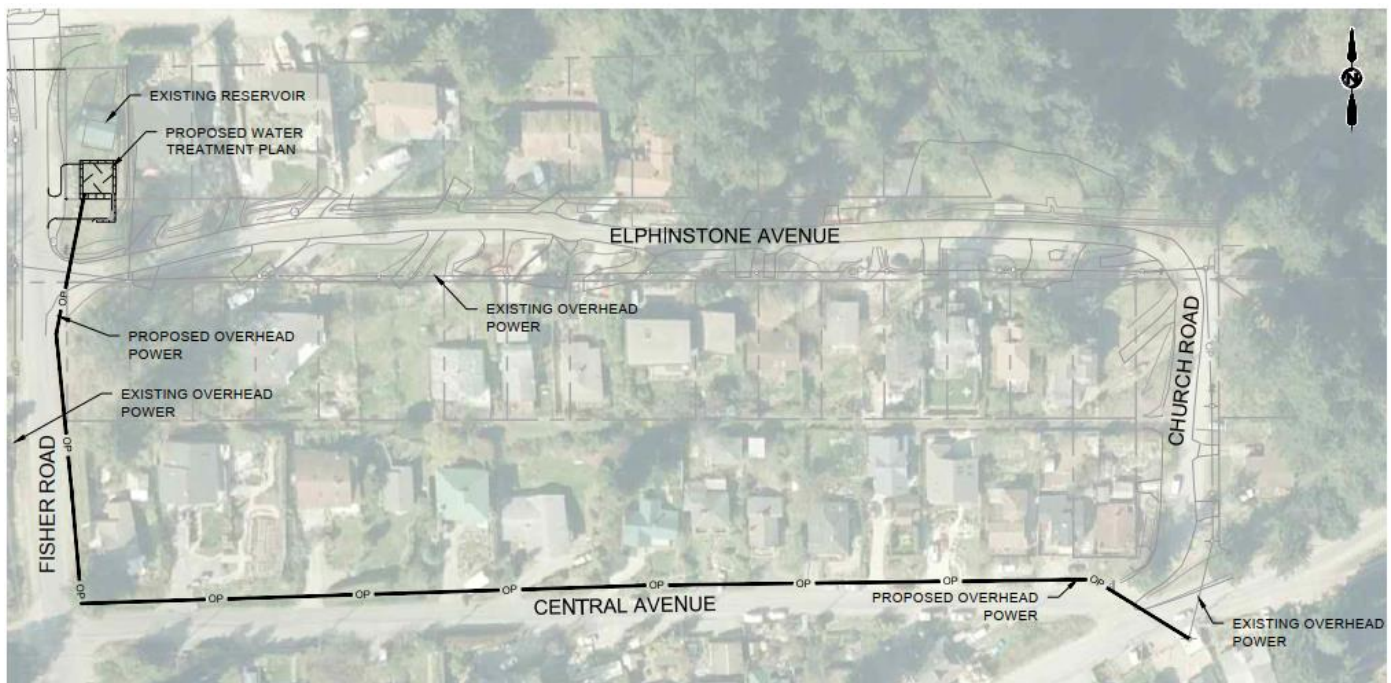
The plumbing system will consist of a sink, emergency eyewash and shower, complete with domestic hot/cold water, venting, and hot water tank.

## 6.11 Electrical

### 6.11.1 Utility Power Connection

Based on preliminary calculations, we recommend that the WTP obtain a 3 phase, 400A service @ 600VAC from the local utility (BC Hydro). It is not feasible to run the WTP on a single-phase distribution (120/240VAC) as the booster and well pumps are each anticipated to be around 50hp.

Based on a site survey, 3 phase power is not available near the proposed location of the WTP. Therefore, BC Hydro will need to upgrade their network from the proposed WTP to the closest available source of 3 phase power. We have determined this to be a length of approximately 400 m and will require replacement of approximately 12 power poles (Figure 6-2). This work will conform to the design criteria set out in BC Hydro's Distribution Technical Standards and Guides (BC Hydro 2019).



**Figure 6-2**  
**Utility Routing**

For the preliminary design we have accounted for the following BC Hydro scope into the estimate:

- Supply and installation of primary cabling to WTP
- Supply and installation of new power poles (qty 12)
- Supply and installation of 300kVA, 25kV-600VAC, 3 phase transformers
- Supply and installation of secondary cabling from the new BC Hydro transformer to the main service switch.

A service connection request will need to be submitted to BC Hydro to obtain an accurate quote for the work. This should be done at the beginning of detailed design to confirm the full cost of this utility upgrade.

### **6.11.2 Major Distribution Equipment**

Based on preliminary calculations, we recommend that the main power distribution equipment for the project be sized for 400Amps with a system voltage of 600VAC, 3 phase, 60Hz. Short circuit values are not expected to be large on this project, so an interrupting capacity no greater than 42kA will be required for the plant's distribution equipment and over current protection devices.

We anticipate that all major distribution equipment will be wall-mounted and consist of the following:

- 1 - 400A, 347/600VAC, 4 wire, Power Distribution Panel with Main Breaker
- 1 - 400A, 3 Pole, Molded Case Circuit Breaker (independent to panel for connection to a genset)
- 1 - Metering Cabinet approved for use with BC Hydro
- 1 - 100A, 120/208VAC, 4 wire, Panelboard (for small loads local to the WTP)
- 1 - 6kW, 208V-120VAC, UPS with ~4,700Vah worth of batteries

Refer to the Single Line Diagram for more details (Appendix E). Alternatively, this equipment could be reduced to a single 400A Motor Control Center (MCC) lineup for an extra cost (i.e., approximately \$4,000 – \$6,000 once cable requirements are factored in). This will be discussed further with the SCRD during detailed design.

A connection for a mobile genset has been incorporated into the preliminary design. We assume that the mobile generator will be sized according to the full operating demand of the WTP (approx. 300kW) and that no automated load shedding will be required. In lieu of an automatic transfer switch for the generator, the genset breaker and utility breaker (main breaker of the main distribution panel) will be mechanically interlocked with a captive/trapped key interlock. This will prevent the distribution system from being fed in parallel by the generator and the utility. A phase sequence relay (ANSI 47 Relay) will also be required to control the genset breaker should the generator be hooked up incorrectly. This relay will prevent the incorrect rotation of the facility's motors.

The main distribution panel will feed three (3) booster pumps, two (2) well pumps and supply power to other miscellaneous electrical equipment for the WTP. Additional spare breakers and spare space for future capacity will be kept to a minimum (10% of overall) as there is little future growth anticipated for the site.

### **6.11.3 Motor Starting Equipment**

Booster pumps will be individually controlled by Variable Frequency Drives (VFDs) rated for 50HP at Normal Duty. VFDs will come equipped with line filters to reduce harmonics. dV/dT filters have been omitted as the booster pumps are close to the starter units. We assume that the VFDs will be controlled via a network communication protocol such as Ethernet/IP, which will be confirmed during detailed design with input from the SCRD.

All other pumps/motors will be started via 'on-the-line' starters. Electronic overload units that contain communication modules (for diagnostics) will be presented and discussed further during detailed design.



#### **6.11.4 Interior and Exterior Lighting**

Lighting will be designed to IESNA and WorkplaceBC standards to ensure that the appropriate lighting levels will be provided. Interior lights will be specified as an LED type that provides energy and cost savings. Exterior lights will be specified as an LED type that meets “dark-sky” compliance. This will be done to ensure that there is minimal light obtrusion. Exterior lights will be controlled by local photocells.

#### **6.11.5 Raceway and Cabling**

The estimate has assumed that all cabling within the WTP will be ran in EMT/Conduit. For detailed design AE will investigate using aluminum ladder cable tray as the primary means of raceway, this will be dependent on the final layout of the building.

All low voltage cabling (600V and below) that supplies power to electrical equipment is anticipated to be RW90 (copper, XLPE insulation) for tray rated (TC) cable. As previously mentioned, we anticipate this cable to be routed via EMT or conduit. All instrumentation cabling for field instruments or interconnections from the Starter units/VFDs to the PLC cabinet will be done with TC or CIC (twisted pair/triads, individually shielded) cable and will be routed via EMT/conduit.

### **6.12 Instrumentation and Controls**

#### **6.12.1 Local Control Equipment**

The Micrologix 1100 series controller (specified to be the SCRD standard controller) has been flagged by Allen Bradley to have a lifecycle status of “Active Mature.” To guarantee long-term support for controller, we recommend that an Allen Bradley Micro 820 series Programmable Logic Controller (PLC) be provided for the control of local equipment. The PLC will be contained in a free-standing enclosure sized to accommodate a fully built out controller and all its break-out terminals, network equipment (cellular router, network switch, and cellular dialer) and the UPS. An addition 25% space will be allotted for additional installations.

A local HMI display (Red Lion CR1000 7" HMI, per SCRD specification) will also be installed within the control panel.

The system will be standardized on an Ethernet/IP communication protocol.

### 6.12.2 Communication Equipment

Figure 6-3 is a high-level sketch of the anticipated new network, generated based on information received from the SCRD.

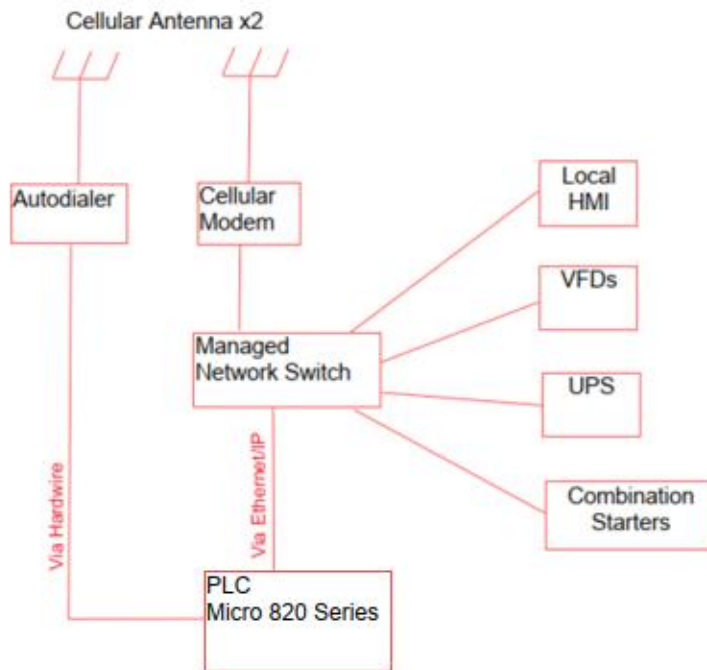


Figure 6-3  
Network Block Diagram of WTP

SCADA communication requirements will be discussed further with the SCRD to ensure that the system is properly integrated or if a new communication protocol/standard will be used.

### 6.12.3 Site Security Requirements

Door contacts will be placed on all exterior doors and will alarm to the local PLC. The PLC will in turn send an alarm via the SCADA system notifying the SCRD that the WTP has been trespassed on.

As the WTP is located in a residential area, we recommend that IP Cameras be considered during detailed design for additional security to ensure that the site is not trespassed upon.

An alarm disable will be programmed into the local HMI (found on the PLC cabinet) for when operators come by to perform maintenance.

## 7 COST ESTIMATING

### 7.1 Phase 4A (Detailed Design, Well 3 Drilling, EFN Setting and Tender Services)

#### 7.1.1 Background

Phase 1 involved a desktop study to identify the most suitable locations to drill new water supply wells. Phase 2 involved drilling and pumping tests of three of the identified well sites, developing preliminary source protection, treatment and distribution concepts for each option, and then selecting a preferred well site. At the end of Phase 2, the District Board authorized staff to proceed with the development of a deep aquifer wellfield located at the Church Road wellsite. Phase 3 involved development of a second test well, which was sized so that it can be used as a production well, preliminary design of the water system including the WTP, and application for a new groundwater use water licence for a two-well system extracting up to 800 USgpm combined. Augmenting Soames Creek flows from well water will be needed as part of the Water Licence Application, to mitigate the loss of flow from the springs caused when pumping from the confined aquifer.

#### 7.1.2 Objective and Scope of Work

The objective of Phase 4A of the Groundwater Investigation is to implement the necessary activities required to bring the Church Road Wellfield into production, building on the work completed in Phase 3. To meet the objectives, the following scope of work is needed:

- Complete terrestrial field assessment to characterize the existing vegetation ecosystems, wildlife habitats, and features in the Project area in support of the environmental assessment.
- Complete further Soames Creek flow monitoring and environmental flow needs (EFN) studies in support of the environmental assessment and Water Licence Application that has been submitted. Flows in Soames Creek have been collected since May 2019, but a full year of data is needed before the EFN threshold can be set. The EFN will inform to what level creek augmentation is needed as part of the licence conditions.
- Complete an environmental assessment for the construction and operation of the groundwater wellfield and supporting infrastructure and apply for related Fisheries and Oceans Canada (DFO) and Ministry of Forests, Lands, Natural Resource Operations, and Rural Development (FLNR) approvals.
- Drill a third test well (Church Road Well 3), which, if successful, can be converted into a production well. Well 3 will be a twin of Well 2.
- Complete detailed design of the water system up to Issued For Tender drawings, transmission piping, treatment plant, and mitigation works. Detailed design will also include water modelling of Soames Point small water system integration into Pressure Zone 2 through Pressure Zone 1.
- Submit applications for various engineering related approvals including:
  - water supply system construction permit application to Vancouver Coastal Health
  - utility application for 3 phase power from BC Hydro
  - building permit for the WTP from SCRD
- After board approval, issue the tender package and award the project to a contractor.

Depending on the finalized schedule (Section 9), if an accelerated schedule is followed, Phase 4B could start in 2020 and include:

- Start construction (we recommend waiting until the Water Licence has been received before issuing the notice to proceed).

- Construction services including contract administration, inspections and commissioning services.

## 7.2 Phase 4A Cost Estimating

Table 7-1 presents a cost estimate for Phase 4A, of which the majority would occur in 2020, following the normal schedule. Note that two tasks were added on to the preliminary design, and due to budgeting constraints, only conceptual design was completed as part of Phase 3: construction of mitigation-related works, and 2.5 km of 300 mm diameter dedicated transmission main pipe along Reed Road. As a result, preliminary design of these two tasks will need to occur in Phase 4A, and therefore the engineering fees for Phase 4A are estimated at 8% of construction costs, compared to a typical range of 5-6% for detailed design if preliminary design is completed prior to detailed design.

**Table 7-1**  
**Phase 4A Cost Estimate**

Item	Class C Cost Estimate
<b><u>Task 100: Environmental Construction Approvals, and Water Licence Application related studies</u></b>	
Impact assessment for instream construction, and related reporting	\$20,000
Water level and flow monitoring, and EFN Assessment	\$28,000
Meeting with FLNR regarding Water Licence, and ongoing liaison	\$12,000
<b><u>Task 200: Well 3 Drilling and Testing</u></b>	
Drilling program design and supervision	\$8,000
Surveying and drilling of Well 3 (contractors only)	\$77,000
Pumping test supervision and water quality sampling	\$15,000
Testing of Well 3 (contractors only)	\$26,000
GARP Screening, well protection plan, and reporting	\$25,000
<b><u>Task 300: Detailed Engineering Design (8% of construction fees*)</u></b>	\$391,000
<b><u>Task 400: Contingency Management Reserve Fund</u></b>	\$50,000
<b>Total cost</b>	<b>\$652,000</b>

\*Note that the detailed design of the decommissioning of Granthams Landing well (valued at 8% of construction fees of \$250,000, or \$28,000) is not recommended to occur until after the Church Road wellfield is in operation for one year.

## 7.3 Construction Cost Estimating

A Class 'C' Cost estimate was developed for construction costs, including Phase 4A, engineering fees during construction, construction, and 40% contingency for construction, for a total of approximately \$7.8M. If the accelerated schedule is selected, we can provide additional cost estimating upon request; however, roughly, add an additional 10% for additional project management tasks. Note that these include Class 'D' costs for the mitigation-related works, and the 2.5 km of 300 mm diameter dedicated transmission main pipe along Reed Road, which was added onto the project after Phase 2.

## 8 ENVIRONMENTAL CONSTRAINTS AND REGULATORY CONSIDERATIONS RELATED TO DESIGN AND CONSTRUCTION

The results of the July 2019 pumping test of Church Road Well 2 suggest that extraction from the aquifer will reduce flow (12-14 L/s) in Soames Creek from Granthams Landing Well and from springs upstream of Granthams Landing Well (Associated 2019a). Associated mitigation (i.e., flow augmentation) will require the construction of a buried pipe and outfall to Soames Creek. The key environmental constraints to the Project, which should be addressed during the design and construction planning, are:

- Fish and fish habitat related to permanent Project footprint (i.e., outfall structure) and operation (i.e., changes in flow) and temporary Project impacts (e.g., excavation, placement of riprap) and associated potential effects (i.e., sedimentation during construction) in Soames Creek; and
- Wildlife (including potential species at risk) and wildlife habitat related to potential temporary Project impacts (i.e., riparian clearing for site access and pipe installation).

The reduction in creek flows will need to be mitigated with stream flow augmentation to return the lost flow or at least satisfy the minimum EFNs. As such, an EFN assessment will need to be conducted once a full year of flow data has been collected (anticipated to be May 2020) to demonstrate that the proposed flow augmentation meets minimum EFN requirements and support regulatory approval applications.

Once a detailed design has been completed for the mitigation works, an Environmental Assessment (EA) should be completed. The EA would assess the extent, magnitude, and duration of impacts on aquatic and terrestrial wildlife and habitat based on the detailed design for the Project and would recommend mitigation measures. The EA report would be included in the required applications for regulatory approvals.

Based on our assessment to date, the following regulatory requirements would be necessary for completing the mitigation works:

- A Water Licence application to the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNR) in accordance with the provincial *Water Sustainability Act* (S.B.C. 2014, c. 15). Note that this has already been submitted as part of Phase 3, and some supplemental studies are planned as part of Phase 4A. As part of the water licence application review process, consultation with First Nations is completed by the Province. However, FLNRO staff have recommended to us that any pro-active consultation that the District can do in advance of the application, could help speed up the review process;
- A request for project review to Fisheries and Oceans Canada (DFO) in accordance with the federal *Fisheries Act* (R.S.C. 1985, c. F-14);
- Applications for fish collection permits to the FLNR and DFO; and
- An Application for General Wildlife Permit (including BC Animal Care form) to FLNR for conducting wildlife salvages.

Environmental permitting requirements currently anticipated for mitigation works including expected timelines are summarized in Table 8-1.

**Table 8-1**  
**Environmental permitting requirements for mitigation works**

Permit	Regulatory Authority	Approximate Processing Time	Submission Requirements
Water Sustainability Act Water Licence Application	FLNR	Six months to 1 year	<ul style="list-style-type: none"> <li>• Application form</li> <li>• Technical Assessment Report</li> <li>• Letter of Agency</li> <li>• Optional but recommended: demonstration of pro-active First Nations consultation.</li> </ul>
Fisheries Act Project Review	DFO	3 weeks to 3 months	<ul style="list-style-type: none"> <li>• Request for Review application</li> <li>• Project description and finalized general arrangement drawings</li> <li>• Final EA report</li> </ul>
Fish Collection Permit	FLNR / DFO	15 – 30 days; should be obtained pre-construction	<ul style="list-style-type: none"> <li>• Fish collection permit application form</li> </ul>
Wildlife Permit	FLNR	45 – 90 days; should be obtained pre-construction	<ul style="list-style-type: none"> <li>• Project description</li> <li>• General Wildlife Permit application form</li> <li>• BC Animal Care Form</li> </ul>

Before construction, a Construction Environmental Management Plan (CEMP) should be developed, the implementation of which, would avoid, minimize, or offset the potential effects of the construction phase on aquatic or terrestrial habitat. The CEMP would include a detailed Erosion and Sediment Control Plan, Waste Management Plan, and Emergency Spill Response Plan, and at minimum, the mitigation measures prescribed in the EA report (to be completed).

General mitigation measures to avoid, minimize, and mitigate potential impacts of the Project on fish, wildlife, and habitat, which should be considered during the design phase and which may affect construction scheduling include:

- Minimize the instream (i.e., below the high-water mark) footprint in Soames Creek.
- Schedule/conduct instream works within the applicable reduced risk work window (August 1 - September 15) (FLNR n.d.). Works proposed outside of the reduced risk work window will require a rationale for the proposed work window and appropriate mitigation measures.
- Operate heavy machinery from the top-of-bank during construction activities whenever possible. Limit machinery fording of the watercourse to a one-time event (i.e., over and back) and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure.
- Minimize native vegetation removal, as forests have a high likelihood of wildlife use (e.g., raptor nesting).
- Avoid vegetation removal (e.g., tree / shrub clearing, grubbing, stump removal) during the regional bird nesting period (March 25 to August 17). If working outside the period is not possible and vegetation clearing is required, a Qualified Environmental Professional (QEP) should conduct pre-clearing bird nest surveys to identify, and thereby avoid, any active nesting in an area. Under the *Wildlife Act* (R.S.B.C. 1996, c. 488), active nests of any bird species and active and inactive raptor and heron nests are protected year-round.

- Revegetate cleared areas with native tree and shrub species, where possible. All exposed soils should be hydroseeded with a certified invasive- and weed-free seed mix appropriate to local climate conditions as soon as feasible to assist in preventing the colonization and spread of invasive plant species and minimize the potential for erosion.

## 9 SCHEDULE

We understand that delivering a new supply of water as fast as possible is of utmost importance to the SCRD. With droughts and subsequent Stage 4 water conservation efforts enforced during summer droughts in 2015, 2017 and 2018, it is possible that drought conditions will be experienced in future. Therefore, two schedules were developed (Appendix G), one accelerated and one normal.

The accelerated schedule involves environmental tasks and detailed engineering from March 2020 to August 2020 (5 months), waiting for the water licence and VCH construction permit until October 2020, and construction in winter (November to May) of 2020-2021. This schedule, if completed on-time, would allow for water to be delivered to customers by mid-summer 2021 at the earliest possible date. This accelerated schedule would require detailed design to start before drilling Church Road Well 3, in-stream construction work outside of the fish window (requiring additional coordination of construction crew and liaison with environmental agencies), and an accelerated detailed design program (requiring additional project management time to coordinate). In addition, several approvals and coordination with outside agencies are required as detailed in section 4.1 and 8. In particular, 12 new power poles, and a new transformer need to be installed by BC Hydro. The timeline of these approvals and coordination with external agencies is somewhat out of the control of the SCRD, and these requirements would need to line up to meet the accelerated schedule. However, if managed accordingly, and if the contractor responses are within our proposed construction schedule, all but the BC Hydro connection is likely to proceed on schedule. If possible, starting detailed design as early as possible (e.g.: January 2020) would give the SCRD a better chance at being ready for commissioning by summer 2021. The BC Hydro application, which is the critical path, requires at least 60% detailed design. Therefore, the sooner 60% detailed design can start, the better the chances of meeting the accelerated schedule.

The normal schedule involves detailed design starting after construction of Well 3, and a 10 month construction and commissioning timeline, and would allow work in Soames Creek to be within the fish window (mid-June to October). This schedule would result in water ready for delivery to the customer by spring 2022. This would allow ample time for project commissioning, and preparation time for a possible drought in summer 2022.

## 10 SUMMARY AND CONCLUSIONS

All tasks of the Phase 3 Groundwater Investigation Project have been completed. Based on the findings of the study, we provide the following conclusions:

- A water licence for new groundwater use was applied for, with mitigation including the replacement of flows lost in Soames Creek when pumping from the confined aquifer.
- A second test well was successfully drilled (Church Road Well 2) to a depth of 60 m. The well is 200 mm in diameter and is suitably sized to become a production well. The testing of Well 2 indicated that a two-well system (Church Road Wells 2 and 3) can fit within the available space at the Church Road site, with a combined pumping rate of 28.8 L/s.

- Water modelling gained a further understanding of how the proposed Church Road Wellfield will fit into the SCRD water distribution system. It provided sizing of the proposed infrastructure and confirmed that fire flows and system pressures will remain. It is confirmed that Harvey Road PRV can be decommissioned.
- Preliminary engineering design resulted in the development of the Church Road water supply system, for a total Detailed Design and Construction cost of \$7.8M, which includes:
  - A new WTP building next to the existing Granthams Landing reservoir
  - Repurposed Granthams Landing reservoir to be used as a clearwell (contact chamber) for the new WTP
  - New 340 m long raw water transmission main (250 mm diameter) from Wells 2 and 3 along Elphinstone Avenue to the new WTP on corner of Elphinstone Avenue and Fisher Road. The proposed works include pavement removal and replacement along the full width of affected roadway.
  - New 2.5 km long dedicated transmission main (300 mm diameter) from the WTP to Reed Road Pump Station. The proposed works include pavement removal and replacement along a half width of affected roadway.
  - 12 new power poles along Central Avenue and Fisher Road to facilitate a new 3-phase distribution to the WTP. In addition, a new 3 phase transformer will be required to step down the voltage from 25kV to 600VAC (the recommended supply voltage for the plant).
  - Replacement of the Granthams Landing Well with Church Road Wells 2 and 3. Wells 2 and 3 are connected to the same confined aquifer where groundwater in Granthams Landing Well originates, so the customers can expect very similar water quality. Preliminary design of the decommissioning of the Granthams Landing Well was not completed, however, as part of the construction costs, Class D cost estimates were provided for the decommissioning, as well as removal of the Granthams Landing pumphouse and related infrastructure. Closure of Granthams Landing Well needs to be well planned out, and at least one year of monitoring is needed to assess whether Wells 2 and 3 can be used as dewatering wells.
  - A 300 m long mitigation pipe (100 mm diameter) from the Granthams Landing Reservoir to convey raw water from Church Road Wells 2 and 3 to Soames Creek, to augment flows in Soames Creek, if required. Includes an outfall to the creek.
- Two schedules have been developed: (1) an accelerated schedule that will result in water being delivered to the community by late summer 2021, or (2) a normal schedule that will be completed by spring 2022. The accelerated schedule has challenges, additional costs, and risk, and many approvals and external agencies (e.g., BC Hydro construction of the power poles and transformers) are involved. The schedule for some of these is somewhat out of the SCRD's control. All of the approvals and input from these external agencies will need to align to meet the accelerated schedule.

## 11 RECOMMENDATIONS

Based on these conclusions, Associated recommends the following next steps:

1. Proceed with Phase 4A and Phase 4B, which will comprise the following:
  - a. Complete an impact assessment for mitigation construction infrastructure and apply for related DFO and FLNR construction approvals.
  - b. Complete further EFN studies in support of the Water Licence Application that has been submitted. Flows in Soames Creek have been collected since May 2019, but a full year of data is needed before the EFN



threshold can be set. The EFN will inform to what level creek augmentation is needed as part of the licence conditions.

- c. Drill a third test well (Church Road Well 3), which, if successful, can be converted into a production well.
  - d. Complete detailed design of the water system, including transmission piping, and treatment plant, and mitigation works, and submit a construction permit to Vancouver Coastal Health Authority.
  - e. Issue the tender and award the project to a contractor.
  - f. Start construction.
2. Consider the advantages and disadvantages of the accelerated schedule and choose one schedule before proceeding with detailed design. If cost is the greatest concern, the normal schedule is recommended, because the majority of the outdoor construction can occur in summer months when construction is much easier and thus less costly.
  3. Once Church Road Wellfield project has been constructed (or concurrently, depending on the SCRD's needs), start planning for the following next steps:
    - a) Decommission of Granthams Landing Well. Closure of Granthams Landing Well needs to be well planned out, as it is an uncontrolled flowing artesian well, and dewatering of the area will be needed. At least one year of monitoring of Well 2 and 3 during operation is needed, to assess whether Wells 2 and 3 can be used as dewatering wells. The cost for this, as well as the cost for removing the Granthams Landing pumphouse and related infrastructure has been roughly estimated and included in the construction cost estimate.
    - b) Source assessment and protection plan for Church Road Wells, with long-term monitoring as described in Section 3.2.4.
    - c) Consider connecting Soames Well to Pressure Zone 1 (80 m HGL) and investigate the possibility of connecting to Pressure Zone 2 (160m HGL) as part of detailed design. Currently, the Soames Well is only used for a small community in the area with an average of 1 L/s, but Church Road Well 2 and Well 3 are designed to be run at their calculated sustainable well yield at the same time as Soames Well up to 16.7 L/s. In addition, based on the water modelling, the pipes are configured to allow 13 L/s from pipes in the vicinity of Soames Well into Pressure Zone 1. By having Soames Well able to supply to Pressure Zone 2, this will allow the SCRD the most flexibility in operating between zones.
    - d) Other areas of groundwater to further augment supply. With the recharge coming from the base of Mt. Elphinstone to the west, it is reasonable to look for other areas to develop groundwater resources to the north and south, each wellfield spaced at least 2 km apart. In this way, the capture zones of each wellfield (estimated at 1 km to north, and 1 km to south for Church Road Wellfield) will not overlap.



## CLOSURE


This report was prepared for the Sunshine Coast Regional District to summarise results related to preliminary design of the Church Road Well Field.

The services provided by Associated Environmental Consultants Inc. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,  
Associated Environmental Consultants Inc.

  
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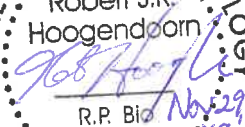
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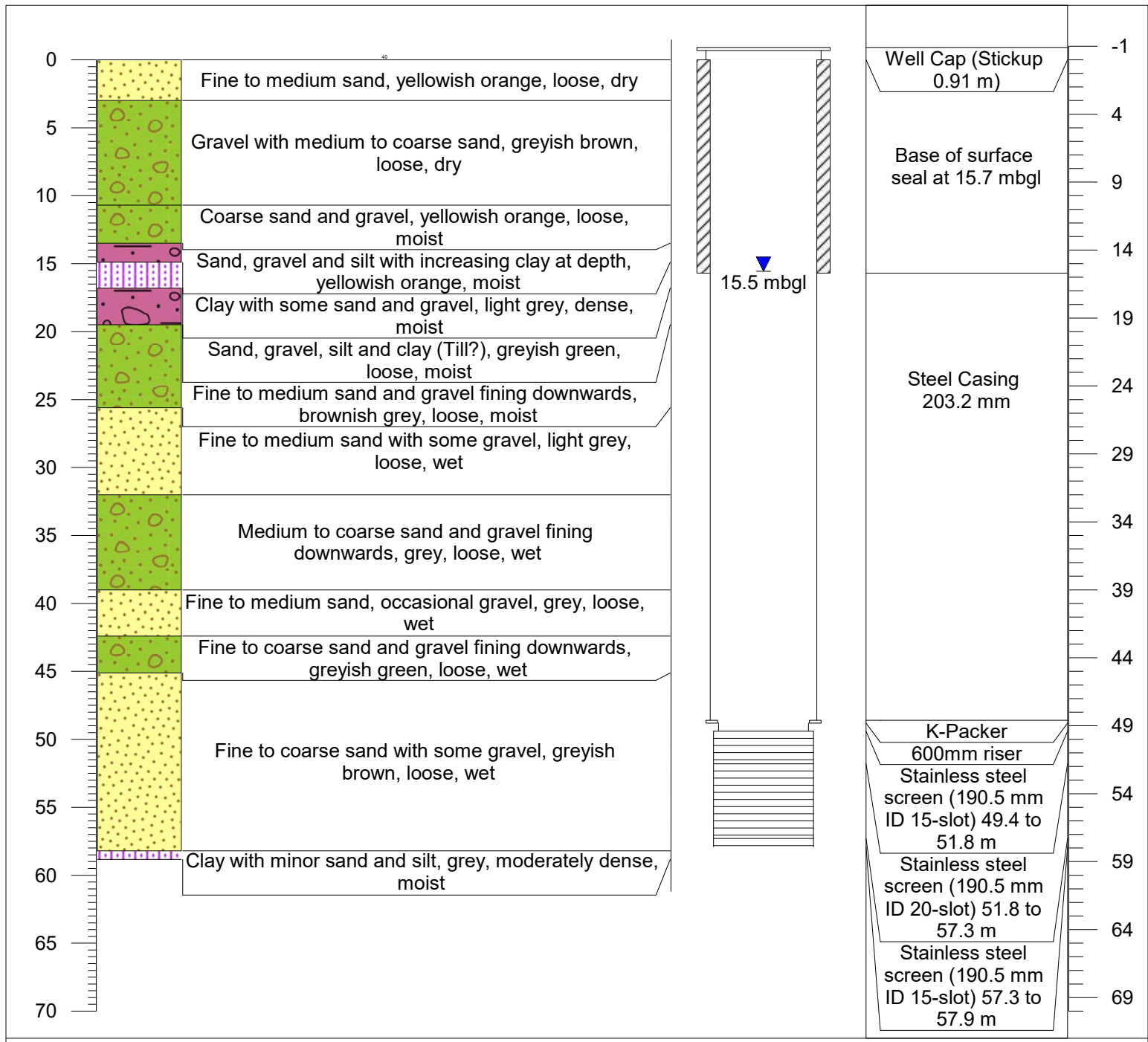
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## APPENDIX A – WELL LOG

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Project Details		WIN 53545 Chuch Road Well #2	Location		
Project Number:	2019-8307		Northing (m):	5473613	
Client:	SCRD		Easting (m):	464107	
Location:	Soames Park		Elevation (m):	40	
Subsurface Profile			Well Completion		
Depth (m)	Graphic Log	Description	Well Construction	Details	Depth (m)



## APPENDIX B – WATER QUALITY SAMPLE RESULTS

\\s-ver-fs-01\projects\20198307\00\_PH3\_GW\_INVEST\Environmental\_Assessments\Task 030 Engineering\reporting\final report\y\_20198307\_SCRD\_GWInvest\_Ph3\_Prelim\_Eng\_Final\_public.docx

# SCRD GW Investigation

## Water Quality Results

Sampling Location

WIN 53545

Date Sampled

08-Aug-19

Lab Sample ID

9080640-01

Sample Type

Analyte	Unit	Guideline				
		GCDWQ MAC	GCDWQ AO	BC SDWQG MAC	BC SDWQG AO	
Lab Results						
General						
Alkalinity (bicarbonate, as CaCO3)	mg/L	NG	NG	NG	NG	36.3
Alkalinity (carbonate, as CaCO3)	mg/L	NG	NG	NG	NG	<1.0
Alkalinity (hydroxide, as CaCO3)	mg/L	NG	NG	NG	NG	<1.0
Alkalinity (phenolphthalein, as CaCO3)	mg/L	NG	NG	NG	NG	<1.0
Alkalinity (total, as CaCO3)	mg/L	NG	NG	NG	NG	36.3
Chloride	mg/L	NG	250	NG	250	1.99
Colour	CU	NG	15	NG	15	<5.0
Conductivity	µS/cm	NG	NG	NG	NG	90.9
Fluoride	mg/L	1.5	NG	1.5	NG	0.12
Hardness, Total (dissolved as CaCO3)	mg/L	NG	NG	NG	NG	29.2
Langelier Index		NG	NG	NG	NG	-1.6
pH		NG	7.0 - 10.5 <sup>2.1</sup>	NG	NG	7.62
Sulphate	mg/L	NG	500 <sup>2.2</sup>	NG	500	7.6
Temperature of observed pH	°C	NG	NG	NG	NG	23.4
Total dissolved solids	mg/L	NG	500	NG	NG	118
Total organic carbon	mg/L	NG	NG	4.0	NG	<0.50
Turbidity	NTU	N <sup>1.1</sup>	NG	N <sup>3.1</sup>	NG	<0.10
UV transmittance at 254 nm	%	NG	NG	NG	NG	100
Nutrients						
Ammonia (total, as N)	mg/L	NG	NG	NG	NG	0.037
Nitrate (as N)	mg/L	10	NG	10	NG	0.340
Nitrate + Nitrite (as N)	mg/L	10 <sup>1.2</sup>	NG	NG	NG	0.340
Nitrate + Nitrite (as N) (calculated)	mg/L	10 <sup>1.3</sup>	NG	NG	NG	0.340
Nitrite (as N)	mg/L	1	NG	1.0	NG	<0.010
Organic nitrogen	mg/L	NG	NG	NG	NG	<0.0500
Total nitrogen	mg/L	NG	NG	NG	NG	0.340

# SCRD GW Investigation

## Water Quality Results

Sampling Location

WIN 53545

Date Sampled

08-Aug-19

Lab Sample ID

9080640-01

Sample Type

Analyte	Unit	Guideline				
		GCDWQ MAC	GCDWQ AO	BC SDWQG MAC	BC SDWQG AO	
Total kjeldahl nitrogen	mg/L	NG	NG	NG	NG	<0.050
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	NG	NG	NG	N <sup>4.1</sup>	0.090
Phosphorus (total, by ICPMS/ICPOES)	mg/L	NG	NG	NG	N <sup>4.2</sup>	0.098
Potassium (dissolved)	mg/L	NG	NG	NG	NG	2.37
Potassium (total)	mg/L	NG	NG	NG	NG	2.52
<b>Microbiological</b>						
E. coli (counts)	CFU/100 mL	0 <sup>1.4</sup>	NG	10 <sup>3.2</sup>	NG	<1
Heterotrophic Plate Count (counts)	CFU/mL	N <sup>1.5</sup>	NG	NG	NG	<1
Iron Bacteria (counts)	CFU/mL	NG	NG	NG	NG	9000
Sulfate-reducing bacteria (counts)	CFU/100 mL	NG	NG	NG	NG	2700000
Total coliforms (counts)	CFU/100 mL	0 <sup>1.6</sup>	NG	NG	NG	<1
<b>Total Metals</b>						
Aluminum (total)	mg/L	NG	N <sup>2.3</sup>	9.5	NG	<0.0050
Antimony (total)	mg/L	0.006	NG	NG	NG	<0.00020
Arsenic (total)	mg/L	0.010 <sup>1.7</sup>	NG	0.01	NG	0.00186
Barium (total)	mg/L	1.0	NG	NG	NG	<0.0050
Beryllium (total)	mg/L	NG	NG	NG	NG	<0.00010
Bismuth (total)	mg/L	NG	NG	NG	NG	<0.00010
Boron (total)	mg/L	5	NG	5.0	NG	0.0366
Cadmium (total)	mg/L	0.005	NG	0.005	NG	<0.000010
Calcium (total)	mg/L	NG	NG	NG	NG	6.38
Chromium (total)	mg/L	0.05	NG	NG	NG	<0.00050
Cobalt (total)	mg/L	NG	NG	NG	NG	<0.00010
Copper (total)	mg/L	2 <sup>1.8</sup>	1 <sup>2.4</sup>	NG	1.0	<0.00040
Iron (total)	mg/L	NG	0.3	NG	0.3	0.031
Lead (total)	mg/L	0.005 <sup>1.9</sup>	NG	0.01	NG	<0.00020
Lithium (total)	mg/L	NG	NG	NG	NG	0.00072

# SCRD GW Investigation

## Water Quality Results

Sampling Location

Date Sampled

Lab Sample ID

Sample Type

WIN 53545

08-Aug-19

9080640-01

Analyte	Unit	Guideline				
		GCDWQ MAC	GCDWQ AO	BC SDWQG MAC	BC SDWQG AO	
Magnesium (total)	mg/L	NG	NG	NG	NG	3.70
Manganese (total)	mg/L	0.12 <sup>1.10</sup>	0.02 <sup>2.5</sup>	NG	0.05	0.00374
Mercury (total)	mg/L	0.001	NG	0.001	NG	<0.000010
Molybdenum (total)	mg/L	NG	NG	0.25	NG	0.00135
Nickel (total)	mg/L	NG	NG	NG	NG	<0.00040
Selenium (total)	mg/L	0.05	NG	0.01	NG	<0.00050
Silicon (total, as Si)	mg/L	NG	NG	NG	NG	20.1
Silver (total)	mg/L	NG	NG	NG	NG	<0.000050
Sodium (total)	mg/L	NG	200	NG	NG	5.12
Strontium (total)	mg/L	7.0 <sup>1.11</sup>	NG	NG	NG	0.0248
Sulphide (total, as S)	mg/L	NG	0.047 <sup>2.6</sup>	NG	NG	<0.020
Sulphur (total)	mg/L	NG	NG	NG	NG	<3.0
Tellurium (total)	mg/L	NG	NG	NG	NG	<0.00050
Thallium (total)	mg/L	NG	NG	NG	NG	<0.000020
Thorium (total)	mg/L	NG	NG	NG	NG	<0.00010
Tin (total)	mg/L	NG	NG	NG	NG	<0.00020
Titanium (total)	mg/L	NG	NG	NG	NG	<0.0050
Tungsten (total)	mg/L	NG	NG	NG	NG	<0.0010
Uranium (total)	mg/L	0.02	NG	NG	NG	0.000093
Vanadium (total)	mg/L	NG	NG	NG	NG	0.0078
Zinc (total)	mg/L	NG	5.0	NG	5.0	0.0117
Zirconium (total)	mg/L	NG	NG	NG	NG	<0.00010
<b>Dissolved Metals</b>						
Aluminum (dissolved)	mg/L	NG	N <sup>2.7</sup>	9.5	NG	<0.0050
Antimony (dissolved)	mg/L	0.006	NG	NG	NG	<0.00020
Arsenic (dissolved)	mg/L	0.010 <sup>1.12</sup>	NG	0.01	NG	0.00138
Barium (dissolved)	mg/L	1.0	NG	NG	NG	<0.0050
Beryllium (dissolved)	mg/L	NG	NG	NG	NG	<0.00010

# SCRD GW Investigation

## Water Quality Results

Sampling Location

WIN 53545

Date Sampled

08-Aug-19

Lab Sample ID

9080640-01

Sample Type

Analyte	Unit	Guideline				
		GCDWQ MAC	GCDWQ AO	BC SDWQG MAC	BC SDWQG AO	
Bismuth (dissolved)	mg/L	NG	NG	NG	NG	<0.00010
Boron (dissolved)	mg/L	5	NG	5.0	NG	0.0367
Cadmium (dissolved)	mg/L	0.005	NG	0.005	NG	<0.000010
Calcium (dissolved)	mg/L	NG	NG	NG	NG	6.07
Chromium (dissolved)	mg/L	0.05	NG	NG	NG	<0.00050
Cobalt (dissolved)	mg/L	NG	NG	NG	NG	<0.00010
Copper (dissolved)	mg/L	2 <sup>1.13</sup>	1 <sup>2.8</sup>	NG	1.0	<0.00040
Iron (dissolved)	mg/L	NG	0.3	NG	0.3	0.026
Lead (dissolved)	mg/L	0.005 <sup>1.14</sup>	NG	0.01	NG	<0.00020
Lithium (dissolved)	mg/L	NG	NG	NG	NG	0.00070
Magnesium (dissolved)	mg/L	NG	NG	NG	NG	3.42
Manganese (dissolved)	mg/L	0.12 <sup>1.15</sup>	0.02 <sup>2.9</sup>	NG	0.05	0.00352
Mercury (dissolved)	mg/L	0.001	NG	0.001	NG	<0.000010
Molybdenum (dissolved)	mg/L	NG	NG	0.25	NG	0.00123
Nickel (dissolved)	mg/L	NG	NG	NG	NG	<0.00040
Selenium (dissolved)	mg/L	0.05	NG	0.01	NG	<0.00050
Silicon (dissolved, as Si)	mg/L	NG	NG	NG	NG	18.7
Silver (dissolved)	mg/L	NG	NG	NG	NG	<0.000050
Sodium (dissolved)	mg/L	NG	200	NG	NG	4.77
Strontium (dissolved)	mg/L	7.0 <sup>1.16</sup>	NG	NG	NG	0.0230
Sulphur (dissolved)	mg/L	NG	NG	NG	NG	<3.0
Tellurium (dissolved)	mg/L	NG	NG	NG	NG	<0.00050
Thallium (dissolved)	mg/L	NG	NG	NG	NG	<0.000020
Thorium (dissolved)	mg/L	NG	NG	NG	NG	<0.00010
Tin (dissolved)	mg/L	NG	NG	NG	NG	<0.00020
Titanium (dissolved)	mg/L	NG	NG	NG	NG	<0.0050
Tungsten (dissolved)	mg/L	NG	NG	NG	NG	<0.0010
Uranium (dissolved)	mg/L	0.02	NG	NG	NG	0.000087
Vanadium (dissolved)	mg/L	NG	NG	NG	NG	0.0068

# SCRD GW Investigation

Water Quality Results

Sampling Location WIN 53545  
 Date Sampled 08-Aug-19  
 Lab Sample ID 9080640-01  
 Sample Type

Analyte	Unit	Guideline				
		GCDWQ MAC	GCDWQ AO	<u>BC SDWQG MAC</u>	<u>BC SDWQG AO</u>	
Zinc (dissolved)	mg/L	NG	5.0	NG	5.0	0.0106
Zirconium (dissolved)	mg/L	NG	NG	NG	NG	<0.00010





## Guideline Notes for Reports for 2018-8152 SCRD GW Investigation Water Quality Results

### 1. Notes for Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations (GCDWQ MAC)

#### Note 1.1 for Turbidity:

Waterworks systems that use a surface water source or a groundwater source under the direct influence of surface water should filter the source water to meet health-based turbidity limits, as defined for specific treatment technologies. Where possible, filtration systems should be designed and operated to reduce turbidity levels as low as possible, with a treated water turbidity target of less than 0.1 NTU at all times. Where this is not achievable, the treated water turbidity levels from individual filters should meet the requirements described in GCDWQ.

For systems that use groundwater that is not under the direct influence of surface water, which are considered less vulnerable to faecal contamination, turbidity should generally be below 1.0 NTU.

For effective operation of the distribution system, it is good practice to ensure that water entering the distribution system has turbidity levels below 1.0 NTU.

#### Note 1.2 for Nitrate + Nitrite (as N):

The MAC for Nitrate (as N) is 10 mg/L

#### Note 1.3 for Nitrate + Nitrite (as N) (calculated):

The MAC for Nitrate (as N) is 10 mg/L

#### Note 1.4 for E. coli (counts):

MAC is none detectable per 100 mL

#### Note 1.5 for Heterotrophic Plate Count (counts):

There is no guideline for heterotrophic plate count (HPC) bacteria. Following is an excerpt from "Guidance on the use of heterotrophic plate counts in Canadian drinking water supplies", Health Canada (2012), prepared by the Federal-Provincial-Territorial Committee on Drinking Water:

Measuring HPC is an analytic method that is a useful operational tool for monitoring general bacteriological water quality throughout the treatment process and in the distribution system. HPC results are not an indicator of water safety and, as such, should not be used as an indicator of potential adverse human health effects. Each drinking water system will have a baseline range of HPC bacteria levels depending on the site-specific characteristics. Unexpected increases in the HPC baseline range could indicate a change in the treatment process, a disruption or contamination in the distribution system, or a change in the general bacteriological quality of the water.

If an unusual, rapid, or unexpected increase in HPC bacteria concentrations does occur, the system should be inspected and the cause determined.

#### Note 1.6 for Total coliforms (counts):

The maximum acceptable concentration (MAC) of total coliforms in water leaving a treatment plant and in non-disinfected groundwater leaving the well is none detectable per 100 mL.

Total coliforms should be monitored in the distribution system because they are used to indicate changes in water quality. Detection of total coliforms from consecutive samples from the same site or from more than 10% of the samples collected in a given sampling period should be investigated.

#### Note 1.7 for Arsenic (total):

Every effort should be made to maintain arsenic levels in drinking water as low as reasonably achievable.

#### Note 1.8 for Copper (total):

A maximum acceptable concentration (MAC) of 2 mg/L is established for total copper in drinking water, based on a sample of water taken at the tap. Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on Copper, June 2019.

#### Note 1.9 for Lead (total):

## SCRD GW Investigation

### Water Quality Results

The maximum acceptable concentration (MAC) for total lead in drinking water is 0.005 mg/L (5 µg/L), based on a sample of water taken at the tap and using the appropriate protocol for the type of building being sampled. Every effort should be made to maintain lead levels in drinking water as low as reasonably achievable (or ALARA). (GCDWQ: Guideline Technical Document; March, 2019)

**Note 1.10 for Manganese (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**Note 1.11 for Strontium (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on strontium, May 2019.

**Note 1.12 for Arsenic (dissolved):**

Every effort should be made to maintain arsenic levels in drinking water as low as reasonably achievable.

**Note 1.13 for Copper (dissolved):**

A maximum acceptable concentration (MAC) of 2 mg/L is established for total copper in drinking water, based on a sample of water taken at the tap. Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on Copper, June 2019.

**Note 1.14 for Lead (dissolved):**

The maximum acceptable concentration (MAC) for total lead in drinking water is 0.005 mg/L (5 µg/L), based on a sample of water taken at the tap and using the appropriate protocol for the type of building being sampled. Every effort should be made to maintain lead levels in drinking water as low as reasonably achievable (or ALARA). (GCDWQ: Guideline Technical Document; March, 2019)

**Note 1.15 for Manganese (dissolved):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**Note 1.16 for Strontium (dissolved):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on strontium, May 2019.

## **2. Notes for Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives (GCDWQ AO)**

**Note 2.1 for pH:**

The operational guideline for pH is a range of 7.0 to 10.5 in finished drinking water.

**Note 2.2 for Sulphate:**

There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L. Health authorities should be notified of drinking water sources containing above 500 mg/L.

**Note 2.3 for Aluminum (total):**

This is an operational guidance value, designed to apply only to drinking water treatment plants using aluminum-based coagulants. The operational guidance value of 0.1 mg/L applies to conventional treatment plants, and 0.2 mg/L applies to other types of treatment systems.

**Note 2.4 for Copper (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on Copper, June 2019.

**Note 2.5 for Manganese (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**Note 2.6 for Sulphide (total, as S):**

The aesthetic objective for sulphide (as H<sub>2</sub>S) is 0.05 mg/L. This is equivalent to 0.047 mg/L sulphide (as S).

**Note 2.7 for Aluminum (dissolved):**

This is an operational guidance value, designed to apply only to drinking water treatment plants using aluminum-based coagulants. The operational guidance value of 0.1 mg/L applies to conventional treatment plants, and 0.2 mg/L applies to other types of treatment systems.

**Note 2.8 for Copper (dissolved):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on Copper, June 2019.

**Note 2.9 for Manganese (dissolved):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

## SCRD GW Investigation

### Water Quality Results

#### 3. Notes for BC Source Drinking Water Quality Guidelines - Maximum Acceptable Concentrations (2017 and updates) (BC SDWQG MAC)

##### General Notes:

The source drinking water quality guidelines presented in this document apply to the ambient water before it is treated and distributed for domestic use. The guidelines apply to drinking water sources from surface water and groundwater.

Metal guidelines are based on total concentrations.

##### Note 3.1 for Turbidity:

For raw drinking water with treatment for particulates, the guideline is:

Change from background of 5 NTU at any time when background is  $\leq 50$  NTU; and change from background of 10% when background is  $> 50$  NTU.

For raw drinking water without treatment for particulates, the guideline is:

Change from background of 1 NTU at any time when background is  $\leq 5$  NTU; and change from background of 5 NTU at any time.

If natural background turbidity is  $> 50$  NTU, the guideline is:

Induced turbidity should not exceed 10% of the background turbidity.

##### Note 3.2 for E. coli (counts):

The MAC is  $\leq 10$  E. coli /100 mL; 90th percentile (minimum of 5 samples).

#### 4. Notes for BC Source Drinking Water Quality Guidelines - Aesthetic Objectives (2017 and updates) (BC SDWQG AO)

##### General Notes:

The source drinking water quality guidelines presented in this document apply to the ambient water before it is treated and distributed for domestic use. The guidelines apply to drinking water sources from surface water and groundwater.

Metal guidelines are based on total concentrations.

##### Note 4.1 for Phosphorus (dissolved, by ICPMS/ICPOES):

The AO for lakes is 0.01 mg/L. For lakes with residence time  $> 6$  months, measure total P during spring overturn. For lakes with residence time  $< 6$  months, measure mean epilimnetic total P during the growing season (ENV 1985).

##### Note 4.2 for Phosphorus (total, by ICPMS/ICPOES):

The AO for lakes is 0.01 mg/L. For lakes with residence time  $> 6$  months, measure total P during spring overturn. For lakes with residence time  $< 6$  months, measure mean epilimnetic total P during the growing season (ENV 1985).

## SCRD GW Investigation

### Water Quality Results

#### Legend for Reports for 2018-8152 SCRD GW Investigation Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
BC SDWQG AO	BC Source Drinking Water Quality Guidelines - Aesthetic Objectives (2017 and updates)
BC SDWQG MAC	BC Source Drinking Water Quality Guidelines - Maximum Acceptable Concentrations (2017 and updates)
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
GCDWQ AO	Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives
GCDWQ MAC	Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count

	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
<u>BC SDWQG AO</u>	Highlighted value exceeds BC SDWQG AO
<u>BC SDWQG MAC</u>	Highlighted value exceeds BC SDWQG MAC
GCDWQ AO	Highlighted value exceeds GCDWQ AO
GCDWQ MAC	Highlighted value exceeds GCDWQ MAC
SL Criteria Override	Highlighted value exceeds sampling location criteria override

## LOGIN NOTICE (Work Order 9080640)

<b>CLIENT</b>	Associated Environmental Consultants Inc. (Vernon)	<b>QUOTATION ID</b>	AE Master Bid (BC)
<b>PO NUMBER</b>		<b>SUBMITTED BY</b>	
<b>PROJECT</b>	2019-8307	<b>COC NO.</b>	No #
<b>PROJECT INFO</b>	SCRD GW Investigation		

### Receipt Details:

<b>RECEIVED</b>	2019-08-08 11:05	<b>LOGGED IN</b>	2019-08-08 14:55
<b>LOCATION</b>	Richmond Lab	<b>ACCOUNT MGR</b>	Alana Crump

### Sample Condition Summary:

Quantity of Transport Vessels Received: 1

Receipt Temperature = 3°C

Broken Container(s)	No	Sampling Date(s) Missing	No	Incorrect Cont./Pres.	No
Cooling Initiated	Yes	Sample(s) Frozen	No	Missing/Extra Samples	No

*Note: Sample transport temperatures of less than 8°C for microbiological parameters and less than or equal to 10°C for environmental parameters is recommended. Samples that exceed these values will still be processed. However, please note that the analytical results may be affected, especially for samples collected prior to the day of receipt.*

<b>REPORT TO</b>	Nicole Penner Associated Environmental Consultants Inc. (Vernon) #200 - 2800 29th Street Vernon, BC V1T 9P9 Tel: (250) 545-3672	<b>INCLUDE QC</b>	Yes
		<b>INCLUDE COC</b>	No
		<b>EXTRAS</b>	No
<b>INVOICE TO</b>	Nicole Penner Associated Environmental Consultants Inc. (Vernon) #200 - 2800 29th Street Vernon, BC V1T 9P9 Tel: (250) 545-3672	<b>FREQUENCY</b>	With Report
		<b>GST EXEMPT</b>	No
		<b>PAYMENT TERMS</b>	Upon Receipt
		<b>MIN AMOUNT</b>	N/A

### Delivery Plan:

**REPORT DUE** Draft: 2019-08-15 15:30 (5 day TAT) | Final: 2019-08-26 15:30 (12 day TAT)

Contact Name	Email / Fax / Cellular	Login Notice	Report	Invoice	EDD	EDD Format	CC to	Fax	Text	Mail
Nicole Penner	pennern@ae.ca	✓			✓	CARO Excel	support@wirelesswater.com friesent@ae.ca			
Nicole Penner	pennern@ae.ca			✓			anzej@ae.ca			
Wireless H2O v2 EDD Uploaded by CARO on behalf of Client										

### Analysis Schedule:

Analysis / Version	Due	Expires <sup>1</sup>	Status	Comments
<b>WIN 53545 (9080640-01)   Matrix: Water   Sampled: 2019-08-07 00:00 to 2019-08-08 06:45  </b>				
Container(s) Submitted:				
A = C13_500 mL Plastic (General)		B = C07_300 mL Plastic (Micro-S)		C = C07_300 mL Plastic (Micro-S)
D = C05_125 mL Plastic (Metals)		E = C06_40 mL Vial (Mercury)		F = S05_125 mL Plastic (Metals-F)
G = S06_40 mL Vial (Mercury-F)		H = C37_40mL vial (TOC with HCl)		I = C37_40mL vial (TOC with HCl)
J = C23_125 mL Plastic (Sulfide)		K = C10_125 mL Plastic (H2SO4)		
Alkalinity	2019-08-15	2019-08-22	Available	



## LOGIN NOTICE (Work Order 9080640)

### Analysis Schedule, Continued:

Analysis / Version	Due	Expires <sup>1</sup>	Status	Comments
<b>WIN 53545 (9080640-01)   Matrix: Water   Sampled: 2019-08-07 00:00 to 2019-08-08 06:45   , Continued</b>				
Carbon, Total Organic	2019-08-15	2019-09-05	Available	
Chloride by IC	2019-08-15	2019-09-05	Available	
Coliforms, Total (MF)	2019-08-15	2019-08-09	Subcontracted	Subcontracted
Colour, True	2019-08-15	2019-08-11	Available	
Conductivity	2019-08-15	2019-09-05	Available	
E. coli (MF)	2019-08-15	2019-08-09	Subcontracted	Subcontracted
Fluoride by IC	2019-08-15	2019-09-05	Available	
Heterotrophic Plate Count	2019-08-15	2019-08-09	Subcontracted	Subcontracted
Iron Related Bacteria (Count)	2019-08-26	2019-08-10	Available	
Langelier Index	2019-08-15	2019-09-05	Available	
Mercury, dissolved by CVAFS	2019-08-15	2019-09-05	Available	
Mercury, total by CVAFS	2019-08-15	2019-09-05	Available	
Metals, Dissolved by ICPMS (All) Pkg	2019-08-15	2020-02-04	Available	
Metals, Total by ICPMS (All) Pkg	2019-08-15	2020-02-04	Available	
Nitrogen, Total & Organic Pkg	2019-08-15	2019-08-11	Available	
pH	2019-08-15	2019-08-08	Available	
Solids, Total Dissolved	2019-08-15	2019-08-15	Available	
Sulfate by IC	2019-08-15	2019-09-05	Available	
Sulfate Reducing Bacteria (Count)	2019-08-26	2019-08-10	Available	
Sulfide, Total	2019-08-15	2019-08-15	Available	
Temperature (lab)	2019-08-15	2019-08-08	Available	
Transmittance at 254 nm	2019-08-15	2019-08-11	Available	
Turbidity	2019-08-15	2019-08-11	Available	

<sup>1</sup> Red font indicates that the analysis has already or is about to expire. In order to guarantee that your samples will be analyzed within the recommended holding time, they must be received at least one day prior to the expiry date (3 hours for microbiological testing). Note that all pH in water / Chlorine / Temperature / Dissolved Oxygen results will be automatically be qualified as they should be analyzed in the field for greatest accuracy.



## LOGIN NOTICE (Work Order 9080640)

### Packages and their respective Analyses included in this Work Order:

#### ***Metals, Dissolved by ICPMS (All) Pkg***

Aluminum, dissolved by ICPMS	Antimony, dissolved by ICPMS	Arsenic, dissolved by ICPMS
Barium, dissolved by ICPMS	Beryllium, dissolved by ICPMS	Bismuth, dissolved by ICPMS
Boron, dissolved by ICPMS	Cadmium, dissolved by ICPMS	Calcium, dissolved by ICPMS
Chromium, dissolved by ICPMS	Cobalt, dissolved by ICPMS	Copper, dissolved by ICPMS
Hardness, Total (as CaCO <sub>3</sub> ) (Calc)	Iron, dissolved by ICPMS	Lead, dissolved by ICPMS
Lithium, dissolved by ICPMS	Magnesium, dissolved by ICPMS	Manganese, dissolved by ICPMS
Molybdenum, dissolved by ICPMS	Nickel, dissolved by ICPMS	Phosphorus, dissolved by ICPMS
Potassium, dissolved by ICPMS	Selenium, dissolved by ICPMS	Silicon, dissolved by ICPMS
Silver, dissolved by ICPMS	Sodium, dissolved by ICPMS	Strontium, dissolved by ICPMS
Sulfur, dissolved by ICPMS	Tellurium, dissolved by ICPMS	Thallium, dissolved by ICPMS
Thorium, dissolved by ICPMS	Tin, dissolved by ICPMS	Titanium, dissolved by ICPMS
Tungsten, dissolved by ICPMS	Uranium, dissolved by ICPMS	Vanadium, dissolved by ICPMS
Zinc, dissolved by ICPMS	Zirconium, dissolved by ICPMS	

#### ***Metals, Total by ICPMS (All) Pkg***

Aluminum, total by ICPMS	Antimony, total by ICPMS	Arsenic, total by ICPMS
Barium, total by ICPMS	Beryllium, total by ICPMS	Bismuth, total by ICPMS
Boron, total by ICPMS	Cadmium, total by ICPMS	Calcium, total by ICPMS
Chromium, total by ICPMS	Cobalt, total by ICPMS	Copper, total by ICPMS
Hardness, Total (as CaCO <sub>3</sub> ) (Calc)	Iron, total by ICPMS	Lead, total by ICPMS
Lithium, total by ICPMS	Magnesium, total by ICPMS	Manganese, total by ICPMS
Molybdenum, total by ICPMS	Nickel, total by ICPMS	Phosphorus, total by ICPMS
Potassium, total by ICPMS	Selenium, total by ICPMS	Silicon, total by ICPMS
Silver, total by ICPMS	Sodium, total by ICPMS	Strontium, total by ICPMS
Sulfur, total by ICPMS	Tellurium, total by ICPMS	Thallium, total by ICPMS
Thorium, total by ICPMS	Tin, total by ICPMS	Titanium, total by ICPMS
Tungsten, total by ICPMS	Uranium, total by ICPMS	Vanadium, total by ICPMS
Zinc, total by ICPMS	Zirconium, total by ICPMS	

#### ***Nitrogen, Total & Organic Pkg***

Ammonia, Total	Nitrate by IC	Nitrate+Nitrite (as N) (Calc)
Nitrite by IC	Nitrogen, Organic (Calc)	Nitrogen, Total (Calc)
Nitrogen, Total Kjeldahl		



## LOGIN NOTICE (Work Order 9080640)

Each Analysis includes the following Analytes and their respective Reporting Limits [RLs]:			
<b>Alkalinity in Water</b>		Reference Method: <i>SM 2320 B* (2017)</i>	Units: <i>mg/L</i>
Alkalinity, Total (as CaCO <sub>3</sub> ) [1] Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) [1]	Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> ) [1]	Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) [1]	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) [1]
<b>Ammonia, Total in Water</b>		Reference Method: <i>SM 4500-NH<sub>3</sub> G* (2017)</i>	Units: <i>mg/L</i>
Ammonia, Total (as N) [0.02]			
<b>Anions by IC in Water</b>		Reference Method: <i>SM 4110 B (2017)</i>	Units: <i>mg/L</i>
Chloride [0.1] Sulfate [1]	Fluoride [0.1]	Nitrate (as N) [0.01]	Nitrite (as N) [0.01]
<b>Carbon, Total Organic in Water</b>		Reference Method: <i>SM 5310 B (2017)</i>	Units: <i>mg/L</i>
Carbon, Total Organic [0.5]			
<b>Coliforms, Total (MF) in Water</b>		Reference Method: <i>SM 9222 (2017)</i>	Units: <i>CFU/100 mL</i>
Coliforms, Total [1]			
<b>Colour, True in Water</b>		Reference Method: <i>SM 2120 C (2017)</i>	Units: <i>CU</i>
Colour, True [5]			
<b>Conductivity in Water</b>		Reference Method: <i>SM 2510 B (2017)</i>	Units: <i>uS/cm</i>
Conductivity (EC) [2]			
<b>Dissolved Metals by ICPMS in Water</b>		Reference Method: <i>EPA 200.8 / EPA 6020B</i>	Units: <i>mg/L</i>
Aluminum, dissolved [0.005] Beryllium, dissolved [0.0001] Calcium, dissolved [0.2] Iron, dissolved [0.01] Manganese, dissolved [0.0002] Potassium, dissolved [0.1] Sodium, dissolved [0.1] Thallium, dissolved [2e-005] Tungsten, dissolved [0.001] Zirconium, dissolved [0.0001]	Antimony, dissolved [0.0002] Bismuth, dissolved [0.0001] Chromium, dissolved [0.0005] Lead, dissolved [0.0002] Molybdenum, dissolved [0.0001] Selenium, dissolved [0.0005] Strontium, dissolved [0.001] Thorium, dissolved [0.0001] Uranium, dissolved [2e-005]	Arsenic, dissolved [0.0005] Boron, dissolved [0.005] Cobalt, dissolved [0.0001] Lithium, dissolved [0.0001] Nickel, dissolved [0.0004] Silicon, dissolved [1] Sulfur, dissolved [3] Tin, dissolved [0.0002] Vanadium, dissolved [0.001]	Barium, dissolved [0.005] Cadmium, dissolved [1e-005] Copper, dissolved [0.0004] Magnesium, dissolved [0.01] Phosphorus, dissolved [0.05] Silver, dissolved [5e-005] Tellurium, dissolved [0.0005] Titanium, dissolved [0.005] Zinc, dissolved [0.004]
<b>E. coli (MF) in Water</b>		Reference Method: <i>SM 9223 B (2017)</i>	Units: <i>CFU/100 mL</i>
E. coli [1]			
<b>Heterotrophic Plate Count in Water</b>		Reference Method: <i>SM 9215 B (2017)</i>	Units: <i>CFU/mL</i>
Heterotrophic Plate Count [1]			
<b>Iron Related Bacteria (Count) in Water</b>		Reference Method: <i>DBI DBISOP06</i>	Units: <i>CFU/mL</i>
Iron Related Bacteria [1]			



## LOGIN NOTICE (Work Order 9080640)

<b>Langelier Index in Water</b>		Reference Method: <a href="#">SM 2330 B (2017)</a>	Units: -
Langelier Index [-5]			
<b>Mercury by CVAFS in Water</b>		Reference Method: <a href="#">EPA 245.7*</a>	Units: <a href="#">mg/L</a>
Mercury, dissolved [1e-005]	Mercury, total [1e-005]		
<b>Nitrogen, Total Kjeldahl in Water</b>		Reference Method: <a href="#">SM 4500-Norg D* (2017)</a>	Units: <a href="#">mg/L</a>
Nitrogen, Total Kjeldahl [0.05]			
<b>pH in Water</b>		Reference Method: <a href="#">SM 4500-H+ B (2017)</a>	Units: <a href="#">pH units</a>
pH [0.1]			
<b>Solids, Total Dissolved in Water</b>		Reference Method: <a href="#">SM 2540 C* (2017)</a>	Units: <a href="#">mg/L</a>
Solids, Total Dissolved [15]			
<b>Sulfate Reducing Bacteria (Count) in Water</b>		Reference Method: <a href="#">DBI DBSLW05</a>	Units: <a href="#">CFU/mL</a>
Sulfate Reducing Bacteria [5]			
<b>Sulfide, Total in Water</b>		Reference Method: <a href="#">SM 4500-S2 D* (2017)</a>	Units: <a href="#">mg/L</a>
Sulfide, Total [0.02]			
<b>Temperature (lab) in Water</b>		Reference Method: <a href="#">SM 2550 B (2017)</a>	Units: <a href="#">°C</a>
Temperature, at pH			
<b>Total Metals by ICPMS in Water</b>		Reference Method: <a href="#">EPA 200.2*</a> / <a href="#">EPA 6020B</a>	Units: <a href="#">mg/L</a>
Aluminum, total [0.005]	Antimony, total [0.0002]	Arsenic, total [0.0005]	Barium, total [0.005]
Beryllium, total [0.0001]	Bismuth, total [0.0001]	Boron, total [0.005]	Cadmium, total [1e-005]
Calcium, total [0.2]	Chromium, total [0.0005]	Cobalt, total [0.0001]	Copper, total [0.0004]
Iron, total [0.01]	Lead, total [0.0002]	Lithium, total [0.0001]	Magnesium, total [0.01]
Manganese, total [0.0002]	Molybdenum, total [0.0001]	Nickel, total [0.0004]	Phosphorus, total [0.05]
Potassium, total [0.1]	Selenium, total [0.0005]	Silicon, total [1]	Silver, total [5e-005]
Sodium, total [0.1]	Strontium, total [0.001]	Sulfur, total [3]	Tellurium, total [0.0005]
Thallium, total [2e-005]	Thorium, total [0.0001]	Tin, total [0.0002]	Titanium, total [0.005]
Tungsten, total [0.001]	Uranium, total [2e-005]	Vanadium, total [0.001]	Zinc, total [0.004]
Zirconium, total [0.0001]			
<b>Transmittance at 254 nm in Water</b>		Reference Method: <a href="#">SM 5910 B* (2017)</a>	Units: <a href="#">% T</a>
UV Transmittance @ 254nm [0.1]			
<b>Turbidity in Water</b>		Reference Method: <a href="#">SM 2130 B (2017)</a>	Units: <a href="#">NTU</a>
Turbidity [0.1]			
Note: RLs on Final Report may be higher than expected due to: 1) limited sample volume, 2) high moisture, 3) analytical interferences			



## **LOGIN NOTICE (Work Order 9080640)**

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CHAIN OF CUSTODY RECORD

COC# PAGE 1 OF 1

REPORT TO: COMPANY: Associated Environmental ADDRESS: 200-2800 29th Street Vernon, BC V1T 9P9 CONTACT: Nicole Penner TEL/FAX: 250-545-3672 250-938-5537 EMAIL PDF [x] EDD [x] EMAIL 1: pennern@ae.ca; friesent@ae.ca EMAIL 2: support@wirelesswater.com MAIL HARDCOPY [ ] HOLD FOR P/U [ ] FAX [ ] SAMPLED BY: Tony Friesen

INVOICE TO: COMPANY: ADDRESS: CONTACT: TEL/FAX: EMAIL PDF [x] EMAIL 1: pennern@ae.ca EMAIL 2: anzej@ae.ca MAIL HARDCOPY [ ] HOLD FOR P/U [ ] PO #:

RELINQUISHED BY: Anthony Friesen DATE: Aug 8/19 TIME: 08:00 RECEIVED BY: [Signature] DATE: 08/19 TIME: 11:05 PROJECT: SCRD GW Investigation PROJECT INFO: 2019-8307

TURNAROUND TIME REQUESTED: Routine: (5-7 Days) [x] Rush: 1 Day\* [ ] 2 Day\* [ ] 3 Day\* [ ] Other\* [ ] REGULATORY APPLICATION: Canadian Drinking Water Quality Guidelines [x] CCME [ ] BC Drinking Water Protection Act / Reg. [ ] ALBERTA TIER 1 [ ] BC CSR [ ] AL [ ] RL [ ] CL [ ] IL [ ] AW [ ] OTHER: [ ]

ANALYSES REQUESTED:		DATE		TIME		CHLORINATED		FILTERED		PRESERVED		(i.e. flow/volume media ID/notes)	
BTEX	[ ]	VPH	[ ]	PHC F1	[ ]	VOC	[ ]	VPH	[ ]	PHC F2-F4	[ ]	PAH	[ ]
PHENOLS	[ ]	Chlorinated	[ ]	Non-Chlor.	[ ]	PCB	[ ]	GLYCOLS	[ ]	HAA	[ ]	PESTICIDES	[ ]
ACID HERBICIDES	[ ]	METALS - WATER TOTAL	[ ]	Hg	[x]	METALS - WATER DISSOLVED	[ ]	Hg	[x]	METALS - SOIL (SALM)	[ ]	inc. pH	[ ]
pH	[x]	EC	[x]	ALK	[x]	TSS	[ ]	VSS	[ ]	TDS	[x]	BOD	[ ]
COD	[ ]	TOG	[ ]	MOG	[ ]	FECAL COLIFORMS	[ ]	HPC	[x]	TOTAL COLIFORMS	[x]	E. coli	[x]
ASBESTOS	[ ]	Iron & sulphate reducing bacteria	[ ]	Total and organic nitrogen package	[ ]	Chloride, fluoride, sulphate	[ ]	Corrosivity (Langelier index)	[ ]	Sulphide	[ ]	Total organic carbon	[ ]
Colour, turbidity, UV transmittance	[ ]	HOLD											

SHIPPING INSTRUCTIONS: Return Cooler(s) [ ] Supplies Needed: SAMPLE RETENTION INSTRUCTIONS (Discarded 30 days after Report unless otherwise specified): 60 Days [ ] 90 Days [ ] Longer Date (Surcharges will Apply): OTHER INSTRUCTIONS: Low-level DL for metals. Upload to Wireless Water. Ensure E. coli & total coliform DL of < 1 CFU/100 mL. PAYMENT: CHEQUE [ ] CREDIT [ ] DEBIT [ ] CASH [ ] INVOICE [ ] SAMPLE RECEIPT TEMP (°C): 3.1 Work Order # W-100 CUSTODY SEAL INTACT Y [ ] N [ ] NA [ ]

## APPENDIX C – GARP SCREENING

\\s-ver-fs-01\projects\20198307\00\_PH3\_GW\_INVEST\Environmental\_Sciences\04.00\_Environmental\_Assessments\Task 030\_Engineering\reporting\final report\y\_20198307\_SCRD\_GWInvest\_Ph3\_Prelim\_Eng\_Final\_public.docx

## Well ID: Church Road Test Well #2 Option 2c

HAZARDS	SCREENING		ASSESSMENT		NOTES
Water Supply System Well	NOT PRESENT	PRESENT (complete Assessment)	AT RISK (water source potentially GARP)	AT LOW RISK	
A. Water Quality Results					
A1: Exhibits recurring presence of total coliform bacteria, fecal coliform bacteria, or <i>Escherichia coli</i> ( <i>E. coli</i> ).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	A comprehensive raw water sample was taken on August 8, 2019. The lab results showed no total coliforms, fecal coliforms, or <i>E. coli</i> have been detected. The results of the water sampled taken from TW#1 (34 m away) in November 2018 also showed no total coliforms or <i>E. coli</i> were present. Based on this dataset, the microbiological water quality from the well is excellent. However, this data set is somewhat limited. Proceed to Stage 4: Long-term monitoring and complete regular (weekly) sampling of raw water for total coliforms and <i>E.coli</i> during first year of operation when well is being pumped.
A2: Has reported intermittent turbidity or has a history of consistent turbidity greater than 1 NTU.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	During the 48 hour pumping test field turbidity measurements ranged from 0.37 to 0.59 NTU. Based on this data set the turbidity levels are good. However, this dataset is somewhat limited; therefore, proceed to Stage 4: Long-term monitoring, as follows: install a turbidity meter and collect and log measurements at a minimum every 4-hours while the well is being used.
B. Well Location					
B1: Situated inside setback distances as per section 8 of the HHR <sup>1</sup> [which includes 30m from any probable source of contamination]	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The well is proposed to be located 24 m from an existing residential septic field that is cross gradient from the well. However, after discussions with Darren Molder, Senior Environmental Health Officer with VCH, the definition of "probable" means "likely", and if the well is determined to be at "low risk to GARP", then it is reasonable to conclude that contamination from the septic field is NOT probable. As a result, the risk assessment determination for this Hazard will be equal to the risk assessments for the other hazards in the GARP screening and assessment.
B2: Has an intake depth <15 m below ground surface that is located within a natural boundary of surface water or a flood prone area.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Well screen is at a depth of 49.4-57.9 m below ground surface.

1. HHR - Health Hazard Regulation  
2. GWPR - Groundwater Protection Regulation  
3. Reworded from original version to provide clarity.



## Well ID: Church Road Test Well #2 Option 2c

HAZARDS	SCREENING		ASSESSMENT		NOTES
Water Supply System Well	NOT PRESENT	PRESENT (complete Assessment)	AT RISK (water source potentially GARP)	AT LOW RISK	
B3: Has an intake depth between the high-water mark and surface water bottom (or <15 m below the normal water level if surface water depth is unknown), and located within, or less than 150 m from the natural boundary of any surface water.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The screen depth for the subject well is between 49-57.9 m bgs, which is equal to an elevation of minus 10 meters above sea level. The elevation of the nearest creek, Soames Creek, is approximately 15 m asl, a difference of 25 meters. Horizontally, the well will be located approximately 60 m away from Soames Creek.
B4: Located within 300 m of a source of probable enteric viral contamination without a barrier to viral transport.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	There are many residential homes within 300 m, all of which have on-site septic systems. The nearest septic field (454 Elphinstone Ave) is 24 m away to the west of the test well 2 location and is cross gradient to the well. All other septic fields within 300 m are greater than 30 m and are either cross gradient or down-gradient of the well. We completed a Schijven model, which is valid for unconsolidated sand and gravel aquifers like this one, to calculate a safe setback distance from leaky sanitary sewer or septic fields using aquifer properties and pumping rates. It's method is described further on page 40 of the GARP Guideline Version 3. The results of the Schijven model estimate the safe setback for the proposed well site is <1 m with a travel time of pathogens to the screen at 10 days. Since the proposed well location is 24 m away from the nearest septic field, this septic field is outside of the safe setback, and based on this, the well is "at low risk" to this hazard. The Schijven calculation was completed with one sand and gravel aquifer, the simplest of the model options, and therefore is a conservative estimate. The inputs to the Schijven model are attached.

## Well ID: Church Road Test Well #2 Option 2c

HAZARDS	SCREENING		ASSESSMENT		NOTES
Water Supply System Well	NOT PRESENT	PRESENT (complete Assessment)	AT RISK (water source potentially GARP)	AT LOW RISK	
C. Well Construction					
C1: Does not meet GWPR <sup>2</sup> (section 7) for surface sealing.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	A 12 inch surface seal was installed to a depth of 15.5 mbgs and set into a clay layer present at 14m bgs, exceeding the GWPR surface seal requirements. It is proposed that the surface seal will be extended down to the clay layer, and set into 1 m of the clay layer, but not through into the pressurized aquifer. In this way, there is no preferred pathway from the unconfined aquifer above the confining unit where the septic effluent will mix with natural groundwater, and the confined aquifer being used for drinking water.
C2: Does not meet GWPR (section 10) for well caps and covers.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	New well constructed to meet GWPR
C3: Does not meet GWPR (section 11) for floodproofing.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	New well constructed to meet GWPR
C4: Does not meet GWPR (section 12) for wellhead protection.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	New well constructed to meet GWPR
D. Aquifer Type and Setting					
D1: Has an intake depth <15 m below ground surface	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The top of the screen is 49 mbgs.
D2: Is situated in an [unconfined, unconsolidated, or fractured bedrock aquifer that is highly vulnerable]. <sup>3</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The aquifer that the well is completed in is a confined sand and gravel aquifer protected by a low permeability till layer that is present from approximately 14.4-19.5 mbgs.
D3: Is completed in a karst bedrock aquifer, regardless of depth.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The well is not completed in a karst bedrock aquifer.

1. HHR - Health Hazard Regulation  
2. GWPR - Groundwater Protection Regulation  
3. Reworded from original version to provide clarity.



## Well ID: Church Road Test Well #2 Option 2c

HAZARDS	SCREENING		ASSESSMENT		NOTES
Water Supply System Well	NOT PRESENT	PRESENT (complete Assessment)	AT RISK (water source potentially GARP)	AT LOW RISK	

### Stage 2: GARP Determination

☐ At Risk (GARP)
 ☐ At Risk (GARP-viruses only)
 ☒ At Low Risk

### Stage 3: Risk Mitigation

#### Recommended Options:

- ☐ Treatment to meet provincial drinking water objectives
- ☐ Treatment to meet only the provincial drinking water objectives for viruses
- ☐ Provide alternate source of water
- ☐ Well Alteration / correct significant deficiencies in well construction
- ☐ Relocate the well
- ☐ Eliminate source(s) of contamination
- ☐ Stage 2 or 3 investigation
- ☒ Move to Stage 4: Long-term Monitoring
- ☐ Other: some recommendations for completing wellhead area during construction are provided in report.

#### Comments:

Stage 4 (long term monitoring) will include regular (every four hours) monitoring of turbidity and weekly sampling of raw water for E.coli and total coliforms during first year of operation.

#### Completed by:

Marta Green, P.Geo., October 16, 2019.



Table 1: Inputs and output from Schijven (2010) equation to assess safe setbacks from pathogens

Input/Output Parameter	Unit	Well# 2	Notes
Vadose thickness, $H_0$	m	25.5	From TW2 (WIN 53545) log. The vadose zone was measure as the distance from the top of well to the bottom of the clay layer.
Aquifer Thickness, $H_1$	m	32.5	From TW2 (WIN 53545) log. The aquifer thickness was measure from 25.52 to 58 mbgs.
Aquifer transmissivity	$m^2/d$	400	Based on pumping test data from TW2
Anisotropy factor	m	1	Default from Schijven (see note 1) analytical equation
Top of well screen	m	49.4	Screen design based on the TW2 (WIN 53545). Screen completed in the fine to medium sand.
Length of well screen	m	8.5	Screen design based on the TW2 (WIN 53545). The proposed screen length is based on the clean fine to medium sand from 49.4 to 57.9 m depth.
Porosity, $r$	unitless	0.25	Default from Schijven analytical equation
Well pumping rate, $Q$	$m^3/day$	2180	Pumping rate is based on 400 Usgpm (25.2 l/sec), which is the calculated sustainable well yield of TW2.
Contaminant leakage rate, $q$	$m^3/day$	1.3	Default from the Schijven analytical equation for a small leak from a sanitary line or field. For comparison, the minimum daily design flow rate for a 3 bedroom residence is $1.3 m^3/d$ (see note 2).
Average grain size	mm	2	This represents coarse sand, which was the coarsest material logged during drilling of TW2 (WIN 53545), to be conservative. There were also layers of fine to medium sand (0.5mm/30 slot average grain size), with the thickest layer between 48 m and 57 m depth.
Safe setback distance	m	<1	Output from model

Notes:

- (1) Schijven, J.F., J.H.C. Mulischlegel, S.M. Hassanizadeh, P.F.M. Teunis and A.M. de Roda Husman. 2010. Vulnerability of unconfined aquifers to virus contamination.
- (2) B.C. Ministry of Health. 2014. Sewerage System Practice Manual Version 3 September 2014.
- (3) Colebrook, Steve, Project Hydrogeologist with Associated. 2019. Personal communication (via email on June 17, 2019) with M.Green of Associated.



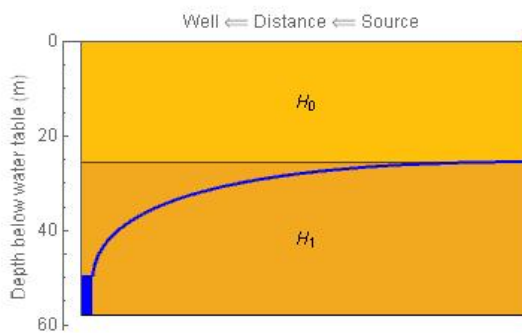
## QMRAwell: Groundwater Protection/Risk Calculator

Location: SCRD Test Well 2 (WTN 53545)

[Print](#)

One aquifer   More aquifers/aquitards   QMRA: Enterovirus   About

Vadose zone thickness  $H_0$  25.5 m  
Aquifer thickness  $H_1$  32.5 m  
Anisotropy factor  $m$  1  
Top of well screen  $-z_1$  49.4 m  
Length of well screen  $-z_2$  8.5 m  
Porosity  $n$  0.25  
Well pumping rate  $Q$  2180 m<sup>3</sup>/d  
Contaminant leakage rate  $q$  1 m<sup>3</sup>/d  
Average grain size  $d_c$  2.00 mm



Domain

Distance	24	m
Travel time	10.	d
$\log_{10} C_{\text{Source}}/C_{\text{Water table}}$	12.75	
$\log_{10} C_{\text{Water table}}/C_{\text{Well}}$	-4.8	(achieved)
$\log_{10} C_{\text{Source}}/C_{\text{Well}}$	16.	(achieved)
$C_{\text{Well}}$	$1.06 \times 10^{-16}$	#/L
Infection risk (95%)	$4.05 \times 10^{-14}$	/person/y

One aquifer
More aquifers/aquitards
QMRA: Enterovirus
About

Enterovirus
☒ Default
☐ Set

Unsaturated zone

Log10 removal/m 0.5  $\text{Log}_{10}/\text{m}$

Saturated zone

Inactivation rate coefficient  $\mu$  0.023  $\text{d}^{-1}$

Sticking efficiency  $\alpha$  0.00001

Attachment rate coefficient  $k_{\text{att}}$  0.00043  $\text{d}^{-1}$

Removal rate coefficient  $\lambda=k_{\text{att}}+\mu$  0.02343  $\text{d}^{-1}$

Drinking water consumption

NL
US
WHO
Set

Mean	0.28
CI	0.019– 1.3
$\mu_{\text{dr}}$	-1.85779
$\sigma_{\text{dr}}$	1.07487

Lognormal distribution[ $\mu_{\text{dr}}, \sigma_{\text{dr}}$ ]  
L/person/d

Infection risk/person/year

$10^{-5}$ 
 $10^{-4}$ 
 $10^{-3}$ 
 $10^{-2}$

Calculate

Risk

$C_{\text{source}}$ 

1.3

#/#/L

Distance

24

m

One aquifer
More aquifers/aquitards
QMRA: *E. coli*
About

*E. coli*

☒ Default
☐ Set

Unsaturated zone

Log10 removal/m

0.5

Log<sub>10</sub>/m

Saturated zone

Inactivation rate

$\mu$

0.023

d<sup>-1</sup>

coefficient

Sticking efficiency

$\alpha$

0.00002

Attachment rate

coefficient

$k_{att}$

0.00012

d<sup>-1</sup>

Removal rate

coefficient

$\lambda = k_{att} + \mu$

0.02311999999999999

d<sup>-1</sup>

98

Drinking water consumption

NL
US
WHO
Set

Lognormal distribution[ $\mu_{dr}$ ,  $\sigma_{dr}$ ]

L/person/d

Mean	0.28
CI	0.019– 1.3
$\mu_{dr}$	-1.85779
$\sigma_{dr}$	1.07487

Infection

10<sup>-5</sup>
10<sup>-4</sup>
10<sup>-3</sup>
10<sup>-2</sup>

One aquifer
More aquifers/aquitards
QMRA: *Cryptosporidium*
About

*Cryptosporidium*
☒ Default
☐ Set

Unsaturated zone  
Log10 removal/m 0.5 Log<sub>10</sub>/m  
Saturated zone  
Inactivation rate coefficient  $\mu$  0.023 d<sup>-1</sup>  
Sticking efficiency  $\alpha$  0.00002  
Attachment rate coefficient  $k_{att}$  0.00042 d<sup>-1</sup>  
Removal rate coefficient  $\lambda=k_{att}+\mu$  0.02342 d<sup>-1</sup>

Drinking water consumption
NL US WHO Set

Lognormal distribution[ $\mu_{dr}, \sigma_{dr}$ ]  
/person/d

Mean	0.28
CI	0.019– 1.3
$\mu_{dr}$	-1.85779
$\sigma_{dr}$	1.07487

Infection risk/person/year
10<sup>-5</sup> 10<sup>-4</sup> 10<sup>-3</sup> 10<sup>-2</sup>

Calculate
Risk

C<sub>source</sub>
 #/L

Version 4.2

February 17, 2019

Jack.Schijven@rivm.nl

Schijven JF, Hassanizadeh SM, Roda Husman AM de,  
Vulnerability of unconfined groundwater to virus contamination,  
Water Research, 2010;44(4):1170–1181

Setback distance  $r_s = Hr_s^* =$

$H(\ln(C^*Q^*))^{0.557} \lambda^{*-0.467}$

$\times \text{EXP}[C^{*-0.227} Q^{*-0.383} \lambda^{*(2.19-1.17z_t^*)} m^{1.64}$

$\times 0.207(1-z_t^*) \text{EXP}[0.529z_t^* - 2.99z_b^*]]$

## APPENDIX D – WATER MODELLING TECHNICAL MEMORANDUM

\\s-ver-fs-01\projects\20198307\00\_PH3\_GW\_INVEST\Environmental\_Sciences\04.00\_Environmental\_Assessments\Task 030 Engineering\reporting\final report\y\_20198307\_SCRD\_GWInvest\_Ph3\_Prelim\_Eng\_Final\_public.docx





**Associated  
Engineering**

*GLOBAL PERSPECTIVE.  
LOCAL FOCUS.*

## TECHNICAL MEMORANDUM

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### **Sunshine Coast Regional District**

### **Phase 3 Groundwater Investigation Water Modelling**

NOVEMBER 2019

**A Carbon  
Neutral  
Company**



Platinum  
member

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2.3 Granthams Landing Reservoir Booster Pumps	2
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# 1 INTRODUCTION

The Sunshine Coast Regional District (the District) has retained Associated Environmental Consultants Inc. (Associated) to analyze a proposed upgrade to the District's existing Chapman water distribution system.

The upgrade consists of two new groundwater supply wells to be drilled and developed at the corner of Elphinstone Avenue and Church Road. The water from these wells will be treated at a proposed Water Treatment Plant before entering the existing Granthams Landing reservoir. The water will then be pumped from the Granthams Landing reservoir into the adjacent larger pressure zone PZ 160 via the existing Reed Road pump station. The new pumps will be housed in the proposed Water Treatment plant, and a proposed dedicated main will convey the pumped water to Reed Road reservoir. As part of the upgrades, the existing Granthams Landing water system (of which the Granthams Landing reservoir is part of) will be connected to the Chapman water system as outlined in the sections below.

The analysis of the upgrades involved modelling in Bentley WaterCAD v8i, using models provided by the District as a base, which included both existing (2011) and projected (2036) maximum day demands (MDD). The scope of the analysis included evaluating only the system in the direct vicinity of the upgrades and determining the required infrastructure for these upgrades.

## 2 MODEL SETUP, ASSUMPTIONS AND DESIGN CRITERIA

The following sections describe the processes and assumptions used in modeling the proposed water system infrastructure upgrades. As mentioned, the District provided two WaterCAD models, one for the large Chapman system and another for the small Granthams Landing system. The two were combined into one model with each system retaining their respective nodal demands and fire flow constraints. The District's models contained two different demand scenarios, an Existing Demand Management (EDM) scenario, and an Intensive Demand Management (IDM) scenario. The EDM scenario is based on historical usage in the District, with no metering taking place, and resulting in higher demands in the system. The IDM scenario is based on universal metering as well as other conservation-driven programs being initiated by the District, resulting in less system demands. As confirmed by the District, for the purpose of this investigation, the higher demands of the EDM scenario were used when modelling.

### 2.1 Proposed Water Supply Wells

The two proposed supply wells were modelled to each produce 28.8 L/s of flow for a total combined output of 57.6 L/s which is based on the pump yield testing completed in August 2019 as part of this project. During periods of the year a well augmentation flow will be required which could be as high as 13 L/s. This varying reduction of flow has not been taken into account when sizing the infrastructure since there will be times when the maximum flow from the wells will be available. The pumping equipment needed to deliver the flows will be selected as part of the preliminary design. The drawdown elevations of the two proposed water supply wells were modelled at an elevation of 2 metres above sea level, based on pumping tests performed on August 7, 2019. The corresponding raw water pumps were sized to pump from the drawdown level to the existing high water level in Granthams Landing reservoir of 80.0m. The proposed supply main was assumed to be Ductile Iron with a Hazen-Williams C of 130 and was sized to be 250mm to stay below the maximum velocity of 1.50 m/s in order to limit headlosses the pump has to overcome. Refer to Figure 2-1 below for a figure of the WaterCAD model used, showing flow and pipe sizes of the proposed raw water supply infrastructure.

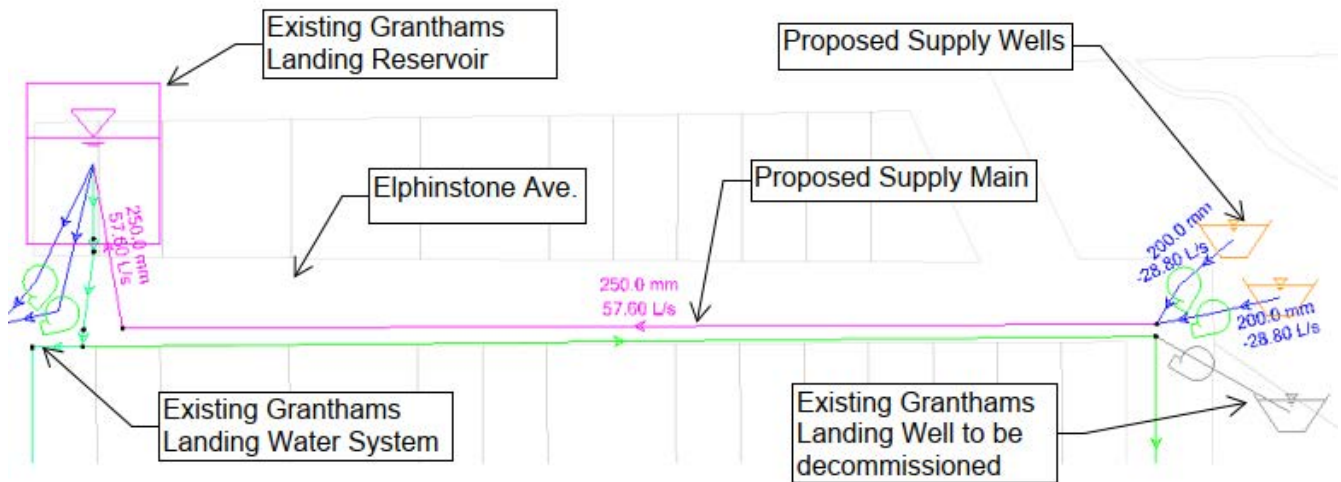


Figure 2-1: WaterCAD model showing existing and proposed infrastructure in Granthams Landing area.

## 2.2 Granthams Landing Water Treatment Plant

For the purpose of this analysis, the proposed water treatment plant at Granthams Landing or any of its processes were not included in the model. Losses through the system will be accounted for in the preliminary and detailed design stage during final pump selection.

## 2.3 Granthams Landing Reservoir Booster Pumps

To pump from the Granthams Landing reservoir (pressure zone PZ 80) to the Reed Road reservoir (pressure zone PZ 160), two booster pumps were proposed and modelled. The booster pumps were sized with a required flow of 57.6 L/s and head based on the minimum water level in the Granthams Landing reservoir and maximum pressure in the Chapman Water System at the tie-in location. Refer to Figure 2-2 for a figure of the WaterCAD model in this area.

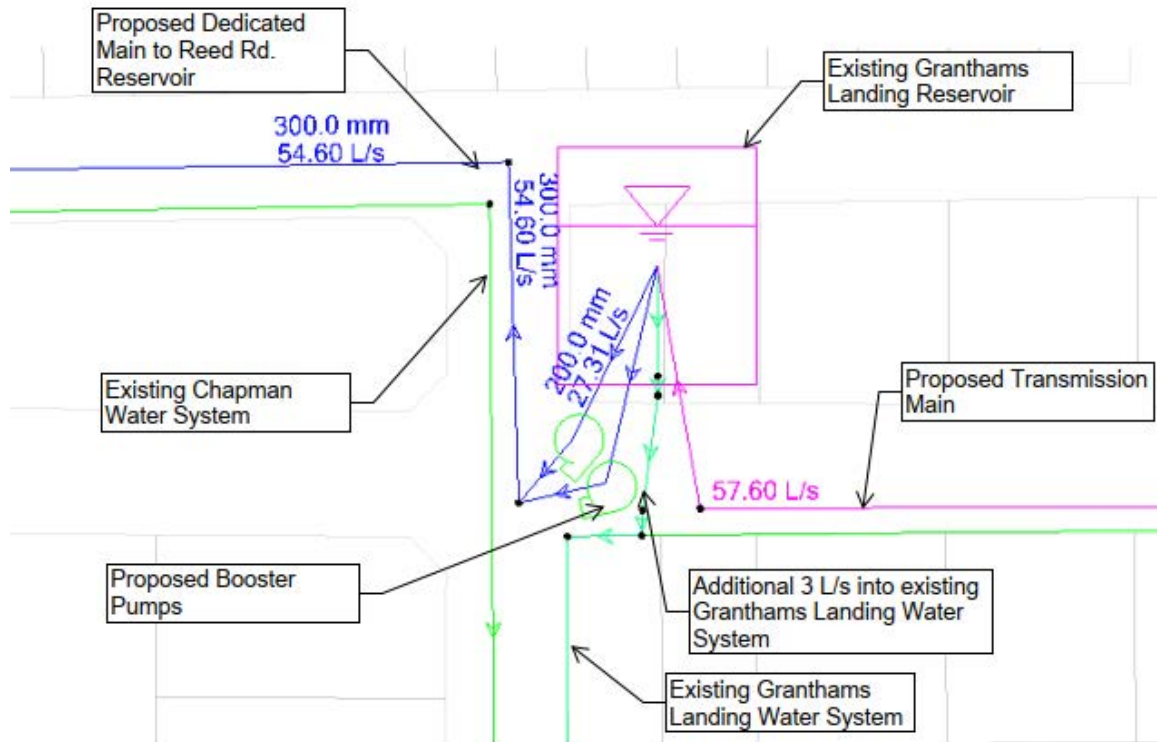
## 2.4 Dedicated Supply Main

At the direction of the District, a dedicated supply main is proposed to convey pumped water from Granthams Landing to Reed Road reservoir. While this dedicated supply main will have significant construction costs attached to it, it will also benefit the system in the following ways:

- Provide redundancy in the Chapman Water System by supplying additional flow back towards Roberts Creek during periods of peak flow as well as providing supplemental fire flow.
- Reduce the power consumption and operation and maintenance requirements on the proposed booster pumps, as they will only need to overcome the smaller head in PZ 160 at the dedicated main tie-in location, as opposed to the larger head in PZ 210 if tie-in were at the Chamberlin Road PRV Station.
- Reduce pressures in the area surrounding the Chamberlin Road PRV Station. If the tie-in were at the Chamberlin Road PRV Station, pressures in the vicinity would increase to unacceptable levels.

The dedicated supply main pipe was assumed to be Ductile Iron with a Hazen-Williams C-factor of 130 and was sized to be 300mm. The water modelling showed that a pipe size of 250mm was sufficient for the current projected flow, with a maximum capacity of approximately 73 L/s before velocity exceeds 1.5 m/s in the pipe. However, to accommodate for future tie-ins, as well as limit headloss in the pipe, it is recommended that a 300mm pipe size be

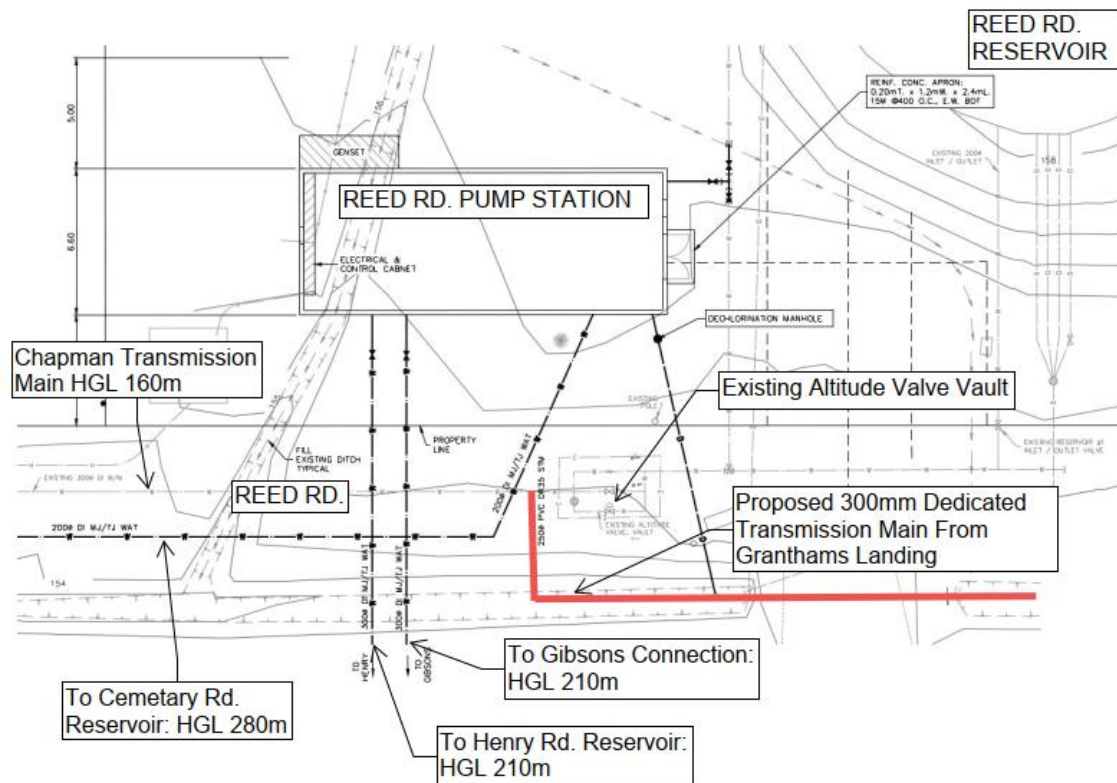
used for the dedicated main. Water modelling showed that upsizing the pipe to 300mm increases the capacity to approximately 105 L/s. Elevations of the pipe nodes were based on a survey of the area. Refer to Figure 2-2 showing the dedicated main directly downstream of the proposed booster pumps.



**Figure 2-2: WaterCAD model showing existing and proposed infrastructure in Granthams Landing area.**

As discussed in more detail in the following Section, it is proposed to send 3 L/s to the existing Granthams Landing water system through a proposed additional connection between the two water systems. This would slightly reduce the sizing of the new pumps to convey a total of 54.6 L/s through the dedicated main to Reed Road reservoir.

The proposed dedicated main will tie in to the existing Chapman system at the Reed Road Reservoir site just upstream of the existing altitude valve vault, as shown in the markup of the record drawing in Figure 2-3 below.



The proposed arrangement ensures that the new booster pumps will have the ability to fill Reed Road reservoir while sending the excess water supply into the rest of the Chapman Water System via the transmission main. The controls and operation of this configuration will be finalized during detailed design. Table 2-1 outlines the existing 2011 and future 2036 MDD within the new Granthams Landing pump station service area. From this table the excess flow available to the large 160m PZ can be determined at the existing and future MDDs. During periods of reduced demand, more water would be available to the 160m PZ.

	PZ 80	PZ 160	PZ 210	PZ 280	Total
2011 MDD	2.21 L/s	3.14 L/s	27.67 L/s	2.71 L/s	35.73 L/s
2036 MDD	3.62 L/s	5.17 L/s	45.31 L/s	8.93 L/s	63.03 L/s

## 2.5 Granthams Landing – Chapman Water System Minor Connection



zone is fed by water from the Henry Road reservoir (HGL of 210 metres), through the Chamberlin Road PRV Station (HGL of 160 metres). Therefore, it is proposed that a minor connection between the existing Granthams Landing and Chapman water systems be installed. This connection would allow the Granthams Landing system, with an HGL of 80 metres, to feed directly into this pressure zone, resulting in similar pressures in the system before and after the connection is made, with no need for an additional PRV Station. Also, this connection would save the proposed booster pumps from unnecessarily pumping an additional 3 L/s and allow for the Harvey Road PRV Station to be decommissioned if desired. Although this connection is not part of the preliminary design, it could be considered during detailed design to slightly reduce the pumping requirements in the new pump station. Refer to Figure 2-4 showing the proposed connection.

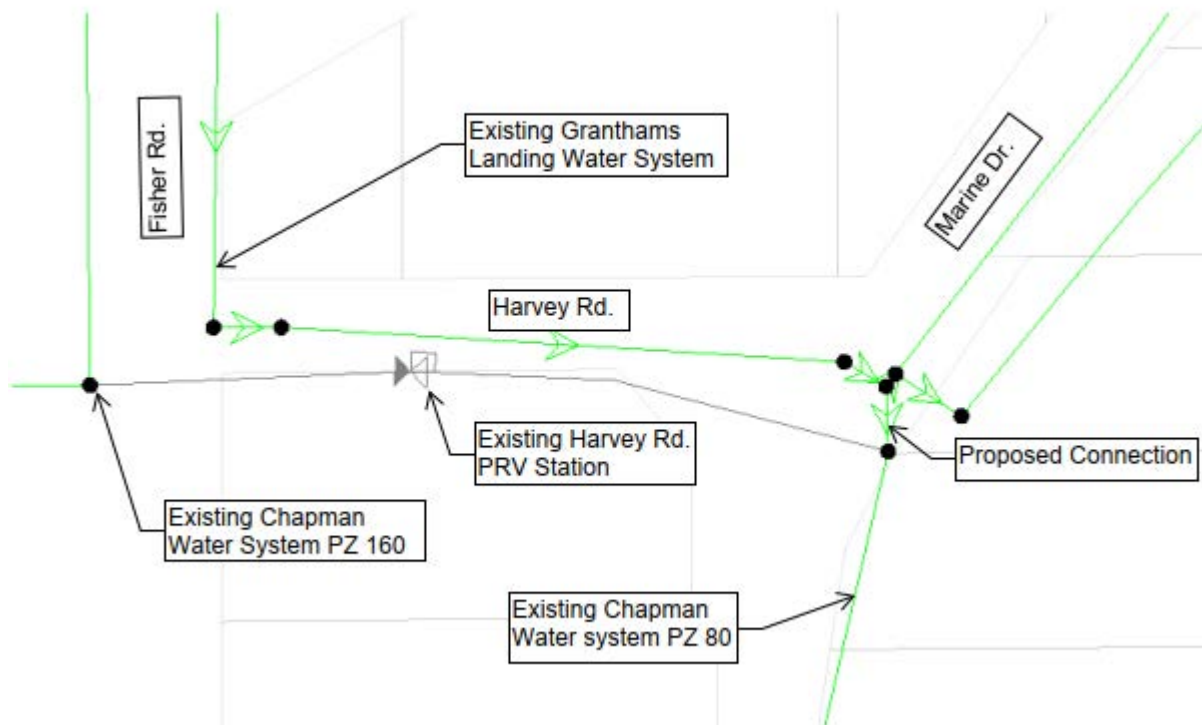


Figure 2-4: Proposed Granthams Landing – Chapman water systems connection at Marine Dr and Harvey Rd.

## 3 MODEL RESULTS

### 3.1 2036 Maximum Day Demand Scenario

To analyze the effect of the proposed upgrades on the District's water system, the existing conditions (Figure 3-1) at the interface of the Chapman and Granthams Landing water systems was compared to the proposed upgraded scenario (Figure 3-2), both under 2036 MDD.

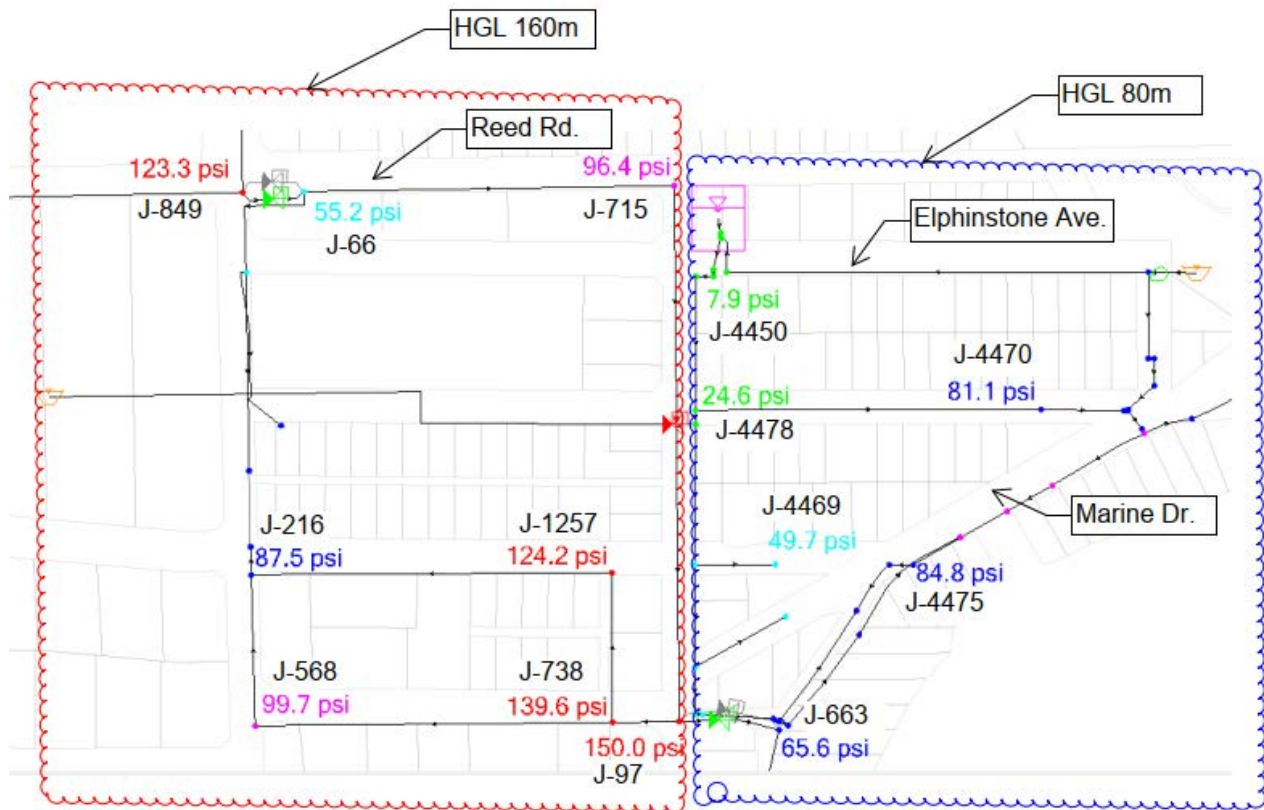
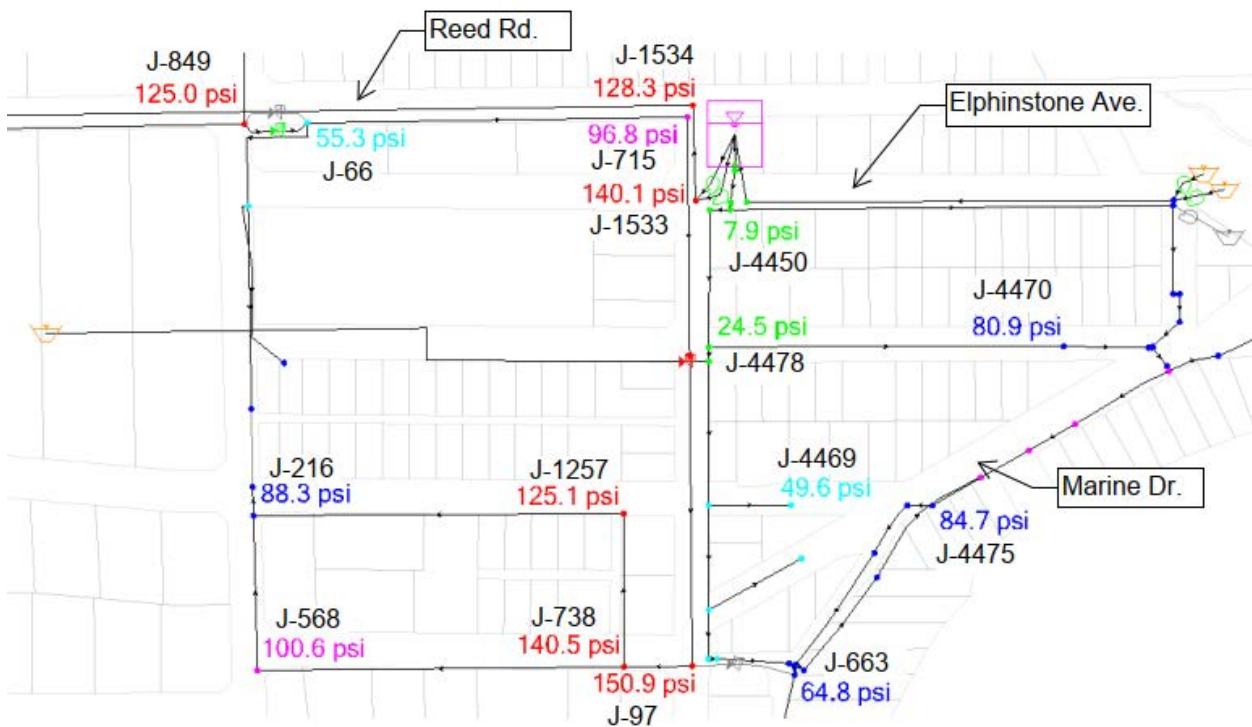


Figure 3-1: Existing configuration of separate Chapman and Granthams Landing water systems, with pressures at select nodes under 2036 Maximum Day Demands.



**Figure 3-2: Proposed configuration of connected Chapman and Granthams Landing water systems, with pressures at select nodes under 2036 Maximum Day Demands.**

As seen in both figures above (Figure 3-1 and 3-2), there is very little change to the pressure in the systems after the proposed upgrades have been modelled. Refer to Table 3-1 below for the node pressures before and after the proposed upgrades. The discharge pressure of the proposed booster pumps is approximately 140 psi at an HGL of 174 m to be able to feed into the 160 m pressure zone during 2036 MDD conditions. The pumps will likely be fitted with variable frequency drives so they can provide more head for when the Chapman system is at a higher static pressure during off peak flow hours. This static pressure should be confirmed by the District as it is suspected that the HGL in the Chapman transmission main could reach as high as approximately 175 m during periods of minimal demand based on the TWL of Selma Reservoir located the Chapman WTP. The ability of the pumps to overcome this varying static pressure in the transmission main is important as it will allow for the dedicated main to serve one of its main benefits of supplying flow back into Chapman Water System.

**Table 3-1: WaterCAD Model output of node pressures before and after proposed upgrades.**

Model Node ID	Pressure Before Upgrades (PSI)	Pressure After Upgrades (PSI)
J-849	123.3	125.0
J-66	55.2	55.3
J-216	87.5	88.3
J-568	99.7	100.6
J-1257	124.2	125.1
J-738	139.6	140.5
J-97	150.0	150.9
J-715	96.4	96.8
J-4450	7.9	7.9
J-4478	24.6	24.5
J-4470	81.1	80.9
J-4469	49.7	49.6
J-4475	84.8	84.7
J-663	65.6	64.8
J-1534	N/A	128.3
J-1533	N/A	140.1

The following infrastructure sizing was determined from the model:

- Installing a 250mm raw water supply main from the proposed wells to the existing Granthams Landing reservoir will provide the required 57.6 L/s of flow while maintaining a velocity of 1.17 m/s in the pipe resulting in an approximate headloss of 1.4 metres.

- Installing a 300mm dedicated transmission main from the Granthams Landing reservoir to the Reed Road reservoir will provide the required flow of 54.6 L/s while maintaining a velocity of 1.11 m/s in the pipe resulting in an approximate headloss of 4.8 metres.

### 3.2 2036 Maximum Day Demands plus Fire Flow

The existing and proposed configurations were also compared under fire flow scenarios to determine the affects of the proposed infrastructure. The existing WaterCAD model contained the District's established fire flow nodes and constraints, with certain nodes requiring 60 L/s of fire flow and others 30 L/s, while maintaining a minimum residual pressure of 20 psi at the node as well as throughout the node's pressure zone. For example, if the required fire flow cannot be delivered without the residual pressures at that node or any other node within the same pressure dropping below 20 psi, then fire flow constraints are not satisfied at that node. The nodes shown in red in the following figures do not meet the fire flow requirements set in the model.

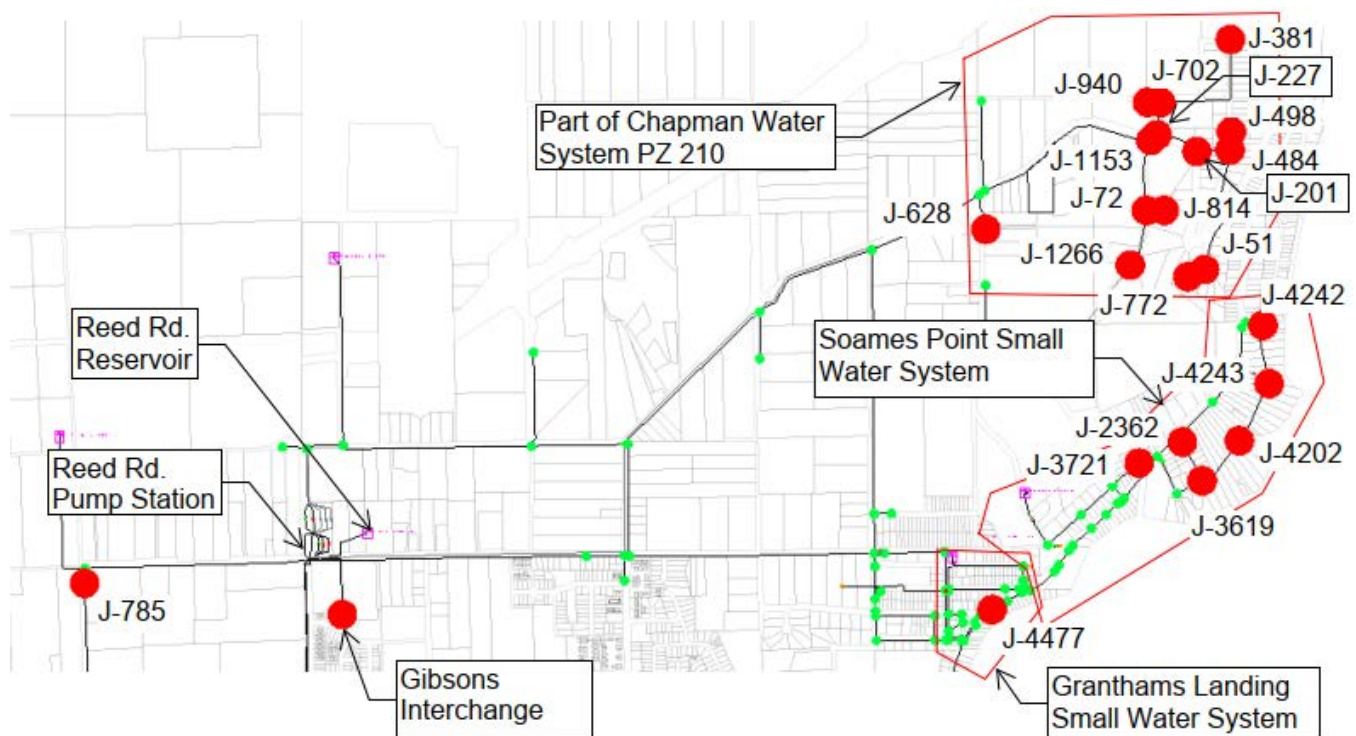


Figure 3-3: Existing northeast corner of separate Chapman water system and Granthams Landing water system under 2036 maximum day demands plus fire flow.

The existing configuration of the Chapman water system does not provide adequate fire flow to the eastern extent of pressure zone PZ 210 as well as the Gibsons Interconnection and the Soames Point water system. These areas are outside the scope of this investigation, however the lack of adequate fire flow in these areas may be explained by the elevation changes between Pressure Zones, as well as the use of undersized, high-loss pipes. The existing configuration of the Granthams Landing water system does not provide adequate fire flows to one fire flow node, located on a dead-end main. The District's GIS open-data maps show that there is no fire hydrant on this dead-end main. These fire flow inadequacies in the system will be corrected in future SCRD CIP programs.

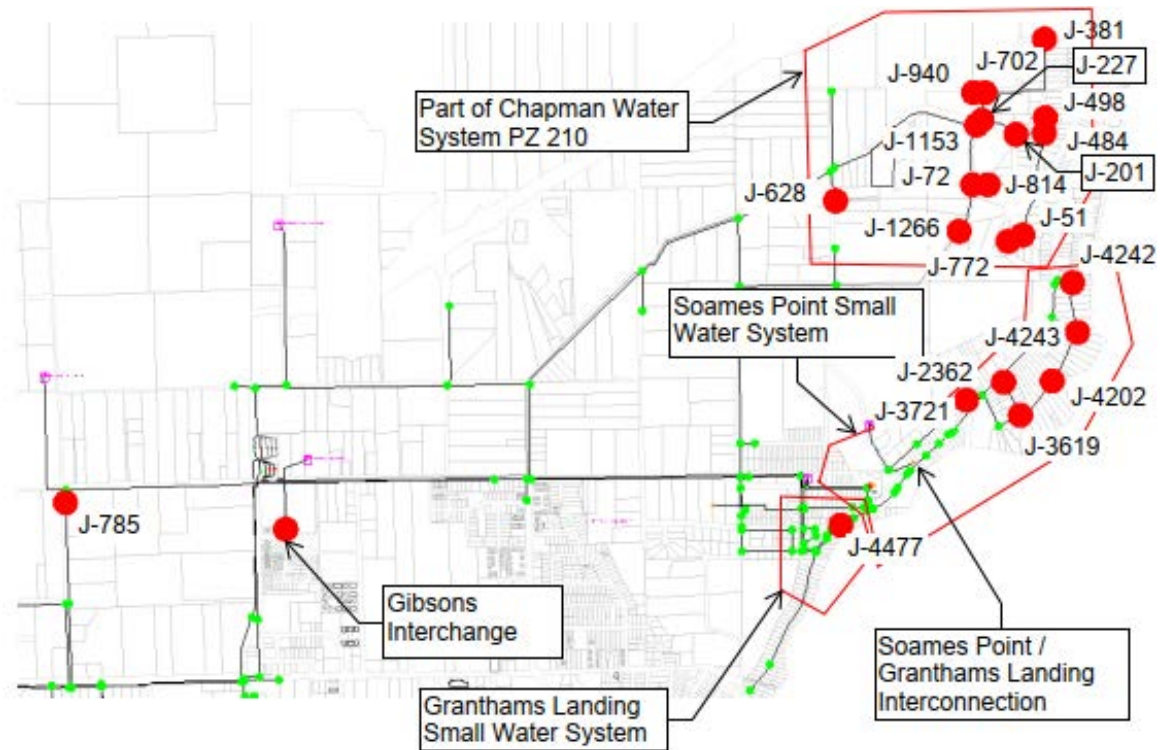


Figure 3-4: Proposed integrated Chapman and Granthams Landing water systems under 2036 maximum day demands plus fire flows.

As seen in Figure 3-4, the proposed upgrades do not have an effect on the system's ability to deliver fire flow as the nodes that fail to meet fire flow are the same as in Figure 3-3. Refer to Table 3-2 for the WaterCAD model output showing the fire flow results from the failed nodes after the proposed upgrades.

Table 3-2: WaterCAD Model output of fire flow nodes after proposed upgrades.

Node ID	Fire Flow Available (L/s)	Fire Flow Needed (L/s)	Residual Pressure (PSI)	Satisfy Fire Flow Constraints?
J-51	28.79	30	89.7	NO
J-72	26.85	30	20.5	NO
J-201	28.78	30	40.2	NO
J-227	28.79	30	36.2	NO
J-381	28.78	30	45.5	NO
J-484	28.78	30	74.9	NO
J-498	28.75	30	70.4	NO
J-628	29.49	30	20	NO
J-702	28.78	30	39.9	NO



Node ID	Fire Flow Available (L/s)	Fire Flow Needed (L/s)	Residual Pressure (PSI)	Satisfy Fire Flow Constraints?
J-772	28.75	30	67.7	NO
J-785	0	30	19.9	NO
J-814	26.9	30	23	NO
J-940	28.79	30	36.4	NO
J-1153	28.79	30	36.7	NO
J-1266	25.61	30	20	NO
Gibsons Interchange	0	30	82	NO
J-2362	12.13	30	34	NO
J-3619	12.12	30	52.1	NO
J-3721	6.71	30	20	NO
J-4202	6.65	30	45.5	NO
J-4242	4.83	30	42.5	NO
J-4243	4.82	30	20	NO
J-4477	9.91	30	20.3	NO

## 4 CONCLUSIONS

The following conclusions can be made based on the completed modelling work:

- Installing a 250mm raw water supply main from the proposed wells to the existing Granthams Landing reservoir will provide the required 57.6 L/s of flow while maintaining a velocity less than 1.5 m/s and an approximate headloss of 1.4 metres.
- Installing a 300mm dedicated transmission main from the Granthams Landing reservoir to the Reed Road reservoir will provide the required flow while maintaining a velocity less than 1.5 m/s and an approximate headloss of 4.8 metres. The dedicated main will be fed by two proposed booster pumps.
- A dedicated transmission main can tie-in to the Chapman Water System PZ 160 directly upstream of the existing altitude valve vault at the Reed Road Pump Station. This will require significant construction costs, however will have the following benefits to the system:
  - Provide redundancy in the Chapman Water System by supplying additional flow back towards Roberts Creek during periods of peak flow as well as providing supplemental fire flow.
  - Reduce the power consumption and operation and maintenance requirements on the proposed booster pumps, as they will only need to overcome the smaller head in PZ 160 at the dedicated main tie-in location, as opposed to the larger head in PZ 210 if tie-in were at the Chamberlin Road PRV Station.
  - Reduce pressures in the area surrounding the Chamberlin Road PRV Station. If the tie-in were at the Chamberlin Road PRV Station, pressures in the vicinity would increase to unacceptable levels.
- A small connection can be made between the Chapman and Granthams Landing water systems directly downstream of the existing Harvey Road PRV Station. This connection would allow for the PRV Station to be decommissioned and reduce the load on the proposed booster pumps. This could be completed as a separate project.





## CERTIFICATION PAGE

This report presents our findings regarding the Sunshine Coast Regional District Phase 3 Groundwater Investigation Water Modelling.

Respectfully submitted,

Prepared by:



Jacob Tetreault, EIT  
Project Engineer

JT/ML/lw

Reviewed by:



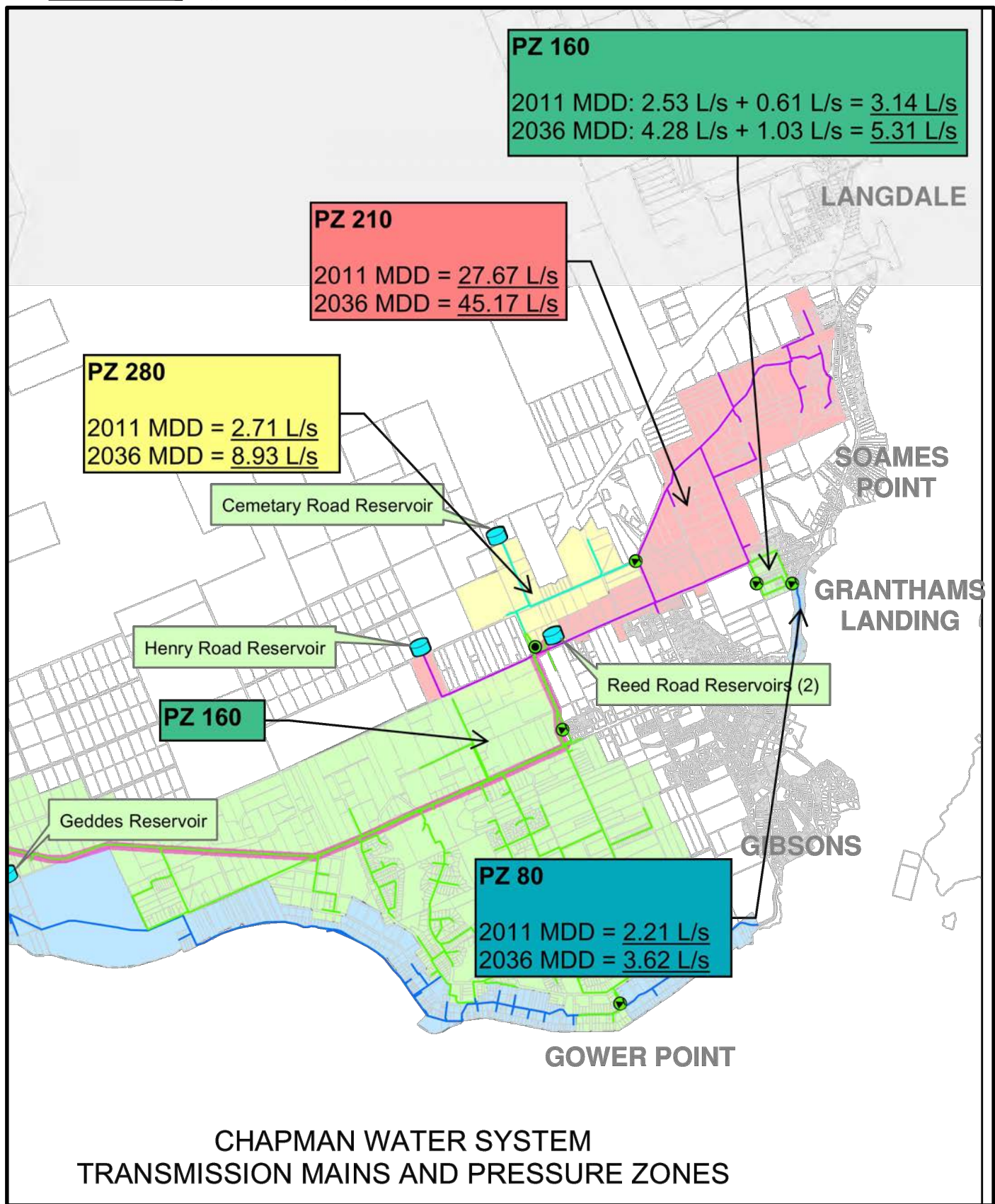
Matt Lozie, P.Eng.  
Mechanical Engineer



## APPENDIX A - CHAPMAN WATER SYSTEM MAP

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AE PROJECT No.  
 SCALE  
 APPROVED  
 DATE  
 REV  
 DESCRIPTION

2019-8307  
 N.T.S.  
 M. LOZIE  
 20191015  
 A  
 ISSUED FOR REVIEW

CHAPMAN WATER SYSTEM MAP  
 SUNSHINE COAST REGIONAL DISTRICT

## APPENDIX E – PRELIMINARY DESIGN DRAWINGS

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# SUNSHINE COAST REGIONAL DISTRICT

# PHASE 3 GROUND WATER INVESTIGATION WTP DESIGN

AE Project No. 20198307  
Preliminary Design Drawings

WP9A DRAWING LIST		
DWG NUMBER	DWG NAME	REV NO
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8307-03-c-100	LOCATION & KEY PLAN	A
8307-03-c-101	SITE PLAN	A
8307-03-c-102	UTILITIES PLAN	A
8307-03-c-103	REED ROAD PIPE ALIGNMENT	A
8307-03-c-104	ELPHINSTONE AVENUE PIPE ALIGNMENT	A
ARCHITECTURAL		
8307-03-a-001	GENERAL NOTES	A
8307-03-a-002	GENERAL NOTES	A
8307-03-a-100	MAIN FLOOR PLAN	A
8307-03-a-201	ELEVATIONS	A
8307-03-a-301	BUILDING SECTION	A
PROCESS		
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8307-03-d-002	P&ID	A
8307-03-d-003	P&ID	A
8307-03-d-004	P&ID	A
8307-03-d-100	PIPING LAYOUT PLAN	A
ELECTRICAL		
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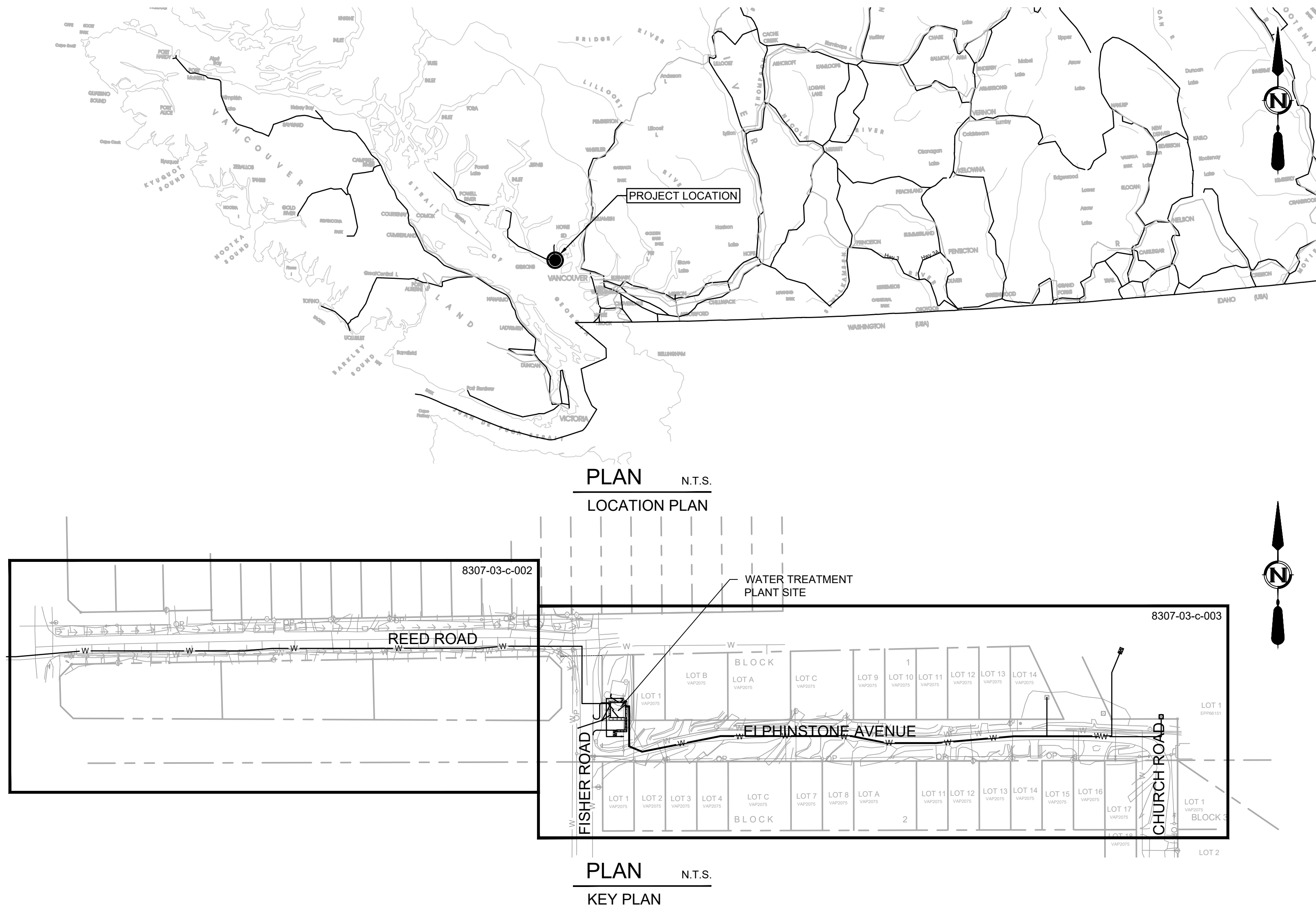


SUNSHINE COAST  
REGIONAL DISTRICT  
GROUNDWATER  
INVESTIGATION  
PHASE 3  
2019-8307-03

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NOT FOR CONSTRUCTION  
  
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ISSUED FOR PRELIMINARY DESIGN				
A	2019NOV08	M. LOZIE	T. SAWKINS	
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GENERAL NOTES:

- EXCEPT WHERE NOTED ON THE DRAWINGS AND IN THESE NOTES, MATERIALS & CONSTRUCTION SHALL CONFORM TO:
  - SUBDIVISION & DEVELOPMENT BYLAWS OF THE SUNSHINE COAST REGIONAL DISTRICT (SCRD) AND TOWN OF GIBSONS (No. 733) AND
  - SPECIFICATIONS & DETAIL DRAWINGS OF THE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS (2009-PLATINUM EDITION)
- BC ONE CALL TO BE CONTACTED 48 HOURS PRIOR TO CONSTRUCTION
- ELEVATIONS REFER TO GEODETIC DATUM IN METERS, UNLESS NOTED OTHERWISE. PRIOR TO CONSTRUCTION, WHERE NEW WATERWORKS ARE PROPOSED, LOCATIONS, ELEVATIONS & OUTSIDE DIAMETERS OF EXISTING UTILITIES SHALL BE DETERMINED & VERIFIED BY THE CONTRACTOR IN NON-DESTRUCTIVE TEST EXCAVATIONS.
- PERIMETERS OF ALL EXCAVATIONS IN EXISTING ASPHALT OR CONCRETE PAVEMENTS OR WALKWAYS SHALL BE SAW CUT VERTICALLY ALONG NEAT STRAIGHT LINES. TRENCHING, BEDDING & BACKFILL SHALL CONFIRM TO MMCD, DWG G4. RESTORATION OF ASPHALT PAVEMENTS SHALL CONFORM TO MMCD DWG G5. OTHER SURFACES AFFECTED BY TRENCHING & EXCAVATION SHALL BE REINSTATED IN KIND, BOULEVARDS WITH 150mm TOP SOIL AND GRASS SEEDED.
- EXISTING UTILITY LOCATIONS APPROXIMATE ONLY. NOT ALL STRUCTURES AND UTILITIES ARE NECESSARILY SHOWN. THE CONTRACTOR IS RESPONSIBLE TO LOCATE AND CONFIRM THE EXISTING ELEVATIONS, MATERIALS, SIZING, ETC. PRIOR TO COMMENCING CONSTRUCTION OF PROPOSED WORKS. ANY UTILITIES WHICH ARE DAMAGED SHALL BE REINSTATED TO THE SATISFACTION OF THE SCRD, THE TOWN OF GIBSONS OR OTHER UTILITY AUTHORITY AS MAY BE APPLICABLE.
- THE CONTRACTOR'S SURVEYOR SHALL RECORD ON A SET OF CONSTRUCTION ISSUE CONTRACT DRAWINGS, PRECISE LOCATIONS & ELEVATIONS OF CONSTRUCTED WORKS AND EXISTING WORKS WHICH MAY BE INVOLVED. AT SUBSTANTIAL COMPLETION, THE CONTRACTOR SHALL PROVIDE THE RECORDED DRAWING SET TO THE ENGINEER.
- THE CONTRACTOR SHALL EXPOSE AND LOCATE ALL EXISTING UTILITIES TO BE CROSSED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- THE CONTRACTOR SHALL LOCATE, VERIFY, AND EXPOSE, IF REQUIRED, THE EXISTING MAIN FOR LINE, ELEVATION AND TIE-IN REQUIREMENTS AT ALL POINTS OF CONNECTION PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- REPORT ALL DISCREPANCIES, ERRORS, OR OMISSIONS TO ENGINEER IMMEDIATELY.
- FOR TYPICAL TRENCH DETAILS REFER TO DETAIL DRAWINGS.
- PROPOSED MEDIUM DUTY ASPHALT TO CONSIST OF 200mm PREPARED SUBGRADE, 200mm BASE COURSE AND 65mm OF ASPHALT.
- ALL DIMENSIONS IN METERS, UNLESS NOTED OTHERWISE.

UTILITY NOTES:

- MINIMUM DEPTH OF COVER OVER WATERMAINS SHALL BE 1.0m.
- CONTRACTOR TO TAP THE MAIN OR BLIND FLANGES AND INSTALL CORPORATION STOP FOR THE PURPOSE OF TESTING.
- WATERMAIN PIPING INSTALLED IN TRENCHES SHALL BE PRESSURE CLASS 350 DUCTILE IRON (PC350 DI) TO AWWA C151, CEMENT MORTAR-LINED TO AWWA C104, EBAA IRON RESTRAINED MECHANICAL JOINTED TO AWWA C110 & AWWA C111 OR CANADA PIP CO. MJ/TJ JOINT SYSTEM.
- WATERMAIN FITTINGS SHALL BE DUCTILE IRON TO AWWA C153 WITH EBAA IRON RESTRAINED MECHANICAL JOINTS (MJR) AND SHALL BE CEMENT MORTAR-LINED TO AWWA C104.
- LINE & BRANCH GATE VALVES SHALL BE RESILIENT SEAT TYPE TO AWWA C509 WITH VALVE BOXES TO MMCD AS PER DWG W3.
- AIR VENT AND VACUUM VALVES SHALL BE TO AWWA C512 AND SHALL BE INSTALLED TO MMCD DWG W3.
- FASTENING FOR WATERWORKS FITTINGS INCLUDING TIE RODS SHALL BE TYPE 304 STAINLESS STEEL.
- STRAIGHT COUPLINGS TO BE BOLTED SLEEVE TYPE TO AWWA C219, EPOXY PAINT COATED SLEEVE & RINGS, TYPE 304 STAINLESS STEEL FASTENINGS, RESTRAINED TYPE TO EBAA IRON SERIES 3800.
- TRANSITION COUPLINGS, DI x ROUGH BARREL, A.C. OR DI x STEEL, SHALL BE BOLTED SLEEVE TYPE TO AWWA C219, EPOXY PAINT COATED SLEEVE & RINGS, TYPE 304 STAINLESS STEEL FASTENINGS.
- INSTALLATION OF PC350 DI PIPING SHALL BE TO AWWA C600 USING HALF THE PERMITTED JOINT DEFLECTION AND TO MMCD STANDARDS.
- VALVES & HYDRANTS ON THE EXISTING WATER SYSTEM SHALL NOT BE OPERATED WITHOUT PERMISSION OF THE SCRD AND THE TOWN WATERWORKS SUPERINTENDENT.
- WHEN THE WATERMAIN CROSSES A STORM OR SANITARY SEWER, THE WATERMAIN SHALL BE INSTALLED A MINIMUM 0.5 M CLEAR ABOVE THE SEWER. WHERE THIS IS NOT POSSIBLE, THE WATERMAIN SHALL HAVE A MINIMUM 0.3M CLEARANCE UNDER THE SEWER WITH ALL JOINTS WITHIN A 3.0M HORIZONTAL DISTANCE FROM THE SEWER WRAPPED WITH HEAT SHRINK PLASTIC IN ACCORDANCE TO THE FOLLOWING STANDARDS:
  - ANSI/AWWA C214 (FACTORY APPLIED)
  - ANSI/AWWA C209 (FIELD APPLIED)
  - ALL MATERIALS USED ARE TO HAVE ZERO HEALTH HAZARDINSTALLATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE REGIONAL HEALTH ENGINEER UNDER THE HEALTH ACT.
- ALL PIPE, JOINTS AND FITTINGS TO BE COMPATIBLE WITH THE REQUIRED TEST PRESSURE.
- TESTING, FLUSHING, & DISINFECTION OF WATERMAINS & SERVICES SHALL BE TO MMCD, TO AWWA C651 AND SHALL BE WITNESSED BY THE ENGINEER AT EACH STAGE. WATER CONTAINING MEASURABLE CONCENTRATIONS OF CHLORINE SHALL BE COMPLETELY DECHLORINATED BEFORE ITS DISCHARGE TO THE ADJACENT DITCH.
- STORM PIPING PVC SDR 35, U.N.O. MANHOLES INSTALLED AS PER SUNSHINE COAST REGIONAL DISTRICT STANDARDS.

LEGEND

	EX. WATERMAIN
	PROP. WATERMAIN
	EX. STORM SEWER
	PROP. STORM SEWER
	EX. OVERHEAD POWER
	EX. UNDERGROUND POWER
	PROP. UNDERGROUND ELECTRICAL CONDUIT
	EX. UNDERGROUND TELEMETRY DUCT
	EX. LEGAL LINE
	PROP. ROW
	CONSTR. EASEMENT
	EX. DITCH
	PROP. DITCH
	EX. FENCE
	PROP. FENCE
	TOE OF FILL
	EX. TOP OF BANK
	LIMIT OF CUT
	EX. GV
	PROP. GV
	PROP. GV - NORMALLY CLOSED
	EX. FIRE HYDRANT
	PROP. FIRE HYDRANT
	AIR VALVE
	BLOW DOWN
	EX. WELL
	PROP. PLUG / CAP
	PROP. ASPHALT
	ITEMS FOR DISPOSAL
	TOP SOIL
	CLAY
	NATIVE MATERIAL
	PIPE BEDDING MATERIAL
	STAGING AREA

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SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

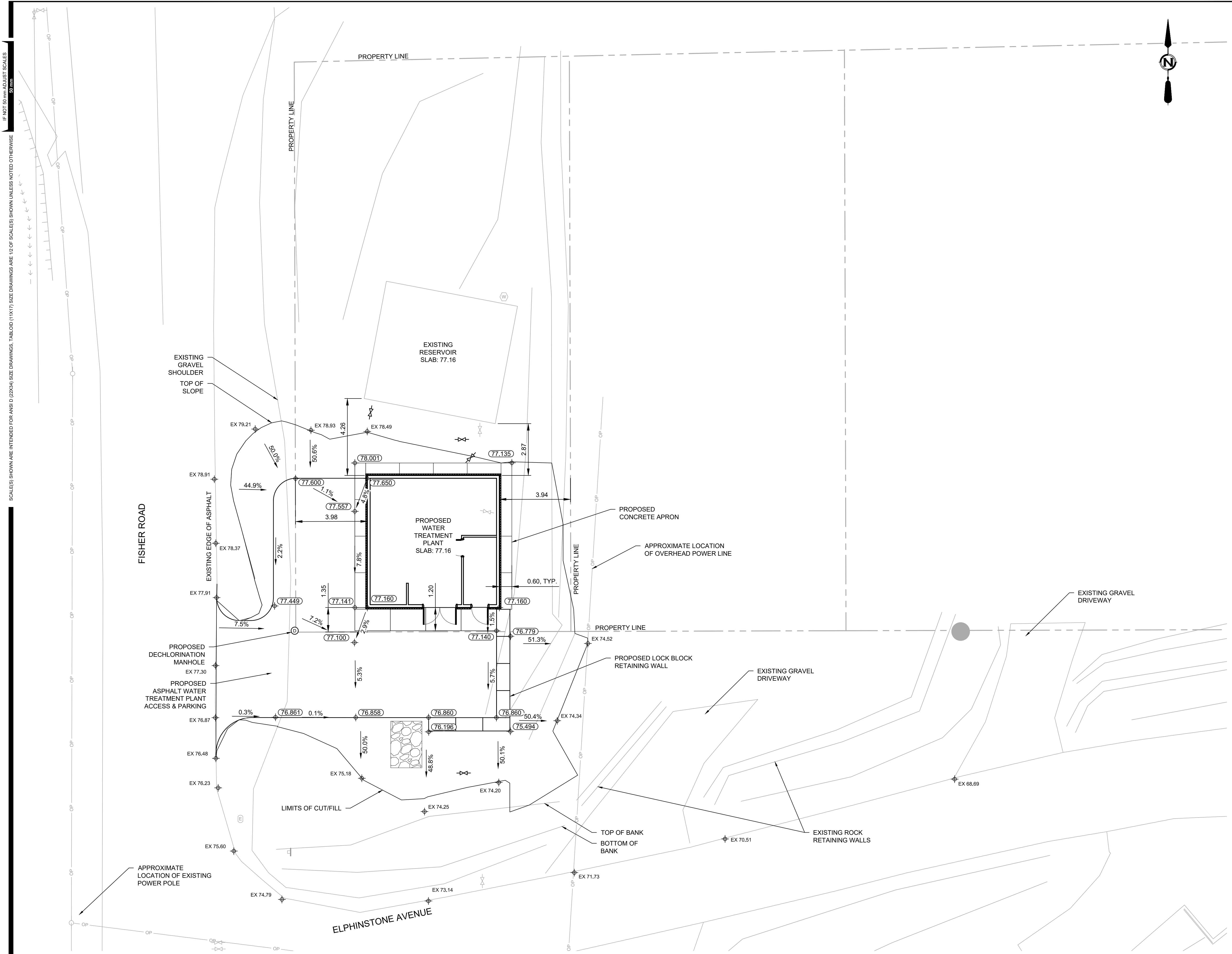
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SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

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SITE PLAN

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SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

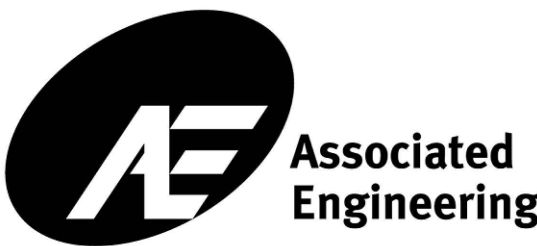
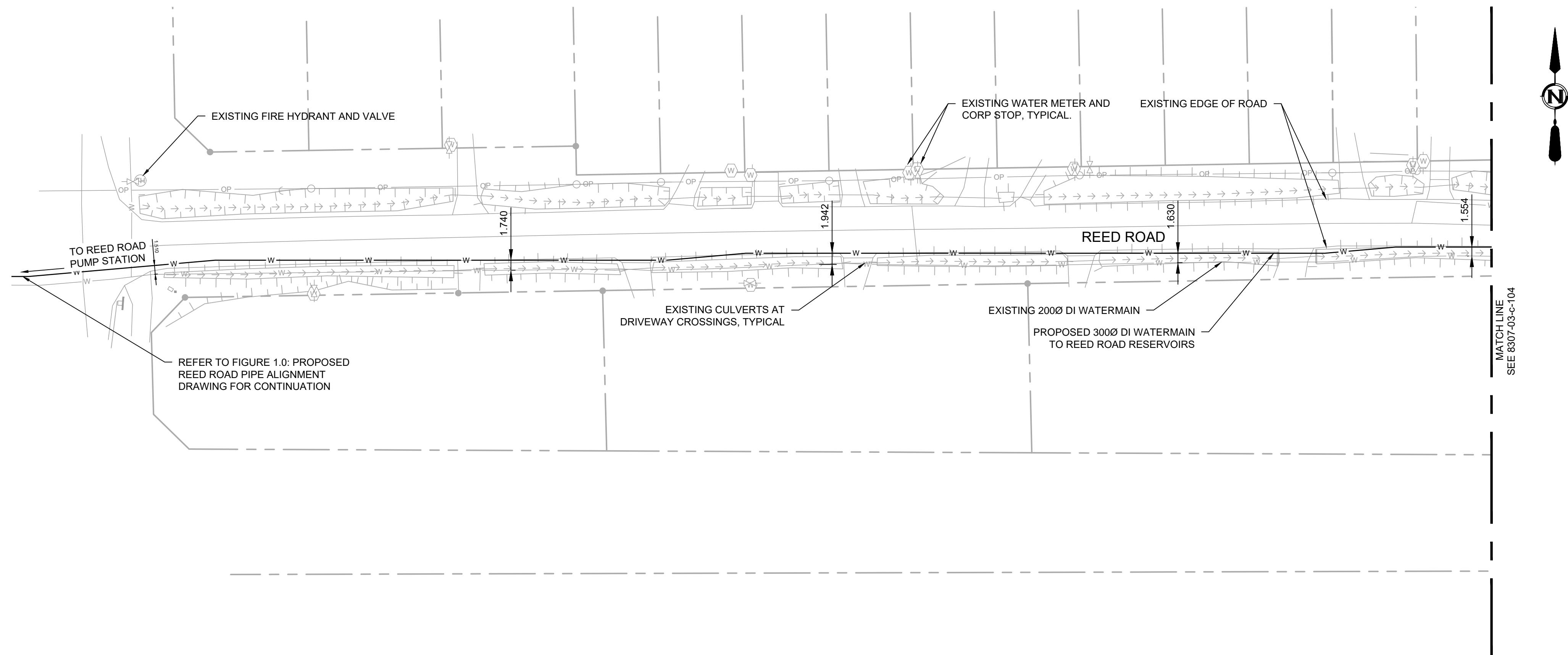
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SUNSHINE COAST REGIONAL DISTRICT

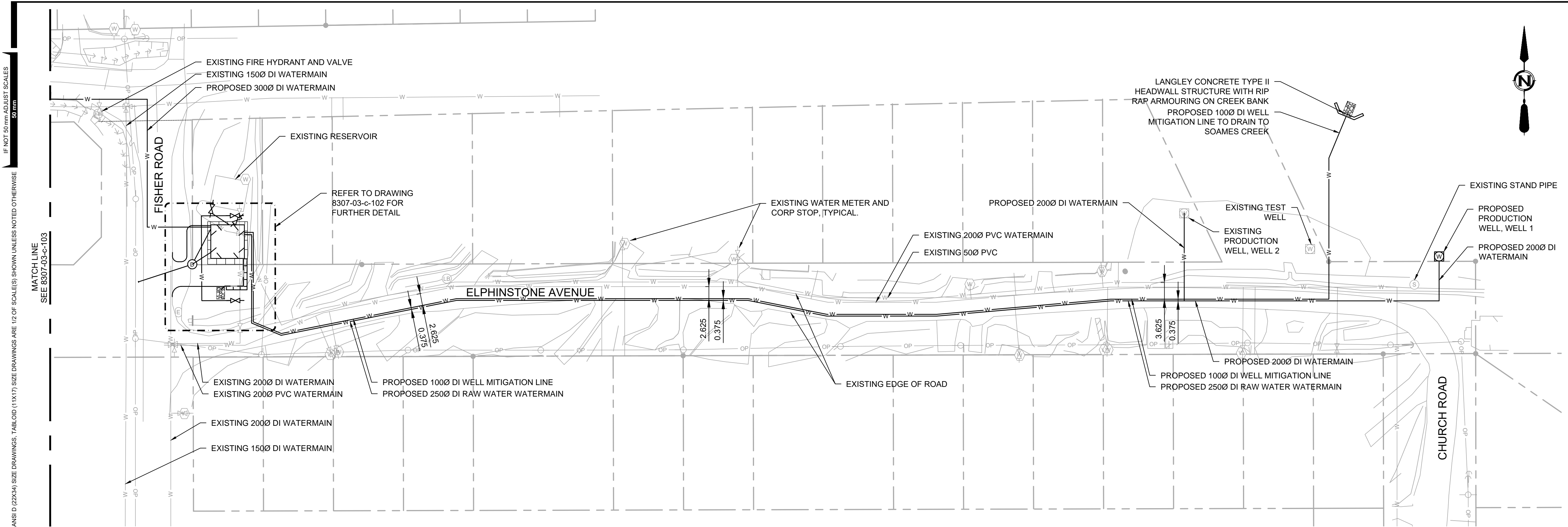
GROUNDWATER INVESTIGATION  
PHASE 3

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SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

CIVIL  
ELPHINSTONE AVENUE PIPE ALIGNMENT

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GENERAL NOTES:

- THE GENERAL NOTES AND STRUCTURAL STANDARD DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.
- READ THIS SET OF DRAWINGS IN CONJUNCTION WITH OTHER CONTRACT DOCUMENTS AND SPECIFICATIONS RELATING TO STRUCTURAL ENGINEERING AND OTHER DISCIPLINES. THESE DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED AN INTEGRAL PART OF THE CONTRACT DOCUMENTS. NEITHER THE DRAWINGS NOR THE SPECIFICATIONS SHALL BE USED ALONE. CONTRACTOR SHALL REPORT OF ANY DISCREPANCIES IMMEDIATELY FOR CLARIFICATION TO THE ENGINEER. IN THE EVENT OF A DISCREPANCY BETWEEN THE VARIOUS DOCUMENTS, THE MORE STRINGENT PROVISIONS SHALL APPLY.
- DESIGN AND CONSTRUCTION TO BE IN ACCORDANCE WITH THE LATEST EDITION CODES, STANDARDS, RULES AND REGULATIONS (AND LOCAL AUTHORITIES HAVING JURISDICTION). THE LATEST EDITION CODE TO GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR THE FOLLOWING NOTES ARE MORE RESTRICTIVE.
- DO NOT CONSTRUCT FROM THESE DRAWINGS UNLESS MARKED "ISSUED FOR CONSTRUCTION" IN THE REVISION COLUMN.
- STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO ARCHITECTURAL, CIVIL, PROCESS MECHANICAL, BUILDING MECHANICAL, ELECTRICAL OR LANDSCAPING TO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPORT OF ANY DISCREPANCIES AND CONFLICTS IMMEDIATELY FOR CLARIFICATION TO THE ENGINEER.
- NO SLEEVES, DUCTS, PIPES OR OTHER OPENINGS SHALL PASS THROUGH STRUCTURAL MEMBERS EXCEPT WHERE DETAILED ON THE DRAWINGS. DO NOT CUT OR DRILL OPENINGS OR GROUPS OF OPENINGS THROUGH STRUCTURAL MEMBERS WITHOUT WRITTEN PERMISSION BY THE ENGINEER. CONTRACTOR TO PROVIDE APPROPRIATE ATTACHMENTS AND CONNECTIONS FOR MECHANICAL, ELECTRICAL, AND OTHER SERVICES WITHOUT CUTTING OR DRILLING.
- FOR CONDITIONS NOT EXPLICITLY SHOWN, CONTRACTOR SHALL REQUEST FOR CLARIFICATION FROM THE ENGINEER.
- BEFORE CONCRETING, ENSURE THAT ALL EMBEDDED ITEMS, SUCH AS ANCHOR BOLTS, SLEEVES AND WATER STOPS ARE IN POSITION AND SECURELY FASTENED IN PLACE TO THE SATISFACTION OF THE ENGINEER.
- ALL DIMENSIONS IN MM UNLESS NOTED OTHERWISE.

FIELD REVIEW AND TESTING:

- CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE WORK AND ENSURING CONFORMANCE TO DRAWINGS AND CONTRACT DOCUMENTS PRIOR TO THE FIELD REVIEW OF THE ENGINEER.
- THE CONTRACTOR SHALL GIVE REASONABLE ADVANCE NOTICE OF WHEN THE STRUCTURAL WORK IS GENERALLY COMPLETED AND READY FOR REVIEW. THE STRUCTURAL WORK CANNOT BE CONCEALED BY FINISHES OR OTHER MEANS WITHOUT PRIOR PERMISSION BY THE ENGINEER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS IN ADVANCE FOR THE FOLLOWING FIELD REVIEWS:
  - CONCRETE REINFORCEMENT BEFORE EACH CONCRETE POUR
  - WOOD FRAMING BEFORE CONCEALMENT
  - STEEL FRAMING BEFORE CONCEALMENT
- THE STRUCTURAL WORK MUST BE SUBSTANTIALLY COMPLETE AT THE TIME OF FIELD REVIEW. ANY WORK FOUND INCOMPLETE OR DEFICIENT AT THE TIME OF FIELD REVIEW MAY REQUIRE ADDITIONAL FIELD REVIEWS BY THE ENGINEER OR ADDITIONAL MATERIAL TESTING AT THE EXPENSE OF THE CONTRACTOR.
- THE FIELD REVIEW IS CONDUCTED FOR THE SOLE PURPOSE OF ENSURING GENERAL CONFORMANCE TO THE DRAWINGS AND CONTRACT DOCUMENTS. THE REVIEW IS CONDUCTED AT ANY STAGE AT THE DISCRETION OF THE ENGINEER AND DOES NOT GUARANTEE THE WORK OF THE CONTRACTOR.

CONSTRUCTION:

- THESE DRAWINGS SHOW THE REQUIREMENTS FOR PERMANENT AND COMPLETED STRUCTURE ONLY. CONTRACTOR IS RESPONSIBLE FOR DESIGNING AND PROVIDING ALL TEMPORARY WORKS INCLUDING BUT NOT LIMITED TO BRACING, FALSEWORK, SHORING, AND TEMPORARY SUPPORTS. TEMPORARY WORKS MUST BE CAPABLE OF TRANSFERRING ALL IMPOSED CONSTRUCTION AND DEAD LOADS WITHOUT EXCEEDING SPECIFIED DESIGN LOADS TO THE STRUCTURE. TEMPORARY WORKS TO BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROJECT PROVINCE/TERRITORY IN ACCORDANCE WITH WCB STANDARDS AND LOCAL RULES AND REGULATIONS.
- THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY.
- BUILDING CONTROL LINES, REFERENCE LINES, GRID LINES AND TEMPORARY BENCH MARKS TO BE CLEARLY IDENTIFIED AND MAINTAINED DURING THE ENTIRE CONSTRUCTION PERIOD.
- ACCURACY OF THE SITE SURVEY AND LAYOUT IS THE RESPONSIBILITY OF THE CONTRACTOR. REMEDIAL ACTIONS RESULTING FROM INACCURACIES, ERRORS AND OMISSIONS WILL BE AT THE CONTRACTOR'S OWN EXPENSE.
- ALL DIMENSIONS, ELEVATIONS AND SLOPES SHALL BE CHECKED AND VERIFIED WITH THE DRAWINGS & EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION AND FABRICATION. DO NOT SCALE DRAWINGS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL UNDERGROUND AND SUB-GRADE SERVICES PRIOR TO COMMENCING SITE WORK.
- CONTRACTOR TO SUBMIT TO THE ENGINEER IN WRITING ALL PROPOSED ALTERNATE PRODUCTS, STRUCTURAL DETAILS, AND STRUCTURAL SYSTEMS, INCLUDING TECHNICAL SPECIFICATIONS, CALCULATIONS AND DATA SHEETS FOR REVIEW AND APPROVAL PRIOR TO COMMENCING WITH WORK. ALTERNATE PRODUCTS MUST HAVE DESIGN PROPERTIES EQUIVALENT TO OR GREATER THAN THOSE SPECIFIED ON THE DRAWINGS AND SPECIFICATIONS.
- CONTRACTOR SHALL PROVIDE MEANS OF PROTECTING EXISTING WORK (EQUIPMENTS, SYSTEMS, FINISHES, FURNISHINGS, ETC.) IN EXISTING AREAS NOT DESIGNATED FOR DEMOLITION OR NEW CONSTRUCTION. ALL WORK AT AND/OR NEAR EXISTING AREAS SHOULD MINIMIZE IMPACTS AND DISRUPTIONS TO THE ONGOING OPERATION OF THE EXISTING COMPONENTS AND SYSTEMS. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND REPLACEMENT OF ANY EXISTING WORK DAMAGED DURING CONSTRUCTION.

DESIGN CODES STANDARDS REGULATIONS:

- BRITISH COLUMBIA BUILDING CODE 2018

DESIGN DATA:

1. FOOTING FOUNDATIONS BEARING PRESSURE 100 kPa (SLS), 150 kPa (ULS)		
2. DESIGN LIVE LOADS (SERVICE):		
DESCRIPTION	UNIFORM (kPa)	CONCENTRATED (kN)
FOUNDATION SLAB	4.8	

- SEISMIC LOADING:
  - SITE CLASS D
  - IMPORTANCE FACTOR  $I_e = 1.5$
  - $S_a(0.2) 0.833$
  - $S_a(0.5) 0.746$
  - $S_a(1.0) 0.425$
  - $S_a(2.0) 0.259$
  - MODIFICATION FACTORS (SEISMIC)  $R_d = 3.0$   
 $R_d = 1.7$
- POST-DISASTER BUILDINGS SHALL HAVE MINIMUM  $R_d$  FACTOR OF 2.0 AND SHOULD BE LIMITED TO 1% DRIFT
- SNOW LOADING:
  - IMPORTANCE FACTOR  $I_s = 1.25$
  - GROUND SNOW LOAD  $S_s = 4.2$  kPa (AS PER GIBONS BYLAW No. 822)
  - RAIN LOAD  $S_r = 0.4$  kPa
- WIND LOADING:
  - IMPORTANCE FACTOR  $I_w = 1.25$
  - WIND 1/10  $q = 0.38$  kPa (AS PER GIBONS BYLAW No. 822)
  - WIND 1/50  $q = 0.49$  kPa (AS PER GIBONS BYLAW No. 822)
- SUPERIMPOSED ROOF DEAD LOAD 1.0 kPa
- SUPERIMPOSED FLOOR DEAD LOAD (PARTITIONS) 1.0 kPa

EXCAVATION & BACKFILL:

- REFER TO GEOTECHNICAL REPORT PREPARED BY ARYA ENGINEERING INC. FILE #19-236-SC, DATED SEPT 2019 FOR DESCRIPTION OF EXISTING SOIL CONDITIONS AND 171-11844-00, SITE PREPARATION REQUIREMENTS.
- ENSURE THE BOTTOM OF EXCAVATION IS UNDISTURBED SOIL, LEVEL AND FREE OF ALL LOOSE, SOFT OR ORGANIC MATTER AND IS PROTECTED AND KEPT DRY DURING EXCAVATION AND DURING CONCRETE PLACEMENT. THOROUGHLY COMPACT THE BASE OF THE EXCAVATION PRIOR TO FOUNDATION CONSTRUCTION IN ORDER TO DENSIFY THE SOIL LOOSENED BY THE EXCAVATION EQUIPMENT.
- ENSURE THAT THE SOIL BELOW A FOUNDATION IS NOT ALLOWED TO FREEZE, EITHER DURING OR AFTER CONSTRUCTION. UNDER NO CIRCUMSTANCES SHALL CONCRETE BE PLACED ON FROZEN SOIL.
- USE HAND-OPERATED COMPACTION EQUIPMENT WITHIN 1m OF WALLS AND FOOTINGS.
- BACKFILL AGAINST GRADE BEAMS AND FOUNDATIONS AS SPECIFIED AFTER CONCRETE HAS ACHIEVED MINIMUM 20 MPa STRENGTH, AND AFTER APPROVAL FROM THE ENGINEER.
- NOTIFY ENGINEER BEFORE COMMENCING WITH EXCAVATION. SOIL CONDITIONS SHALL BE APPROVED BY ENGINEER DURING EXCAVATION AND PRIOR TO CONSTRUCTION OF FORMWORK OR REINFORCEMENT FOR FOUNDATIONS.
- TEST LAYER COMPACTION AS SPECIFIED, FREQUENCY AS FOLLOWS:
  - AT LEAST FOUR (4) RANDOM LOCATIONS FROM SAME LAYER, FOR AT LEAST THREE (3) LAYERS EQUALLY SPACED THROUGH DEPTH.
- THE GEOTECHNICAL ENGINEER SHALL BE NOTIFIED A MINIMUM OF 24 HRS. BEFORE COMMENCEMENT OF EXCAVATION. SOIL CONDITIONS SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER DURING EXCAVATION AND PRIOR TO CONSTRUCTION OF FORMWORK FOR FOUNDATIONS.
- BACKFILL AGAINST RETAINING WALLS ONLY AFTER WALL HAS REACHED 28-DAY CONCRETE COMPRESSIVE STRENGTH. NOTIFY ENGINEER BEFORE BACKFILLING.
- WET WELL EXCAVATION WILL REQUIRE THE INSTALLATION OF DEWATERING MANIFOLD AND WELL-POINTS AT 3m OF EXCAVATION OF DEPTH OR AT THE LEVEL OF GROUND WATER (WHICHEVER IS SHALLOWER). THE WELL POINTS AND MINOFLD SHOULD BE INSTALLED AT A DISTANCE AWAY TO ENABLE 1H:1V EXCAVATION FOR THE WET WELL BASE. REFER TO BRAUN GEOTECHNICAL MEMO FOR FURTHER DETAILS.

CONCRETE:

- PERFORM CONCRETING WORK TO CAN/CSA A23.1.
- TEST CONCRETE IN ACCORDANCE WITH CAN/CSA A23.2.
- CONCRETE MIXES SHALL BE PROPORTIONED IN ACCORDANCE WITH CAN/CSA A23.2 TO MEET THE FOLLOWING REQUIREMENTS:

LOCATION	28 DAY COMPRESSIVE STRENGTH (MPa)	CEMENT TYPE	AIR %	SLUMP mm	NOMINAL COARSE SIZE AGG. mm	EXP. COND.
STRUCTURAL CONCRETE	32	GU	0	60-100	20	N
EXTERIOR APRON SLAB	32	GU	5-8	60-100	20	C-1

- STRUCTURAL CONCRETE SUCH AS CONCRETE CURB AND RAFT SLAB
- WATER/CEMENT RATIO FOR EXPOSURE CLASSES AS PER CAN/CSA A23.1
- MAX W/C = 0.4 / 0.45 MAX.
- LOWER SLUMP MAY BE REQUIRED FOR BENCHING
- WHERE SPECIFIED STRENGTH EXCEEDS THOSE IMPLIED BY EXPOSURE CLASS, SPECIFIED STRENGTH GOVERNS.
- ALL CONCRETE TO BE NORMAL WEIGHT 2400 kg/m³
- MIX DESIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW
- SUPPLEMENTAL FLYASH TO A MAXIMUM OF 20% MAY BE PERMITTED AT THE DISCRETION OF THE ENGINEER.
- SEE SPECIFICATIONS FOR OTHER TYPES OF CONCRETE REQUIREMENTS
- ALL CONCRETE AND MATERIALS THAT MAY COME IN CONTACT WITH POTABLE WATER MUST BE CERTIFIED TO NSF/ANSI 61. CONTRACTOR TO PAY FOR FOR NSF/ANSI 61 TESTING OF PRODUCTS THAT HAVE NOT BEEN PRE-CERTIFIED. ALL WATERTIGHT CONCRETE AS DEFINED ABOVE SHALL BE NSF CERTIFIED, EXCLUDING THE RESIDUAL TANK AND TRENCHES.
- STRENGTH OF CONCRETE TO BE DETERMINED BY FIELD-CURED CYLINDERS. ALTERNATE METHODS, IF ACCEPTABLE TO THE ENGINEER, MAY BE USED.
- LOCATIONS & DETAILS OF CONSTRUCTION JOINTS NOT SHOWN ON DRAWINGS ARE TO BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
- BEFORE CONCRETE PLACEMENT, ENSURE THAT ALL EMBEDDED ITEMS SUCH AS ANCHOR BOLTS, SLEEVES, AND WATER STOPS ARE IN POSITION AND SECURELY FASTENED IN PLACE TO THE SATISFACTION OF THE ENGINEER.
- ANCHOR BOLTS AND DOWELS SHALL BE PLACED BEFORE CONCRETE IS POURED. TEMPLATES SHALL BE USED TO ENSURE CORRECT PLACEMENT OF ANCHOR BOLTS AND DOWELS. DOWELS TO MATCH VERTICAL BARS IN SIZE AND SPACING.
- BEFORE PLACING CONCRETE, ENSURE THAT THE REINFORCING STEEL AND FORMS ARE CLEAN, FREE OF LOOSE SCALE, DIRT AND OTHER FOREIGN MATERIALS WHICH WOULD REDUCE THE BOND BETWEEN THE REINFORCING STEEL AND THE CONCRETE.
- ALL EXPOSED CONCRETE CORNERS TO HAVE 20x20 CHAMFER.
- SAWCUT OR HAND-TOOL CONTROL JOINTS IN THE SEQUENCE THE CONCRETE APRON IS CAST WITH AT LEAST A MINIMUM JOINT DEPTH OF ¼ THE SLAB THICKNESS.

- SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL:

- CONCRETE MIX DESIGN
- DETAIL AND LOCATION OF CONSTRUCTION JOINTS
- CONCRETE TEST RESULTS

SHOP DRAWINGS AND SPECIALTY ENGINEER:

- CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE SHOP DRAWINGS AND ENSURING CONFORMANCE TO DRAWINGS AND CONTRACT DOCUMENTS PRIOR TO THE SHOP DRAWING REVIEW OF THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL SUB-TRADES, SUBCONTRACTORS, SUPPLIERS AND SUPPORTING REGISTERED PROFESSIONALS.
- SUBCONTRACTORS AND SUPPLIERS SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER AND CONTRACTOR FOR REVIEW PRIOR TO FABRICATION. SHOP DRAWINGS ARE TO BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROJECT PROVINCE/TERRITORY WHO WILL BE THE SUPPORTING REGISTERED PROFESSIONAL (SRP) RESPONSIBLE FOR THE DESIGN AND FIELD REVIEW OF THE PARTICULAR COMPONENT OR SYSTEM.
- THE SUPPORTING REGISTERED PROFESSIONAL (SRP) SHALL CONDUCT FIELD REVIEWS DURING CONSTRUCTION AT THE DISCRETION OF THE SRP AND SUBMIT A WRITTEN FIELD REVIEW REPORT TO THE ENGINEER. THE SRP SHALL SUBMIT SEALED LETTERS OF ASSURANCE B AND C-B OR SCHEDULES S-B AND S-C FOR ASSURANCE OF DESIGN AND FIELD REVIEW OF THE PARTICULAR COMPONENT OR SYSTEM.
- THE SHOP DRAWING REVIEW IS CONDUCTED FOR THE SOLE PURPOSE OF ENSURING GENERAL CONFORMANCE TO THE DESIGN CONCEPT. THE SHOP DRAWING REVIEW DOES NOT GUARANTEE THE SUBCONTRACTOR OR SUPPLIER'S DESIGN, DETAILS, QUANTITIES, DIMENSIONS, METHOD OF CONSTRUCTION, AND SAFETY MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR ANY ERRORS/AND OR OMISSIONS IN THE SHOP DRAWINGS AND MEETING THE REQUIREMENTS OF THE CONSTRUCTION AND CONTRACT DOCUMENTS.
- THE SHOP DRAWINGS SHALL INDICATE THE METHOD AND MEANS OF ATTACHMENT TO THE PRIMARY STRUCTURAL SYSTEM AS WELL AS THE DESIGN LOADS AND CRITERIA USED AS THE BASIS OF DESIGN OF THE PARTICULAR COMPONENT OR SYSTEM.

REINFORCEMENT:

- REINFORCING STEEL: NEW DEFORMED BARS TO CSA G30.18. "BILLET" STEEL BARS FOR CONCRETE REINFORCEMENT, WITH MIN. YIELD STRENGTH OF 400W MPa. WELDED WIRE FABRIC CONFORM TO CSA G30.5 WITH MIN. YIELD STRENGTH OF 450MPa. PLACE REBAR TO CSA/CAN A23.1. REINFORCEMENT REQUIREMENTS ARE SHOWN ON DETAIL DRAWINGS. WHERE DETAILS OF BAR SIZING AND SPACING ARE NOT SHOWN, ALLOW FOR MINIMUM REINFORCEMENT IN ACCORDANCE WITH CSA/CAN A23.1
- PROVIDE CLEAR CONCRETE COVER OVER REBAR AS FOLLOWS U.N.O.:

CONCRETE PLACED DIRECTLY ON GROUND	75mm
FORMED SURFACES EXPOSED TO WEATHER & SEWAGE	
· WALLS AND SLABS	50mm
· BEAM PRINCIPAL REINFORCING	50mm
· BEAM STIRRUPS	40mm
TOP SLAB REINF. & BEAM STIRRUPS IN BUILDING	40mm
FORMED SURFACES EXPOSED TO EARTH	50mm
- REBAR SPLICE LENGTHS (UNLESS NOTED OTHERWISE):  
LENGTHS SHOWN ARE IN mm

REBARS		10M	15M	20M	25M	30M	35M
WALLS	HORIZONTAL	500	650	800	1300	1700	2000
	VERTICAL	400	600	750	1000	1300	1500
SLABS	TOP	500	700	900	1400	1700	2000
	BOTTOM	400	600	800	1100	1300	1500

- LAP WIRE MESH REINFORCING 200mm AND MINIMUM 2 LONGITUDINAL MESH BARS.
- UNLESS OTHERWISE NOTED, EDGE OF ALL SLABS SHALL HAVE 2-15M CONT. LAPPED 600mm
- UNLESS NOTED OTHERWISE, ALL OPENINGS IN SLAB SHALL HAVE 2-15M BARS PARALLEL TO ALL EDGES EXTENDING BEYOND CORNERS 600mm
- ALL REINFORCEMENT REQUIRED TO BE WELDED SHALL BE GRADE 400W (WELDABLE)
- PLACE ADDITIONAL REINFORCEMENT AT ALL OPENINGS FOR PIPING, MECHANICAL AND ELECTRICAL EQUIPMENT, DOORS AND OTHER OPENINGS UNLESS NOTED OTHERWISE.
- PLACE REINFORCING BARS SYMMETRICALLY OVER SUPPORTS AND SYMMETRICALLY IN SPANS UNLESS NOTED OTHERWISE.
- UNLESS NOTED OTHERWISE, SLAB REINFORCING SHALL NOT BE CUT AT OPENINGS. SPREAD REINFORCING AROUND OPENINGS.
- PROVIDE SUFFICIENT CHAIRS AND SUPPORT BARS TO MAINTAIN SPECIFIED CONCRETE COVER AND TO SECURE REINFORCING STEEL IN PLACE DURING CONCRETE PLACEMENT.
- RESERVE MINIMUM OF 1% TOTAL VOLUME OF REINFORCEMENT TO BE USED AS DIRECTED BY THE ENGINEER FOR FIELD ADJUSTMENT.
- SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL:
  - SHOP DRAWING DETAILING ALL REINFORCEMENT (METRIC).
- REINFORCEMENT REQUIREMENTS ARE SHOWN ON DETAIL DRAWINGS. WHERE DETAILS OF BAR SIZING AND SPACING ARE NOT SHOWN, ALLOW FOR A MINIMUM 0.5% REINFORCING IN EACH DIRECTION, EACH FACE.



PRELIMINARY/  
FOR DISCUSSION  
NOT FOR CONSTRUCTION

DRAFT

A	2019NOV8	D. WOO	S. ROOT	ISSUED FOR PRELIMINARY DESIGN
REV	DATE	DESIGN	DRAWN	DESCRIPTION

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

ARCHITECTURAL  
GENERAL NOTES  
SHEET 1

DRAWING	REVISION	SHEET
8307-03-A-001	A	7



TIMBER:

1. TIMBER CONSTRUCTION SHALL CONFORM TO CSA 086 AND PART 9 OF THE B.C BUILDING CODE.
2. JOIST HANGERS AND FRAMING ANCHORS TO BE CAPABLE OF SUPPORTING LOADS INDICATED WITH MINIMUM CAPACITY OF 750LB. (3.5kN) AND TO BE MINIMUM 18GA. (1.21mm) GALVANIZED SHEET METAL MATERIAL. NAIL TO MANUFACTURER'S INSTRUCTIONS. USE COATED SPIRAL NAILS TO CSA B111. FASTEN TO MANUFACTURER'S INSTRUCTIONS UNLESS SHOWN OTHERWISE.
3. WOOD FRAMING MATERIAL (UNLESS NOTED OTHERWISE):

JOISTS, LINTELS, BUILT-UP BEAMS:

- KILN DRIED: D. FIR-L NO. 1 (S-DRY)

EXTERIOR WALL STUDS:

- KILN DRIED: S-P-F NO. 1 (S-DRY) OR BETTER

INTERIOR PARTITION WALL STUDS:

- KILN DRIED: S-P-F STUD GRADE OR BETTER

TRUSSES:

- KILN DRIED: S-P-F STUD GRADE OR BETTER

WALL PLATES:

- KILN DRIED: S-P-F STUD GRADE OR BETTER

PLYWOOD SHEATHING:

- DOUGLAS FIR PLYWOOD (DFP) SHEATHING (SHG) TONGUE AND GROOVE (T&G) PLYWOOD TO CSA O121

4. CONNECT ALL NON-LOAD BEARING PARTITIONS TO THE STRUCTURE ABOVE. CONNECTION TO ALLOW FOR VERTICAL DEFLECTION OF THE STRUCTURE.
5. ALL LUMBER IN DIRECT CONTACT WITH MASONRY OR CONCRETE SHALL BE SEPARATED BY 45LB. BUILDING PAPER, FOAM GASKET MATERIAL, 6 MIL POLYETHYLENE FILM OR EQUAL.

6. PLYWOOD NAILING REQUIREMENTS (UNLESS NOTED OTHERWISE):

WALL SHEATHING:

- AT PANEL EDGES 100mm O.C.
- AT INTERMEDIATE FRAMING MEMBERS 300mm O.C.

ROOF SHEATHING:

- AT PANEL EDGES 100mm O.C.
- AT INTERMEDIATE FRAMING MEMBERS 300mm O.C.

PLYWOOD NAILING SHALL NOT BE OVERDRIVEN OR EMBEDDED INTO THE PLYWOOD SHEATHING.

7. FASTENINGS:
- CONNECT ALL MEMBERS TOGETHER USING COMMON WIRE NAILS, BOLTS, OR SCREWS. DO NOT USE STAPLES. PNEUMATIC NAILS (P-NAILS) TO BE EQUAL TO OR BETTER THAN THE COMMON WIRE NAIL SPECIFICATIONS.

UNLESS NOTED OTHERWISE, ALL WALL PLATES SHALL BE ANCHORED TO FOUNDATIONS WITH 16mm (5/8") DIAMETER ANCHOR BOLTS AT 1200mm O/C

ALL FRAMING HARDWARE IS REFERRED TO ON THE STRUCTUAL DRAWINGS AS "SIMPSON STRONG-TIE" PRODUCTS. OTHER APPROVED CONNECTORS WITH EQUIVALENT LOAD VALUES MAY BE USED. THE CONNECTORS SHOULD BE COATED WITH A FINISH SUITABLE FOR THE SERVICE CONDITION PRESENT DURING AND AFTER CONSTRUCTION. EXTERIOR EXPOSED HARDWARE TO BE GALVANIZED. ALL HARDWARE (HANGERS, TIES, CONNECTORS, ETC.) SHALL BE INSTALLED AS PER THE MANUFACTURER'S REQUIREMENTS.

8. KEEP ALL WOOD PRODUCTS CONSTANTLY PROTECTED IN TRANSIT AND DURING CONSTRUCTION. STORE WOOD PRODUCTS OFF THE GROUND AND LEVEL WITH THE GROUND WITH SPACER BLOCKS PLACED ALONG THE LENGTH OF THE MEMBER.

9. SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL NO LATER THAN THREE WEEKS PRIOR TO CONSTRUCTION:

- TRUSS DRAWINGS. SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA

STRUCTURAL STEEL AND FABRICATIONS:

1. FABRICATE AND ERECT STRUCTURAL STEEL TO CSA CAN-S16.1 SUBMIT SHOP DRAWINGS SHOWING ALL DETAILS AND MATERIAL SPECIFICATIONS FOR REVIEW PRIOR TO FABRICATION.

2. PROVIDE STRUCTURAL STEEL TO CSA G40.21 WITH THE FOLLOWING GRADES:

- WIDE FLANGE BEAMS AND COLUMNS 350W
- CHANNEL S AND ANGLES 300W
- HSS SECTIONS (CLASS C) 350W
- STRUCTURAL BARS AND PLATES 300W
- MISCELLANEOUS STEEL 300W

3. PROVIDE ERECTION BOLTS TO ASTM A325, MINIMUM 19mm DIAMETER. DESIGN BOLTED CONNECTIONS TO ASTM A325 FOR THREADS EXCLUDED FROM SHEAR PLANE. TIGHTEN BOLTS BY THE "TURN OF NUT" METHOD TO BOLT TENSIONS SPECIFIED IN CSA S16.1 ANCHOR BOLTS TO ASTM A307 (UNLESS NOTED OTHERWISE)

4. WELD TO CSA W59 BY FABRICATORS CERTIFIED TO CSA W47.1 DIV. 1 OR DIV. 2.1.1. WELDING OF REINFORCING SHALL CONFORM TO CSA W186.

5. MINIMUM WELDS FOR CONNECTIONS SHALL BE 6mm FILLET WELD AND WHERE EXPOSED IN FINISHED BUILDING, WELD SHALL BE GROUND SMOOTH.

6. NO BURNING OF HOLES SHALL BE ALLOWED IN STRUCTURAL STEEL.

7. ALL STEEL STUD TO CONFORM TO CAN/CSA-S136, 228 MPa MIN.

8. GALVANIZED STEEL TO BE HOT DIP GALVANIZED TO CSA-G-164.

9. NON-GALVANIZED STEEL TO BE PAINTED WITH A SUITABLE PAINT SYSTEM APPROVED BY ARCHITECT.

10. STEEL CONNECTIONS FOR THE HIGHER OF THE FORCES AS INDICATED ON THE DRAWINGS. ALL CONNECTIONS SHALL BE SHOP WELDED AND FIELD BOLTED UNLESS NOTED OTHERWISE. DESIGN BOLTED CONNECTIONS ASSUMING THE BOLT THREADS INTERCEPT THE SHEAR PLANE. CONNECTIONS SHALL BE DESIGNED TO TRANSFER FORCES THROUGH THE CENTERLINE OF MEMBERS WITHOUT IMPOSING ROTATIONAL LOADS.

11. DESIGN CONNECTIONS FOR THE HIGHER OF THE FORCES AS INDICATED ON THE DRAWINGS OR FOR FACTORED END SHEAR OF A MINIMUM 60% OF THE TOTAL BEAM LOAD CAPACITY AS LISTED IN THE BEAM LOAD TABLES OF HE CISC HANDBOOK.

12. SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL:

- SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY SUPPORTING REGISTERED PROFESSIONAL FOR THE CONNECTION DESIGN OF STEEL-TO-STEEL CONNECTIONS.
- FIELD REVIEW REPORT FROM SUPPORTING REGISTERED PROFESSIONAL
- SCHEDULES S-B AND S-C FROM SUPPROTING REGISTERED PROFESSIONAL

NON-STRUCTURAL ELEMENTS:

1. DESIGN OF NON-STRUCTURAL AND SECONDARY STRUCTURAL ELEMENTS IS NOT THE RESPONSIBILITY OF THE ENGINEER-OF-RECORD. SUCH COMPONENTS OF THE PROJECT SHALL BE DESIGNED, DETAILED, SPECIFIED AND REVIEWED IN THE FIELD BY A SUPPORTING REGISTERED PROFESSIONAL. EXAMPLES OF NON-STRUCTURAL COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO:

- HANDRAILS, GUARDRAILS AND RAILINGS
- CURTAIN WALL SYSTEMS, SKYLIGHTS AND GLAZING
- INTERIOR AND EXTERIOR STEEL STUD WALLS AND JOISTS
- ROOFING SYSTEMS AND WALL CLADDING SYSTEMS
- ANCHORAGE, SUPPORTS AND BRACINGS OF ELECTRICAL, PROCESS MECHANICAL AND BUILDING MECHANICAL SYSTEMS AND OTHER EQUIPMENT (EX: PIPING, DUCTING, CABLE TRAYS, TANKS, SODA ASH FRAME, ETC.) FOR BOTH GRAVITY AND LATERAL LOADS
- ATTACHED AND FREE-STANDING SIGNAGE STRUCTURES
- CEILING SYSTEMS

2. STRUCTURAL DESIGN OF NON-STRUCTURAL AND SECONDARY STRUCTURAL ELEMENTS IS TO BE PERFORMED BY SUPPORTING REGISTERED PROFESSIONAL RETAINED BY THE CONTRACTOR AND/OR SUPPLIER IN ACCORDANCE TO PART 4 OF THE BUILDING CODE.

3. IN ADDITION TO CONSTRUCTION TOLERANCE, NON-STRUCTURAL AND SECONDARY STRUCTURAL ELEMENTS ARE TO BE DESIGNED FOR VERTICAL DEFLECTIONS AND HORIZONTAL DEFLECTIONS OF THE PRIMARY STRUCTURE.

4. NON-STRUCTURAL AND SECONDARY STRUCTURAL ELEMENTS ARE TO BE DESIGNED TO MINIMIZE TORSIONAL LOADING TO THE PRIMARY STRUCTURAL ELEMENTS.

5. SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL:
- SHOP DRAWING AND CALCULATIONS SIGNED AND SEALED BY SUPPORTING REGISTERED PROFESSIONAL SHOWING THE ELEMENT, DESIGN LOADS, LOADS IMPOSED ON THE PRIMARY STRUCTURE, AND METHOD OF ATTACHMENT TO PRIMARY STRUCTURE
  - FIELD REVIEW REPORT FROM SUPPORTING REGISTERED PROFESSIONAL TO THE RESPECTIVE ELECTRICAL, BUILDING MECHANICAL, PROCESS MECHANICAL ENGINEER-OF-RECORD
  - SCHEDULES S-B AND S-C FROM SUPPORTING REGISTERED PROFESSIONAL TO THE RESPECTIVE ELECTRICAL, BUILDING MECHANICAL, PROCESS MECHANICAL ENGINEER-OF-RECORD.



PRELIMINARY/  
FOR DISCUSSION  
NOT FOR CONSTRUCTION  
DRAFT

A	2019NOV8	D. WOO	S. ROOT	ISSUED FOR PRELIMINARY DESIGN
REV	DATE	DESIGN	DRAWN	DESCRIPTION

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

ARCHITECTURAL  
GENERAL NOTES  
SHEET 2

DRAWING	REVISION	SHEET
8307-03-A-002	A	8

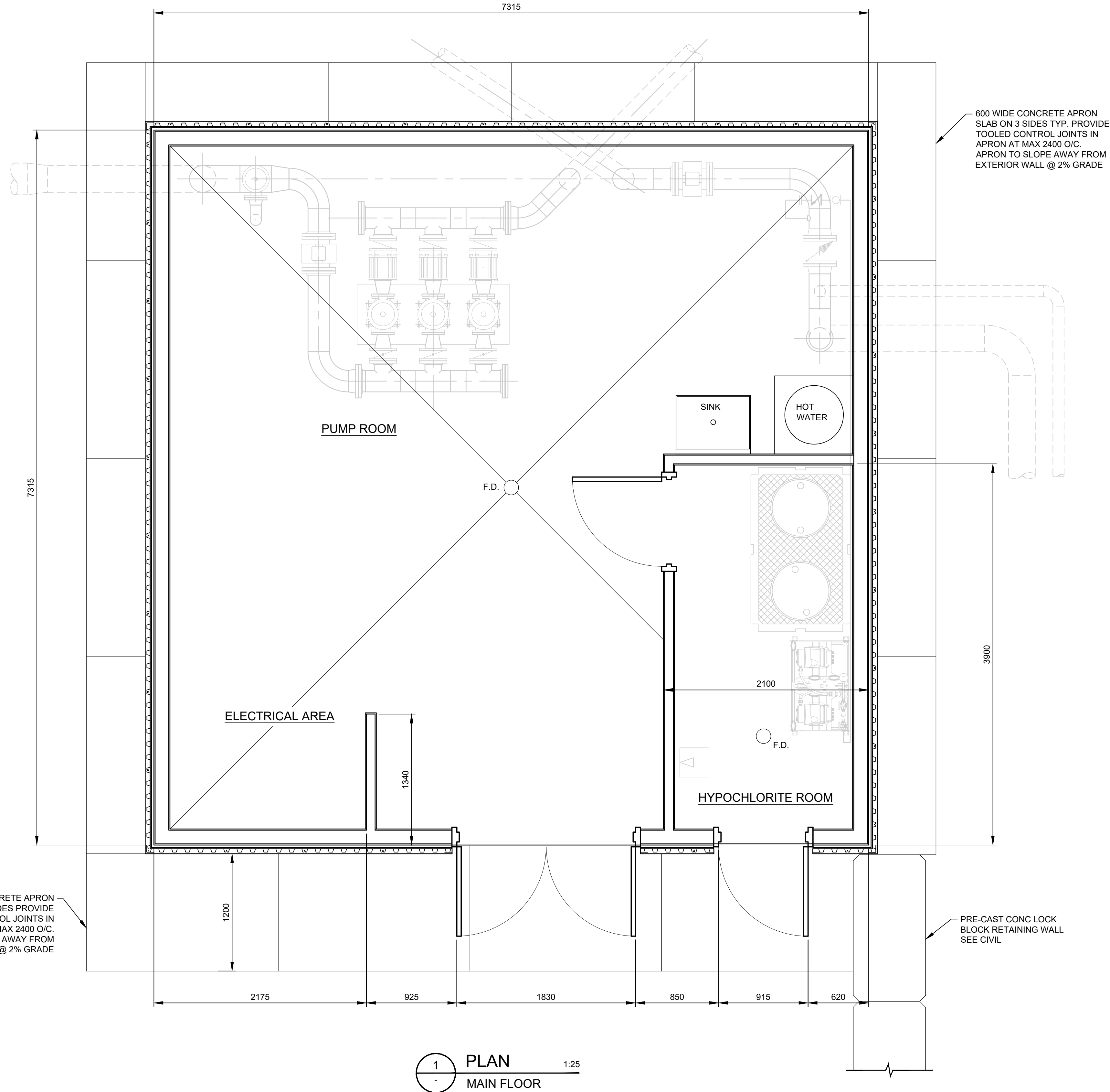
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SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22x34) SIZE DRAWINGS. TABLOID (11x17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE

IF NOT 50 mm ADJUST SCALES  
30 mm



1200 WIDE CONCRETE APRON  
SLAB ON SOUTH SIDES PROVIDE  
TOOLED CONTROL JOINTS IN  
APRON AT MAX 2400 O/C.  
APRON TO SLOPE AWAY FROM  
EXTERIOR WALL @ 2% GRADE



600 WIDE CONCRETE APRON  
SLAB ON 3 SIDES TYP. PROVIDE  
TOOLED CONTROL JOINTS IN  
APRON AT MAX 2400 O/C.  
APRON TO SLOPE AWAY FROM  
EXTERIOR WALL @ 2% GRADE

PRE-CAST CONC LOCK  
BLOCK RETAINING WALL  
SEE CIVIL

1 PLAN  
MAIN FLOOR  
1:25

PRELIMINARY/  
FOR DISCUSSION  
NOT FOR CONSTRUCTION  
DRAFT

REV	DATE	DESIGN	DRAWN	DESCRIPTION
A	2019NOV8	D. WOO	S. ROOT	ISSUED FOR PRELIMINARY DESIGN

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

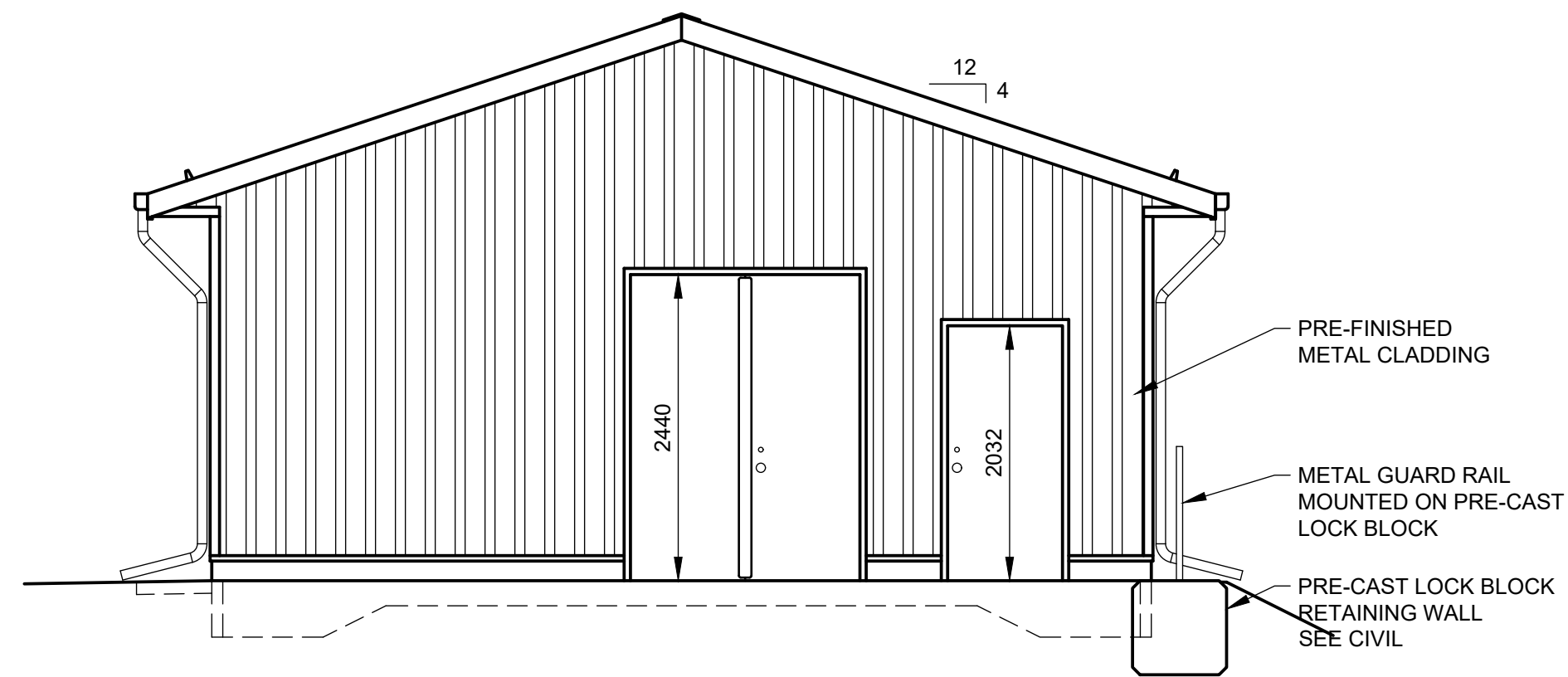
ARCHITECTURAL  
MAIN FLOOR PLAN

DRAWING	REVISION	SHEET
8307-03-A-100	A	9

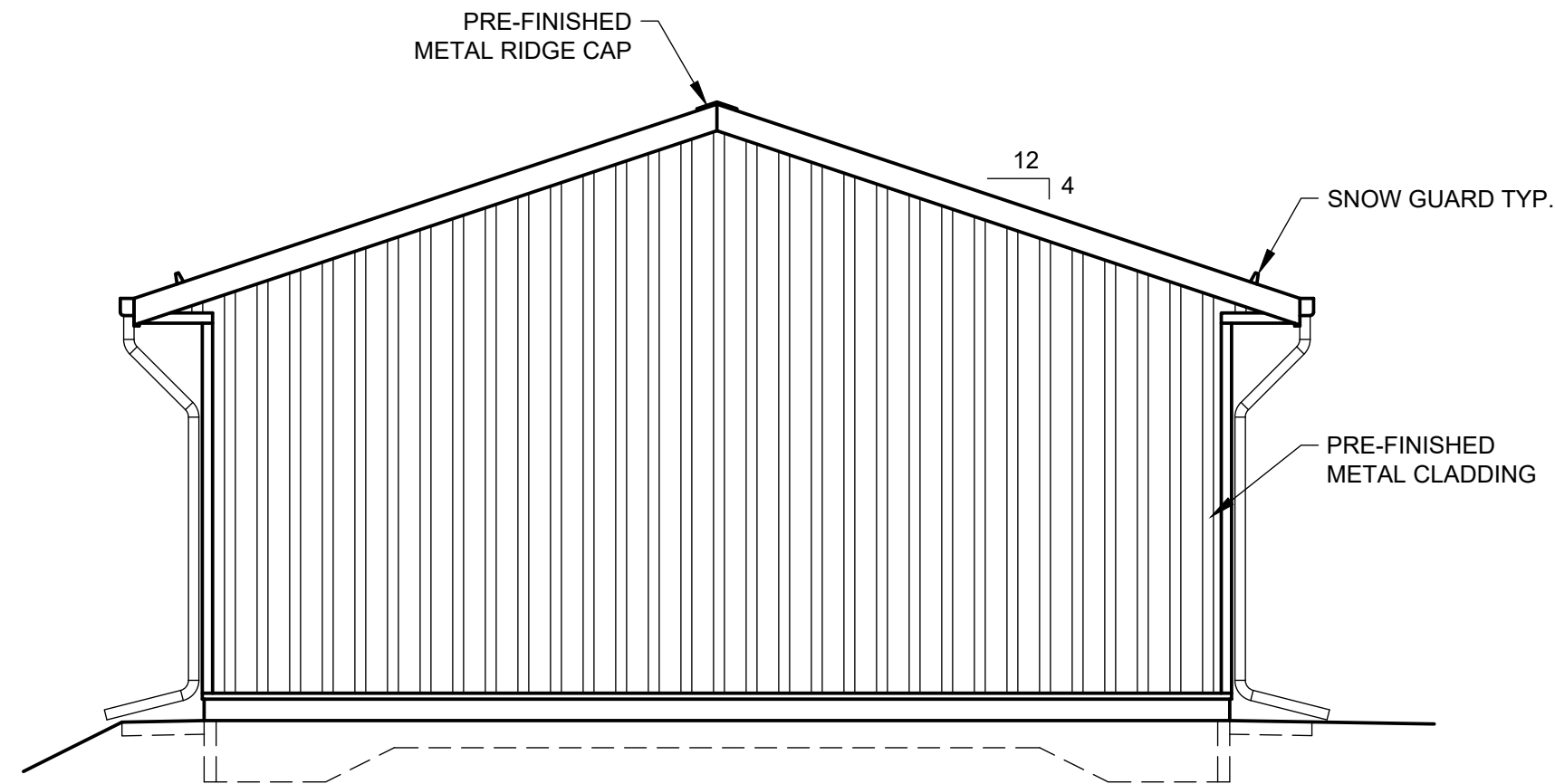
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SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22x34) SIZE DRAWINGS. TABLOID (11x17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE

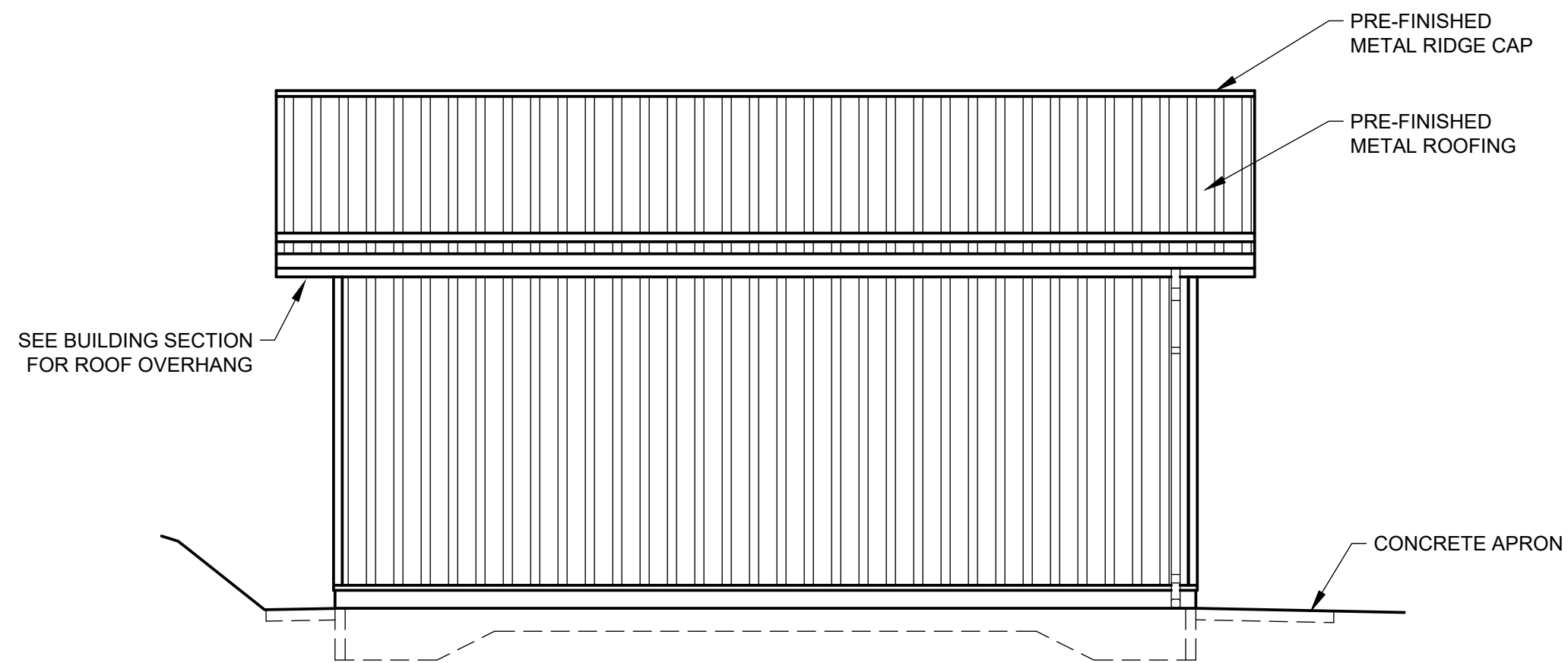
IF NOT 50 mm ADJUST SCALES  
50 mm



1 ELEVATION 1:50  
SOUTH



2 ELEVATION 1:50  
NORTH



3 ELEVATION 1:50  
WEST (EAST SIMILAR)

PRELIMINARY/  
FOR DISCUSSION  
NOT FOR CONSTRUCTION

DRAFT

A	2019NOV8	D. WOO	S. ROOT	ISSUED FOR PRELIMINARY DESIGN
REV	DATE	DESIGN	DRAWN	DESCRIPTION

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

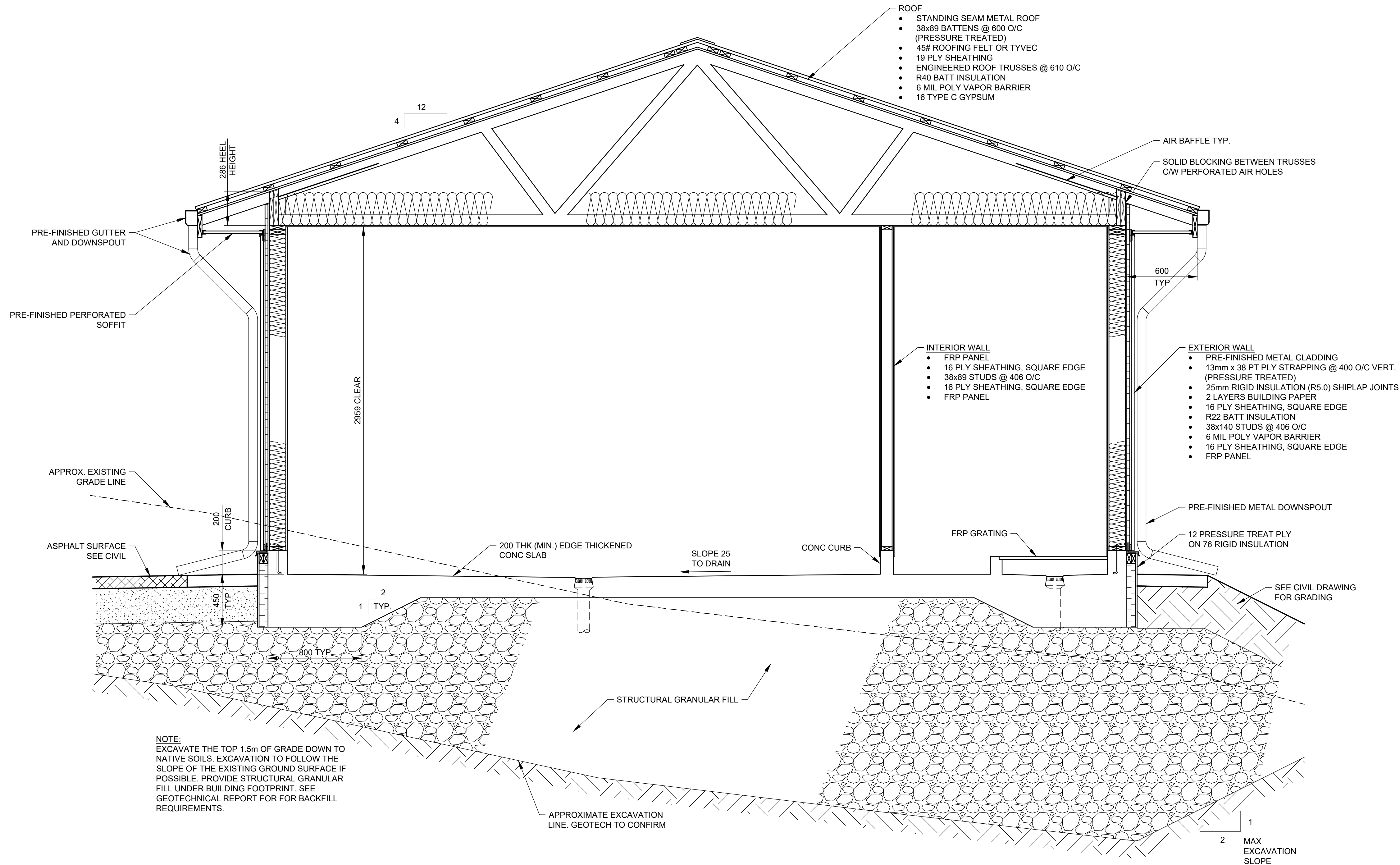
ARCHITECTURAL  
ELEVATIONS

DRAWING	REVISION	SHEET
8307-03-A-201	A	10



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IF NOT 50 mm ADJUST SCALES  
30 mm  
SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22x34) SIZE DRAWINGS. TABLOID (11x17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE



1 SECTION  
A-101 BUILDING 1:20

PRELIMINARY/  
FOR DISCUSSION  
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DRAFT

REV	DATE	DESIGN	DRAWN	DESCRIPTION
A	2019NOV8	D. WOO	S. ROOT	ISSUED FOR PRELIMINARY DESIGN

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

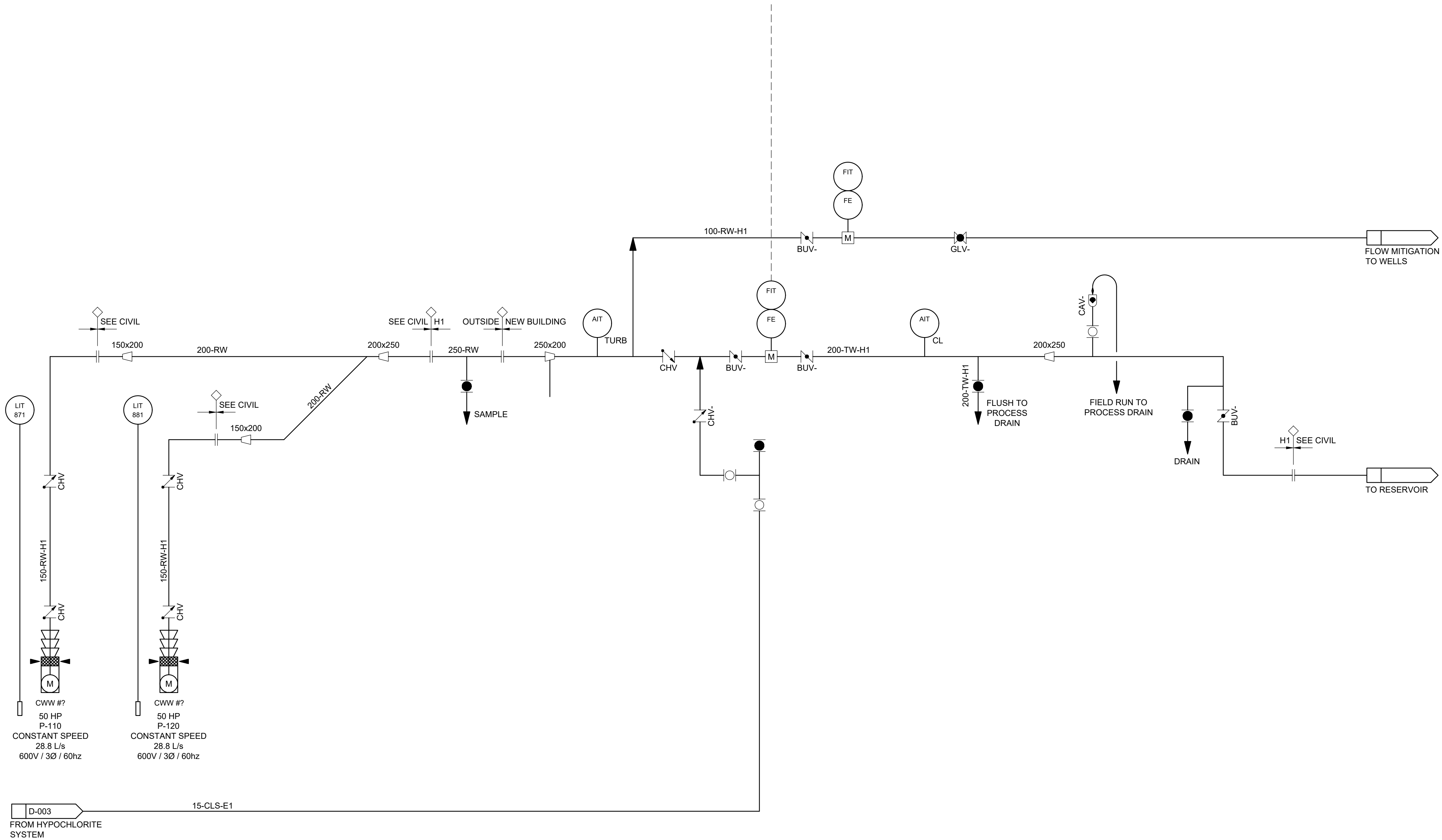
ARCHITECTURAL  
BUILDING SECTION

DRAWING	REVISION	SHEET
8307-03-A-301	A	11



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IF NOT 50 mm ADJUST SCALES  
30 mm  
SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22x34) SIZE DRAWINGS. TABLOID (11x17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE



EQUIPMENT DATA

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DRAFT

REV	DATE	DESIGN	DRAWN	DESCRIPTION
A	2019NOV08	M. LOZIE	S. ROOT	ISSUED FOR PRELIMINARY DESIGN

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

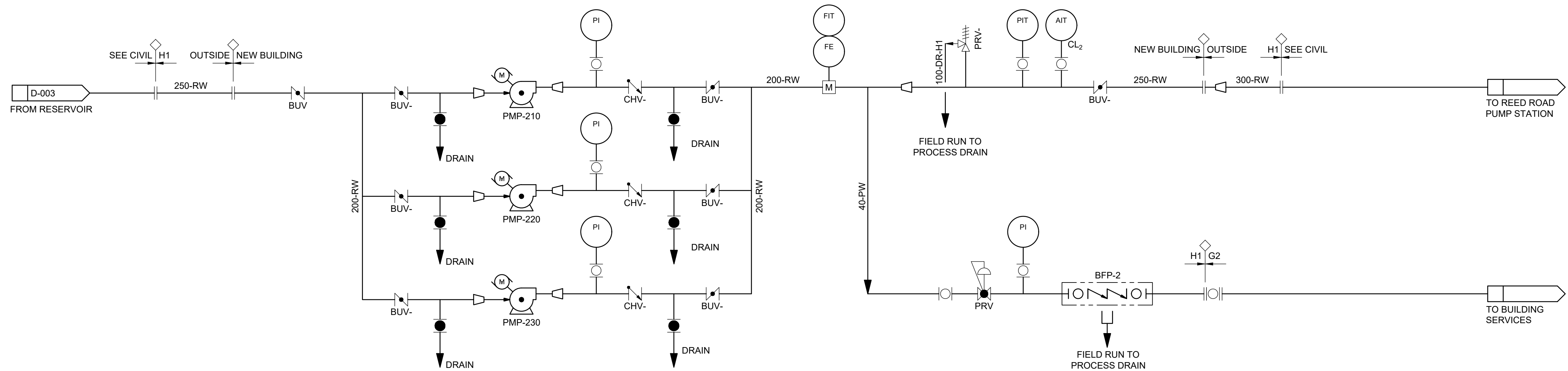
SCALE: AS SHOWN

PROCESS  
P&ID  
SHEET 1

DRAWING	REVISION	SHEET
8307-03-D-001	A	12

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SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22x34) SIZE DRAWINGS. TABLOID (11x17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE  
IF NOT 50 mm ADJUST SCALES  
30 mm



EQUIPMENT DATA

PRELIMINARY/  
FOR DISCUSSION  
NOT FOR CONSTRUCTION  
DRAFT

A	2019NOV08	M. LOZIE	S. ROOT	ISSUED FOR PRELIMINARY DESIGN
REV	DATE	DESIGN	DRAWN	DESCRIPTION

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

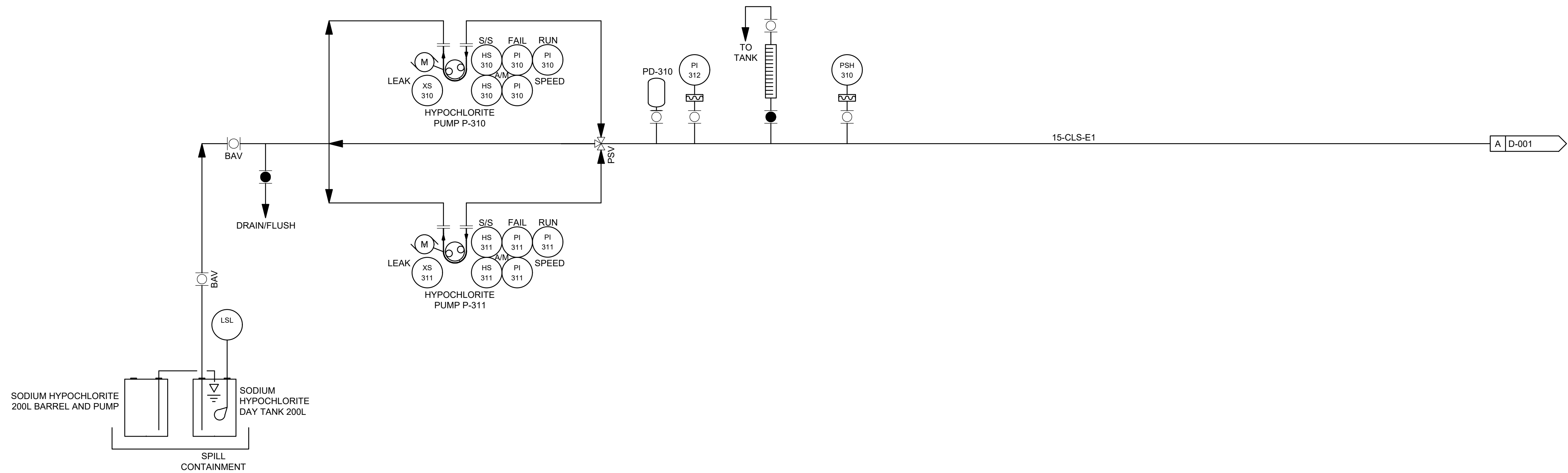
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P&ID  
SHEET 2

DRAWING	REVISION	SHEET
8307-03-D-002	A	13



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IF NOT 50 mm ADJUST SCALES  
30 mm  
SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22x34) SIZE DRAWINGS. TABLOID (11x17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE



EQUIPMENT DATA

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FOR DISCUSSION  
NOT FOR CONSTRUCTION  
DRAFT

A	2019NOV08	M. LOZIE	S. ROOT	ISSUED FOR PRELIMINARY DESIGN
REV	DATE	DESIGN	DRAWN	DESCRIPTION

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

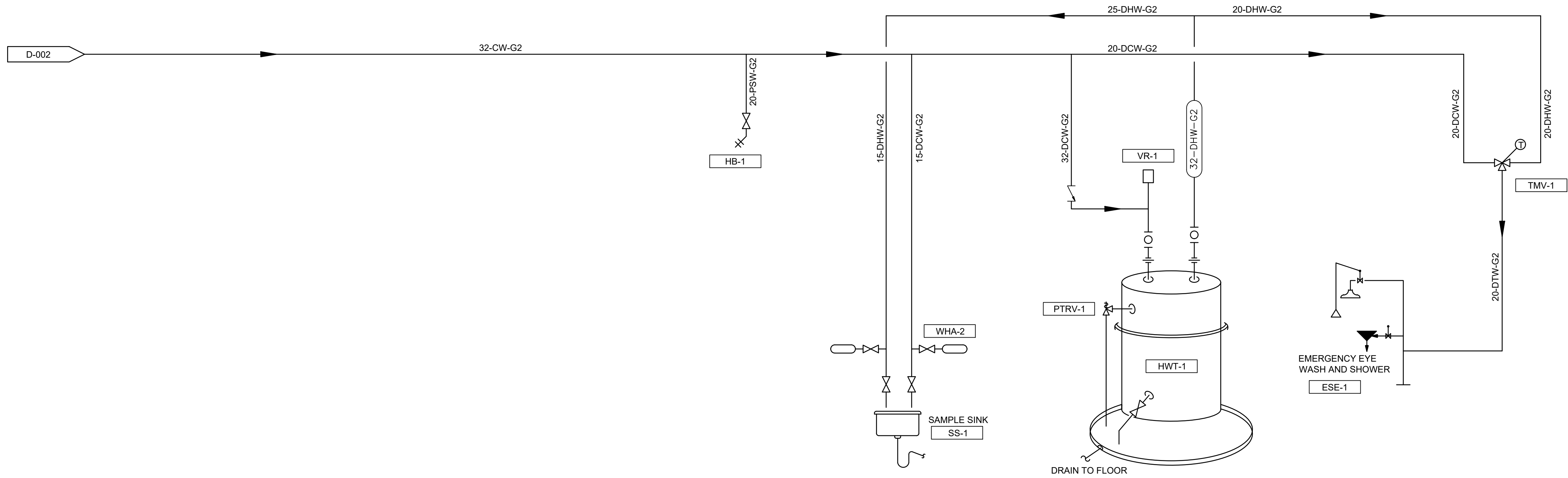
SCALE: AS SHOWN

PROCESS  
P&ID  
SHEET 3

DRAWING	REVISION	SHEET
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IF NOT 50 mm ADJUST SCALES  
30 mm  
SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22x34) SIZE DRAWINGS, TABLOID (11x17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE



PLUMBING SYSTEM SCHEMATIC  
N.T.S.

EQUIPMENT DATA

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NOT FOR CONSTRUCTION  
DRAFT

A	2019NOV08	M. LOZIE	S. ROOT	ISSUED FOR PRELIMINARY DESIGN
REV	DATE	DESIGN	DRAWN	DESCRIPTION

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

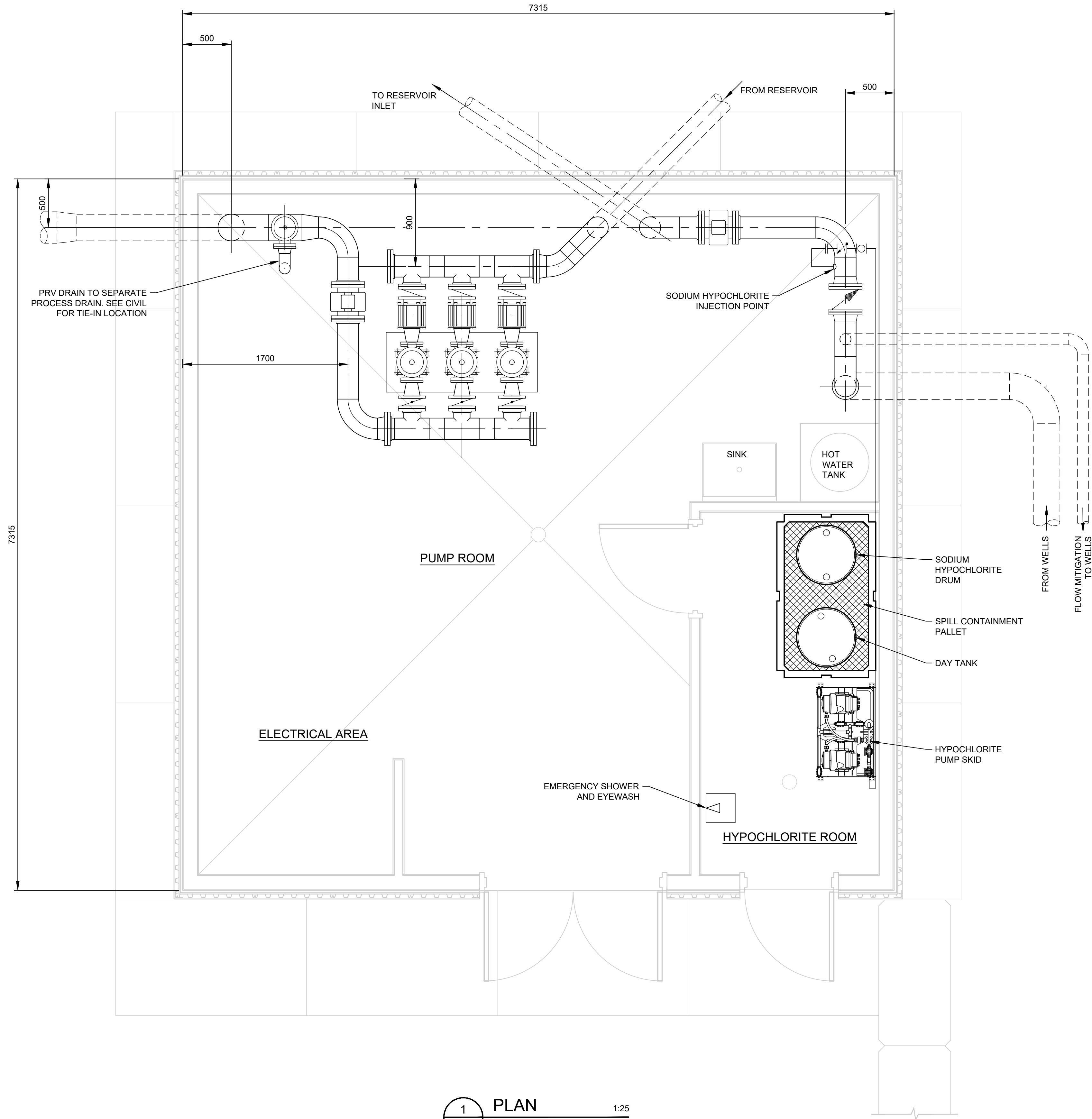
PROCESS  
P&ID  
SHEET 4

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SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22x34) SIZE DRAWINGS. TABLOID (11x17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE

IF NOT 50 mm ADJUST SCALES  
30 mm



1 PLAN  
PUMP HOUSE LAYOUT 1:25

PRELIMINARY/  
FOR DISCUSSION  
NOT FOR CONSTRUCTION  
**DRAFT**

A	2019NOV08	M. LOZIE	S. ROOT	ISSUED FOR PRELIMINARY DESIGN
REV	DATE	DESIGN	DRAWN	DESCRIPTION

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

PROCESS  
PIPING LAYOUT PLAN

DRAWING	REVISION	SHEET
8307-03-D-100	A	16



## LAYOUT SYMBOLS

	<b>CABLE, CONDUIT &amp; WIRE</b> CONDUIT RUN ON SURFACE (WALL OR CEILING) CONDUIT RUN IN SLAB (OR BELOW GRADE) CONDUIT CAPPED CONDUIT GOING UP CONDUIT GOING DOWN FLEXIBLE CONDUIT CONDUIT HOME RUN c/w NUMBER OF WIRES CONDUIT SEAL WP-WEATHERPROOF, EP-EXPLOSION PROOF CONDUIT UNION CONDUIT EXPANSION JOINT CONDUIT BEND BARE GROUND WIRE OVERHEAD POWER SERVICE ENTRANCE OVERHEAD TELEPHONE SERVICE ENTRANCE PULL BOX - FLUSH MOUNTED JUNCTION BOX PULL BOX - WALL MOUNTED ELECTRICAL MANHOLE MULTI-CABLE TRANSIT (MCT) SPARE WIRE LOOP CABLE OR CONDUIT DESIGNATION PC-POWER TC-TELEPHONE CC-CONTROL IC-INSTRUMENTATION HC-HEATING PANEL "A", CIRCUIT "10", SWITCH "b" A10-b XFMR PNL "A" PNL "A" SPLTR MUA2D 5005 MOTOR AND/OR EQUIPMENT TAG c/w NAME, PLANT AREA & NUMBER MOTOR MOTORIZED DAMPER MOTOR OPERATED VALVE SOLENOID OPERATED VALVE ELECTRIC HEATER SINGLE RECEPTACLE DUPLEX RECEPTACLE SPLIT DUPLEX RECEPTACLE ISOLATED GROUND RECEPTACLE GROUND FAULT (GFCI) RECEPTACLE ABOVE COUNTER DUPLEX RECEPTACLE ABOVE COUNTER SPLIT DUPLEX RECEPTACLE ABOVE COUNTER GROUND FAULT (GFCI) RECEPTACLE FLOOR MOUNTED SINGLE RECEPTACLE FLOOR MOUNTED DUPLEX RECEPTACLE SPECIAL SINGLE PHASE RECEPTACLE SPECIAL THREE PHASE RECEPTACLE OVERHEAD REEL DUPLEX RECEPTACLE SINGLE PHASE POWER CONNECTION THREE PHASE POWER CONNECTION WELDING RECEPTACLE		<b>GROUNDING</b> GROUND BUS GROUND COMPRESSION CONNECTION EQUIPMENT GROUND CONNECTION THERMIT WELD GROUND CONNECTION GROUND ROD GROUND WELL & ROD GROUND GRID w/ RODS ONLY GROUND GRID w/ WELLS & RODS <b>CONTROL</b> SINGLE POLE SWITCH (SWITCH "a") PANEL "A" CIRCUIT "x" 2 SWITCHES IN 2 GANG BOX 3 SWITCHES IN 3 GANG BOX 4 SWITCHES IN 4 GANG BOX TWO POLE SWITCH THREE WAY SWITCH FOUR WAY SWITCH SWITCH c/w PILOT LIGHT MANUAL MOTOR SWITCH MANUAL MOTOR SWITCH c/w PILOT LIGHT KEY OPERATED SWITCH EXPLOSION PROOF SWITCH WEATHERPROOF SWITCH LOW VOLTAGE SWITCH (CIRCUIT "a") LOW VOLTAGE SWITCH (K-KEY OPERATED, P-PILOT LIGHT) DIMMER SWITCH SPECIAL LOW VOLTAGE SWITCH UNIT (SEE SPECIFICATIONS) LOW VOLTAGE SWITCHING RELAY CABINET MOTION SENSOR SWITCH PHOTOELECTRIC CELL DISCONNECT SWITCH - FUSED DISCONNECT SWITCH - UNFUSED MANUAL MOTOR STARTER MAGNETIC MOTOR STARTER COMBINATION MAGNETIC STARTER LOW VOLTAGE THERMOSTAT HUMIDSTAT ON-OFF CONTROL STATION HAND-OFF-AUTO SELECTOR SWITCH LOCKOUT STOP CONTROL STATION LOCAL-OFF-REMOTE CONTROL STATION SELECTOR SWITCH (HOA, LOR, LO or OA) START-STOP PUSHBUTTON AND SELECTOR SWITCH (HOA, LOR, LO or OA) LOCKOUT STOP PUSHBUTTON START-STOP PUSHBUTTON START-STOP PUSHBUTTON c/w PILOT LIGHT & LOCKOUT STOP START-JOG-STOP PUSHBUTTON EMERGENCY SHUTDOWN PUSHBUTTON THERMISTOR CONTROL TRIPPING UNIT TIME SWITCH <b>ABBREVIATIONS</b> BD - BUS DUCT CB - CIRCUIT BREAKER DB - DUCT BANK DS - DISCONNECT SWITCH MCC - MOTOR CONTROL CENTRE PDP - POWER DISTRIBUTION PANEL PNL - BRANCH PANEL BOARD SWB - SWITCHBOARD TR - TRANSFORMER UPS - UNINTERRUPTIBLE POWER SUPPLY
--	--	--	--

## SINGLE LINE DIAGRAM / SCHEMATIC SYMBOLS

	<b>EQUIPMENT BUS</b> BUS EXTENSION / CONNECTION POWER CIRCUIT BREAKER DRAWOUT POWER CIRCUIT BREAKER AMMETER SWITCH VOLTMMETER TRANSDUCER CURRENT TRANSFORMER c/w RATIO & QUANTITY ZERO SEQUENCING CURRENT TRANSFORMER c/w RATIO & QUANTITY BUSHING TYPE CURRENT TRANSFORMER c/w RATIO & QUANTITY POTENTIAL TRANSFORMER c/w VOLTAGE RATING & QUANTITY KEY OPERATED INTERLOCK MOTOR OPERATED SWITCH DIGITAL METERING SYSTEM UTILITY POWER METER LIGHTNING ARRESTER w/ GROUNDED GAP LIGHTNING ARRESTER w/ GROUNDED GAP AND SURGE CAPACITOR DRAWOUT FUSED CURRENT TRANSFORMER DELTA-DELTA TRANSFORMER DELTA-WYE GROUND TRANSFORMER DELTA-WYE RESISTOR GROUND TRANSFORMER OPEN DELTA CLOSED DELTA THREE PHASE WYE THREE PHASE WYE TO GROUND THREE PHASE WYE THREE PHASE WYE TO GROUND THREE PHASE ZIGZAG TO GROUND THREE PHASE WYE w/ RESISTOR TO GROUND MALE & FEMALE DISCONNECT DEVICE CIRCUIT BREAKER DRAWOUT CIRCUIT BREAKER NON-FUSED DISCONNECT SWITCH FUSED DISCONNECT SWITCH FUSED HRC DISCONNECT SWITCH LOAD BREAK DISCONNECT SWITCH FUSED LOAD BREAK DISCONNECT SWITCH HORN GAP SWITCH INTERRUPTER SWITCH FUSED INTERRUPTER SWITCH GROUND SWITCH MAGNETIC ELEMENT CAPACITOR FOR PF CORRECTION c/w KVAR RATING NORMALLY OPEN CONTACT NORMALLY CLOSED CONTACT PROGRAMMABLE LOGIC CONTROLLER		<b>REACTOR</b> HARMONIC FILTER TRANSFER SWITCH FLEX CONNECTOR JUNCTION BOX MOUNTED NEAR MOTOR RESISTANCE TEMPERATURE DETECTOR FVNR MAGNETIC STARTER c/w SIZE FVR (REVERSING) STARTER c/w SIZE TWO SPEED STARTER c/w SIZE THERMAL OVERLOAD RELAY ELECTRONIC OVERLOAD c/w RATIO & QUANTITY VARIABLE SPEED DRIVE SOFT START REDUCED VOLTAGE GENERATOR SQUIRREL CAGE MOTOR MOTORIZED VALVE LIGHTING OR POWER PANEL VALVE TRAVEL LIMIT SWITCH-NORMALLY OPEN VALVE TRAVEL LIMIT SWITCH-NORMALLY CLOSED SPECIAL SINGLE PHASE RECEPTACLE SPECIAL THREE PHASE RECEPTACLE WELDING RECEPTACLE MOTOR SPACE HEATER SOLID STATE SURGE ARRESTER TRANSIENT VOLTAGE SURGE SUPPRESSION CURRENT TRANSFORMER SHORTING BLOCK PT-CT TEST BLOCK TEST BLOCK GROUND TO EARTH BATTERY PROTECTIVE RELAY c/w QUANTITY (1 LINE) PROTECTIVE RELAY c/w QUANTITY (2 LINE) RELAY SHUNT CONTROL POWER TRANSFORMER SINGLE or THREE PHASE MOTOR MOTOR OPERATED VALVE RELAY COIL (1 LINE) RELAY COIL (2 LINE) RELAY COIL (3 LINE)		<b>TD</b> 0-30 SECS TIMING RELAY COIL w/ TDE -TIME DELAY ENERGIZED, TDD -TIME DELAY DE-ENERGIZED & TIME RANGE <b>LC</b> LIGHTING CONTACTOR COIL <b>M</b> MOTOR STARTER COIL <b>CR</b> CONTROL RELAY <b>RA</b> AUXILIARY RELAY <b>PFR</b> POWER FAILURE RELAY <b>OTR</b> OVERLOAD TRIP RELAY <b>CC</b> CLOSING COIL <b>HC</b> HOLDING COIL <b>A</b> INDICATING PILOT LIGHT c/w LENS COLOR R=RED, G=GREEN, A=AMBER, Y=YELLOW, W=WHITE <b>ETM</b> ELAPSED TIME METER <b>OIL</b> MOTOR OVERLOAD CONTACT <b>TEST</b> TEST SUPPLY PLUG <b>FUSE</b> FUSE c/w FUSE No. or AMP RATING DUMMY FUSE <b>ELECTRIC HEATER</b> ELECTRIC HEATER c/w KILOWATT RATING <b>MOTOR SPACE HEATER</b> MOTOR SPACE HEATER c/w KILOWATT RATING <b>RESISTOR</b> RESISTOR c/w RESISTANCE RATING <b>SERIES COIL OR SOLENOID VALVE</b> TEMPERATURE CONTROLLER SURGE SUPPRESSOR FUSE ASSEMBLY w/ INDICATING LIGHT c/w FUSE NUMBER AND CURRENT RATING INDICATING LIGHT PUSH TO TEST c/w COLOR TYPE SEMICONDUCTOR DIODE WIRE WITH WIRE NUMBERS MECHANICAL CONNECTION WIRES CROSSOVER WIRES CONNECTED FIELD CONNECTION NORMALLY CLOSED MUSHROOM HEAD PUSHBUTTON - MOMENTARY NORMALLY OPEN PUSHBUTTON - MOMENTARY NORMALLY CLOSED PUSHBUTTON - MOMENTARY THREE POLE CIRCUIT BREAKER (CONTROL SCHEMATIC ONLY) THREE POLE DISCONNECT SWITCH (CONTROL SCHEMATIC ONLY) SINGLE POLE SINGLE THROW DISCONNECT SWITCH SINGLE POLE DOUBLE THROW DISCONNECT SWITCH TWO (2) POSITION SELECTOR SWITCH (ON-OFF SWITCH SHOWN IN ON POSITION) THREE (3) POSITION SELECTOR SWITCH (HAND-OFF-AUTO SHOWN IN HAND POSITION)		<b>DUAL TRANSFER SWITCH</b> FLOW SWITCH NORMALLY OPEN OR CLOSED LEVEL SWITCH NORMALLY OPEN OR CLOSED LIMIT SWITCH NORMALLY OPEN OR CLOSED PRESSURE SWITCH NORMALLY OPEN OR CLOSED TEMPERATURE SWITCH NORMALLY OPEN OR CLOSED <b>TERMINALS - TYPE AND LOCATION ASSIGNMENT DESIGNATED BY PROJECT DESIGN</b>
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## GENERAL NOTES

### NOTES:

- THIS DRAWING IS GENERAL IN NATURE. NOT ALL SYMBOLS, ABBREVIATIONS ARE USED IN THESE CONTRACT DRAWINGS.
- ALL CONDUITS SHALL BE EXPOSED UNLESS INDICATED OTHERWISE.
- ALL INDOOR ELECTRICAL AND CONTROLS CONDUIT IN NON-CLASSIFIED AREAS SHALL BE RIGID PVC UNLESS OTHERWISE INDICATED.
- ALL POWER DISTRIBUTION CABLES INSTALLED UNDER THIS PROJECT SHALL BE COPPER.
- PROVIDE LIQUID TIGHT METAL ARMOUR FLEXIBLE CONDUIT FOR ALL MOTOR TERMINATIONS. FLEX CONNECTIONS NOT TO EXCEED MAX. ALLOWABLE LENGTH PERMITTED UNDER THE CANADIAN ELECTRICAL CODE LATEST REVISION.
- REFERENCE P&ID LEGEND FOR DETAILED DESCRIPTION OF THE INSTRUMENTATION AND FIELD DEVICE SYMBOLS.
- ALL NEW POWER DISTRIBUTION CABLES SHALL BE CONTINUOUS FROM THE PRIMARY OVER CURRENT PROTECTION SUPPLY POINT TO THE LOAD APPLICATION TERMINATION. NO SPLICES ARE PERMITTED.
- ALL WIRING AND MOTOR CIRCUIT PROTECTION MUST COMPLY WITH REQUIREMENTS OF THE CANADIAN ELECTRICAL CODE - LATEST REVISION
- ALL ELECTRICAL EQUIPMENT MUST BE CSA APPROVED. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ESA REVIEW AND INSPECTION.
- THE CONTRACTOR IS REQUIRED TO SUPPLY AS-BUILT LAMINATED 'D' SIZE WALL MOUNTED ELECTRICAL SINGLE LINE DIAGRAMS AND HAND THEM TO THE CLIENT.
- DO NOT MIX POWER AND CONTROL CABLING

PRELIMINARY/  
FOR DISCUSSION  
NOT FOR CONSTRUCTION  
DRAFT

A	2019NOV08	B. TERRY	G. SHEN	ISSUED FOR PRELIMINARY DESIGN
REV	DATE	DESIGN	DRAWN	DESCRIPTION

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: NTS

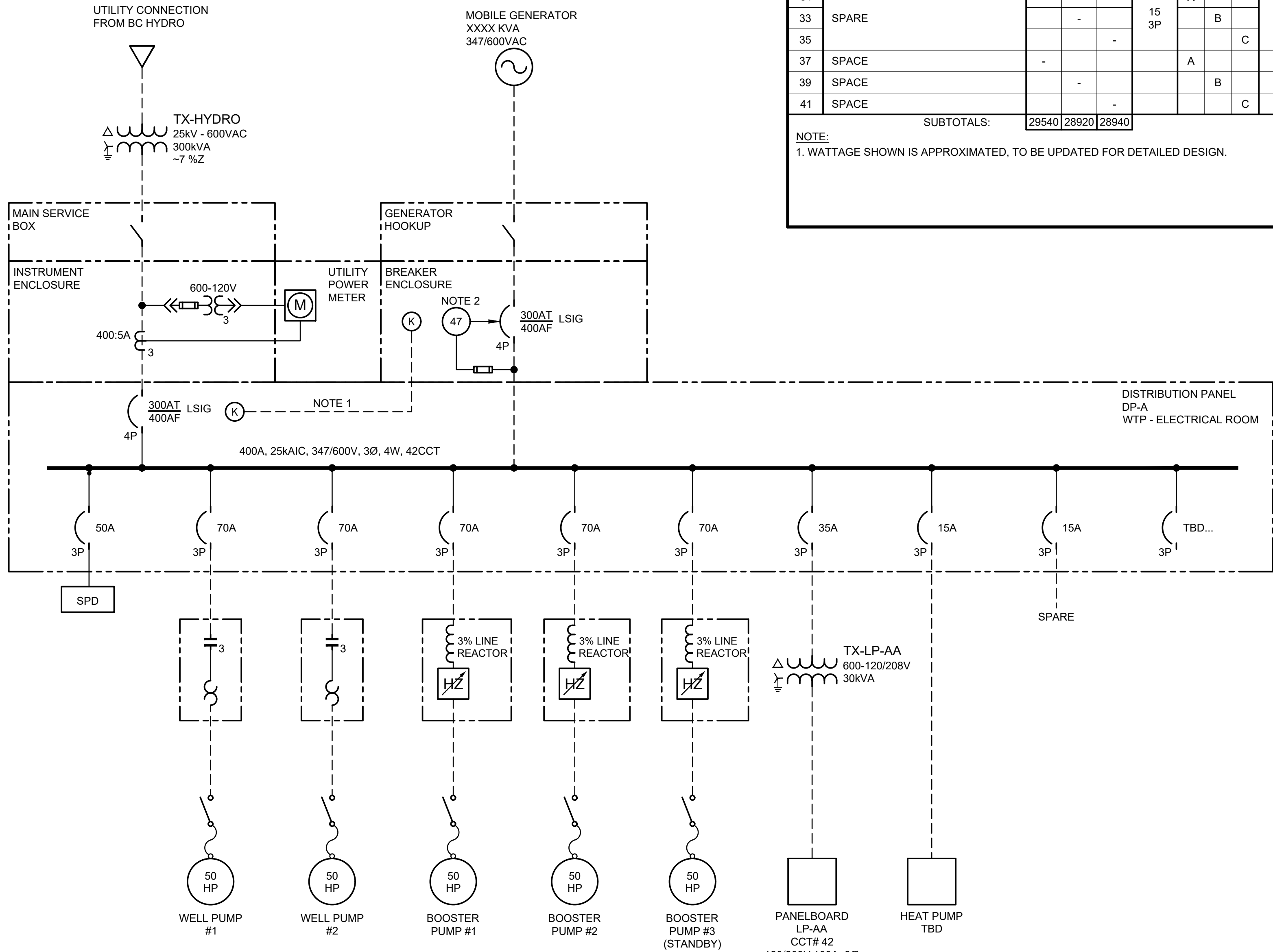
ELECTRICAL  
LEGEND

DRAWING	REVISION	SHEET
8307-03-E-001	A	17



PANEL AA SCHEDULE													
LOCATION: ELECTRICAL ROOM				VOLTAGE: 120/208VAC				PHASE: 3				WIRE: 4	
MOUNTING: WALL - SURFACE				BUS RATING: 100A, 22kAIC									
INCOMING LUGS: 100A				MAIN BREAKER: N/A									
MANUFACTURER: SCHNEIDER NQ OR EQUIV.				FEEDER: 4C - #3/0AWG									
CCT No	DESCRIPTION	WATTAGE			BKR AMPS	BUS			BKR AMPS	WATTAGE			CCT No
						A	B	C					
1	PLC REDUNDANT PSU	480			15	A			15 2P	3000			2
3	SITE LIGHTING		380		15		B				3000		4
5	EMERGENCY LIGHTING			100	15			C	15 2P			500	6
7	RECEPTACLES	720			15	A				500			8
9	HOT WATER TANK		700		15		B		15				10
11				700	2P			C	15				12
13	SPACE					A							14
15	SPACE						B						16
17	HYPOCHLORITE PUMP P-310							C	20			1400	18
SUBTOTALS:		1200	1080	2200						3500	3000	1900	
NOTE: 1. WATTAGE SHOWN IS APPROXIMATED, TO BE UPDATED FOR DETAILED DESIGN.													
												PHASE A TOTAL - 4700 W	
												PHASE B TOTAL - 4080 W	
												PHASE C TOTAL - 4100 W	
												PANEL LOAD TOTAL - 12880 W	

PANEL A SCHEDULE													
LOCATION: ELECTRICAL ROOM				VOLTAGE: 347/600VAC				PHASE: 3				WIRE: 4	
MOUNTING: WALL - SURFACE				BUS RATING: 400A, 25kAIC									
INCOMING LUGS: N/A				MAIN BREAKER: 300A									
MANUFACTURER: SCHNEIDER I-LINE OR EQUIV.				FEEDER: 4C - #3/0AWG									
CCT No	DESCRIPTION	WATTAGE			BKR AMPS	BUS			BKR AMPS	WATTAGE			CCT No
						A	B	C					
1	SURGE PROTECTION DEVICE	-			50 3P	A				12420			2
3			-				B		70 3P		12420		4
5				-				C				12420	6
7	WELL PUMP #2	12420				A				12420			8
9			12420		70 3P		B		70 3P		12420		10
11				12420				C			12420		12
13	BOOSTER PUMP #2	12420				A				12420			14
15			12420		70 3P		B		70 3P		12420		16
17				12420				C			12420		18
19	LV PANELBOARD LP-AA	4700				A				1000			20
21			4080		35 3P		B		15 3P		1000		22
23				4100				C			1000		24
25	SPARE					A							26
27					15 3P		B		15 3P				28
29								C					30
31	SPARE	-				A				-			32
33			-		15 3P		B		15 3P		-		34
35				-				C			-		36
37	SPACE	-				A				-			38
39	SPACE		-				B				-		40
41	SPACE			-				C				-	42
SUBTOTALS:		29540	28920	28940						38260	38260	38260	
NOTE: 1. WATTAGE SHOWN IS APPROXIMATED, TO BE UPDATED FOR DETAILED DESIGN.													
												PHASE A TOTAL - 67800 W	
												PHASE B TOTAL - 67180 W	
												PHASE C TOTAL - 67200 W	
												PANEL LOAD TOTAL - 202180 W	



1 DIAGRAM  
SINGLE LINE DIAGRAM

NTS

NOTES:

- CAPTIVE KEY INTERLOCK TO PREVENT PARALLEL OPERATION OF MAIN BREAKER AND GENERATOR BREAKER.
- INSTALL PHASE SEQUENCE RELAY (47) TO ENSURE PROPER ROTATION OF PUMP MOTOR WHEN GENERATOR IS HOOKED UP.

PRELIMINARY/  
FOR DISCUSSION  
NOT FOR CONSTRUCTION  
DRAFT

A	2019NOV08	B. TERRY	G. SHEN	ISSUED FOR PRELIMINARY DESIGN
REV	DATE	DESIGN	DRAWN	DESCRIPTION

SUNSHINE COAST REGIONAL DISTRICT

GROUNDWATER INVESTIGATION  
PHASE 3

20198307-03

SCALE: AS SHOWN

ELECTRICAL  
PANEL SCHEDULES  
AND SINGLE LINE DIAGRAM

DRAWING	REVISION	SHEET
8307-03-E-601	A	18

## APPENDIX F – GEOTECHNICAL REPORT

\\s-ver-fs-01\projects\20198307\00\_PH3\_GW\_INVEST\Environmental\_Sciences\04.00\_Environmental\_Assessments\Task 030\_Engineering\reporting\final report\y\_20198307\_SCRD\_GWInvest\_Ph3\_Prelim\_Eng\_Final\_public.docx



Associated Environmental Consultants Inc.  
200 – 2800 29 Street  
Vernon, British Columbia

November 4, 2019  
File: 19-236-SC

Attention: Matthew Lozie, P.Eng.  
t: 250.763.3638 EXT 247; e: loziem@ae.ca

**Re: Geotechnical Assessment: Proposed Auxiliary Structure  
500 Elphinstone Avenue, Gibsons, British Columbia**

Arya Engineering Inc. (Arya) presents the following report providing the results of a geotechnical assessment recently performed for the proposed development of an auxiliary structure to be located at 500 Elphinstone Avenue in Gibsons, British Columbia. The intent of this document is to determine the suitability of the land for the proposed works from a geotechnical perspective and to provide the client and the Sunshine Coast Regional District (SCRD) with the relevant geotechnical information needed for the issuance of a development permit. It is also the intention of this document to provide the client, the SCRD, and additional key stakeholders with preliminary geotechnical information needed to guide the geotechnical aspects of the proposed works.

We trust this report contains the relevant information required for project continuation at this time. Should additional information be required, please do not hesitate to contact our office.

Sincerely,  
**Arya Engineering Inc.**



Benjamin Tomasz, P.Eng.  
Principal | Senior Geotechnical Engineer



## EXECUTIVE SUMMARY

Based on the findings of this assessment and provided that the recommendations presented herein are considered and implemented, there are no reasonably conceivable geotechnical issues that would preclude the safe development of the proposed works on the subject site. The land can be considered safe for the use intended provided the recommendations in this report are adhered to. It is important to note that the term safe as presented in the above statement should be understood in terms of tolerable risk and does not constitute a guarantee. In this context, the land can be considered within the limits of tolerable geotechnical risk, as defined by society and related in applicable building codes, national design standards, professional practice standards (EGBC, formerly APEGBC), and design and construction policies presented in the Sunshine Coast Regional District's (SCRD) West Howe Sound Official Community Plan (OCP) that was adopted in October 2011.

Based on a review of the West Howe Sound Official Community Plan (OCP), the subject site lies within Development Permit Area (DPA) 5 – Aquifer Protection & Stormwater Management. Based on the results of this assessment, the proposed works are not expected to appreciably impact community drinking water aquifers in the area.

Continuous concrete strip footings are the recommended foundation type for the proposed development. Strip footings should be designed with a minimum footing width of 450 mm. A minimum width of 600 mm should be used where pad/column footings are needed for design purposes. Footings should be placed a minimum of 450 mm below final grade for frost protection requirements and to satisfy the allowable bearing pressures presented herein. Strip footings and pad footings seated on approved undisturbed soils or compacted engineered fill can be designed for an allowable bearing pressure of 100 kPa. This value represents SLS resistance based on a reasonable subsidence in the proposed structure of less than 25 mm over a 6.25 m length (CFEM, 2006).

An excavation depth on the order 1.5 m is expected near the eastern property boundary, as needed to seat footings on undisturbed, compact to dense sand (some silt to silty) and also to achieve a stable permanent slope angle as projected from underside of footings in this area downward toward the neighboring parcel. This 1.5 m excavation depth is necessary from a geotechnical standpoint to achieve adequate bearing capacity, frost protection, and for permanent static and seismic stability of soil slopes adjacent to foundation elements. Therefore, it is expected that an approximate excavation on the order of 2.5 m is required for the proposed works on the western extent of the lot, as we understand that a flat building area is intended for the proposed works. If this is the case, temporary excavation stability works (shoring) may be required on the western extent of the excavation during construction.



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**APPENDIX B – Test Pit Logs**

**APPENDIX C – Site Photographs**





## 1.0 INTRODUCTION

Arya Engineering Inc. (Arya) has conducted a geotechnical assessment of 500 Elphinstone Avenue in Gibsons, British Columbia at the request of the client, Associated Environmental Consultants Inc. (AEC). The scope of work performed for this assessment included the following:

1. A geotechnical site investigation to observe current conditions of the site, including but not limited to, surficial soils, topography, vegetation, and surface water and runoff conditions. The site investigation also included a subsurface exploration program consisting of the excavation of two (2) exploratory test pits to characterize subsurface conditions across the lot.
2. A desktop review of relevant background information including a review of provincially published well log data for the area, published surficial geology mapping for the area, and satellite imagery. In addition, a local aquifer mapping study conducted for The Town of Gibsons, and well log data from a groundwater investigation recently conducted by the client (AEC), were also reviewed and referenced as part of this assessment.
3. Geotechnical engineering analysis and evaluation of the collected data.
4. Preparation of this summary geotechnical report to present the relevant findings and recommendations.

An Arya representative conducted the site investigation on August 28, 2019. The following sections summarize the observations and results of the geotechnical investigation. The intent of this report is to provide the client and additional key stakeholders with the relevant information needed for the issuance of a development permit, and with preliminary geotechnical information required to direct the geotechnical aspects of the proposed development activities. The scope of this assessment did not include items related to other disciplines.

## 2.0 SITE ASSESSMENT

### 2.1 Site Layout and Topography

The subject site is located at 500 Elphinstone Avenue in Gibsons, British Columbia. The lot is rectangular in shape and averages approximately 32 m on its longest edge (north-south) and 15 m in width (east-west). The subject site encompasses a total area of approximately 0.05 ha. A developed residential parcel borders the property to the east, with Reed Road bordering the property to the north, Fisher Road bordering the property to the west, and Elphinstone Avenue bordering the property to the south.

Topographic characteristics were developed from LiDAR data available on the Sunshine Coast Regional District's (SCRD) web mapping tool, in combination with visual observations and on-site measurements.

The subject site is in an area of gently sloping to steeply sloping terrain, which generally decreases in elevation from northwest to southeast at gradients ranging from 3.5H:1V (horizontal to vertical) to 4.5H:1V. A localized slope along the eastern property line, in the vicinity of the proposed building area, is approximately 2 m high, and maintains gradients as steep as 1H:1V.



## **2.2 Existing Structures and Proposed Development**

An existing auxiliary structure was observed to be situated approximately mid-lot during the site investigation.

At the time of preparation of this assessment, no architectural or structural plans were available for review; however, based on conversations with the client, the proposed works are expected to consist of the construction of a new auxiliary structure to be situated south of the existing structure. Subsurface utilities development is also expected as part of the proposed works.

## **2.3 Vegetation**

Vegetation on the subject site was observed to consist of sparsely populated juvenile conifers and deciduous trees located adjacent to the eastern and western property boundaries. The understory vegetation across the site was observed to consist of a variety of low growth vegetation including grass, Himalayan Blackberry and other various woody-stemmed plants.

No irregular growth patterns or vegetative indicators suggesting geotechnical related issues were observed on the subject site during the site investigation

## **2.4 Surface Water and Runoff**

No surface water was observed on-site during the site investigation. In consideration of the topographic conditions and subsurface soils that characterize the site, infiltration of precipitation through granular surface soils is expected.

## **3.0 SUBSURFACE CONDITIONS**

The subsurface conditions at the subject site were investigated through the advancement of two (2) exploratory test pits (TP-01 and TP-02) on August 28, 2019. The test pits were advanced into undisturbed soils to final depths that ranged from 1.2 m to 1.5 m below existing grade.

A summary of the results of the subsurface exploration program is presented in the subsequent sections of this report. Test pit logs containing more detailed descriptions of the materials encountered are provided in Appendix B. The approximate locations of TP-01 to TP-02 can be found on a Test Pit Location Map in Appendix A.

### **3.1 Soil Stratigraphy**

A surficial geology map of the lower Sunshine Coast (McCammon, 1977) indicates that the subject site is located in an area of marine and glacio-marine deposits described as Capilano Sediments which are expected to consist of varied gravelly, sandy, stoney clay, and clay veneer.

Provincially published well log data for several water wells nearest to the subject site were reviewed to develop a more comprehensive understanding of subsurface conditions in the vicinity of the parcel. Data for two groundwater wells located approximately 200 m northeast of the subject site, adjacent to





Soames Creek (Well Tag Numbers: 78231 and 65967), were accessed via iMap BC. Well data indicates variable grained granular soils located near surface to a maximum depth of 36 m below existing ground surface. Subsurface information provided by the client, for a recently installed groundwater well located approximately 225 m east of the subject site, generally corroborates the provincially published well log data reviewed and the findings of McCammon.

The stratigraphic profile at TP-01 was observed to consist of 0.45 m of fill/disturbed ground, underlain by 0.45 m of granular material that can be described as well-graded sand and gravel with some cobbles, light brown to strong brown in color, slightly moist, and inferred to be loose, further underlain by granular material that was described as sand, fine to medium grain size, some silt to silty, grey with strong brown inclusions, slightly moist to moist, and inferred to be compact to dense. Trace organics and woody roots were observed in the sand and gravel deposit.

Subsurface conditions at TP-02 were observed to consist of 0.15 m of fill/disturbed ground, underlain by 0.6 m of sand and gravel, further underlain by compact to dense sand (some silt to silty).

Based on the results of the subsurface investigation, the anticipated soil profile across the subject site is expected to consist of fill/disturbed ground underlain by sand and gravel (undisturbed), further underlain by compact to dense sand (some silt to silty).

### 3.2 Bedrock

Bedrock was not encountered at the time of the geotechnical site investigation and is not expected at a depth necessary to influence geotechnical components of the proposed works.

### 3.3 Groundwater

Groundwater was not encountered during the subsurface exploration program. An oxidation profile within the sand and gravel deposit and the underlying compact to dense silty sand deposit was observed during the subsurface exploration program. This condition suggests unconfined, transient groundwater presence near surface during the wetter winter months.

A local aquifer mapping study completed for the Town of Gibsons, titled *Aquifer Mapping Study – Town of Gibsons, British Columbia*, provided by Waterline Resources Inc. (Waterline) and dated May 13, 2013, indicates that the Capilano Sediments expected in this area may contain a “shallow, perched aquifer”. The provincial well log data indicate a static water level of 22.5 m below ground surface and 9.5 m below ground surface for Wells 78231 and 65967, respectively. In addition, a static groundwater level of approximately 15 m below ground surface was recorded by AEC during a groundwater well installation located approximately 225 m east of the subject property.

Based on the results of the subsurface investigation program and the desktop study, permanent groundwater conditions are not expected at a depth necessary to influence the geotechnical components of the proposed works, provided the recommendations contained herein are adhered to.



#### 4.0 SEISMIC ANALYSIS

The proposed structure should be designed under the seismic provisions of the 2018 British Columbia Building Code (BCBC) and the 2015 National Building Code of Canada (NBCC).

Horizontal peak ground acceleration (PGA), peak ground velocity (PGV) and 5% damped spectral response acceleration values  $S_a(T)$  for seven different periods (0.2, 0.3, 0.5, 1.0, 2.0, 5.0 and 10.0 seconds) are outlined below for the subject site for a seismic event with a 2% probability of exceedance within 50 years (1 in 2,475 year event). In consideration of undisturbed, compact to dense sand encountered during the site investigation, these values have been interpolated according to Site Class 'D' – Stiff Soil.

As interpolated from the 2015 National Building Code Seismic Hazard Calculation, the following criteria apply for this location (Latitude 49.414° N, Longitude -123.498° W):

PGA = 0.363 g

PGV = 0.550 m/s

Spectral Acceleration Response Values:

$S_a(0.2)=0.833g$ ,  $S_a(0.3)=0.839g$ ,  $S_a(0.5)=0.746g$ ,  $S_a(1.0)=0.425g$ ,  $S_a(2.0)=0.259g$ ,  $S_a(5.0)=0.083g$ ,  $S_a(10.0)=0.029g$

Site Coefficients:

$F(0.2)=0.96$ ,  $F(0.5)=1.16$ ,  $F(1.0)=1.27$ ,  $F(2.0)=1.33$ ,  $F(5.0)=1.38$ ,  $F(10.0)=1.35$ ,  $F(PGA)=0.95$ ,  $F(PGV)=1.16$

$F_s = 1.6$

$F_a = F(0.2)$

$F_v = F(1.0)$

#### 5.0 DEVELOPMENT PERMIT AREAS

Based on a review of the West Howe Sound Official Community Plan (OCP), the subject site lies within Development Permit Area (DPA) 5 – Aquifer Protection & Stormwater Management. In consideration of the SCRD's DPA requirements, the influence of the proposed development on community drinking water aquifers and precipitation induced drainage and stormwater runoff was considered as part of this assessment.

Based on the geotechnical condition of the parcel and the scope of proposed works as we understand them at this time, the proposed development project on the subject property is not expected to significantly impact community drinking water aquifers in the area, as land alteration and foundation construction are expected at an elevation of at least several meters above a permanent groundwater source.

In general, the proposed works should provide for the adequate collection and conveyance of excess surface waters collected on the roof of new structures and on hardscape components during precipitation events. Runoff should be directed away from neighboring parcels and towards appropriate





discharge facilities or appropriately designed infiltration pits. Water collected and conveyed via perimeter drainage components should also be directed to appropriate discharge locations. Based on conversations with the client, stormwater swales, culverts and/or an overflow conveyance network are to be constructed as part of the proposed works. Provided such features are considered in civil design and construction, the proposed works are not expected to significantly impact community drinking water aquifers in the area, and concentrated stormwater runoff is not expected to adversely affect nearby areas.

## 6.0 RECOMMENDATIONS AND CONCLUSIONS

### 6.1 Suitable Building Sites

No siting criteria is warranted at this time for the proposed works. Provided the recommendations in this document are adhered to, the proposed structure, in its intended location, can be considered safe for the use intended.

### 6.2 Site Preparation and Foundations

Continuous concrete strip footings are the recommended foundation type for the proposed development. Strip footings should be designed with a minimum footing width of 450 mm. A minimum width of 600 mm should be used where pad/column footings are needed for design purposes.

In accordance with the 2015 NBCC, the foundation recommendations included in this report are based on limit state design (LSD) methodology. Factored ultimate limit state (ULSf) bearing capacity values for the acceptable subgrades have been determined and are provided in Table 1 below. Serviceability Limit States (SLS) design criteria have also been provided in Table 1, reflecting the allowable bearing pressures appropriate for the foundation specifications presented in this report.

**Table 1 – Recommended Bearing Capacities and Allowable Bearing Pressures**

Material	Geotechnical Resistance Factor ( $\phi$ )	Factored ULS (kPa)	SLS (kPa)
Engineered Fill	0.5	150	100
Undisturbed Compact to Dense Sand	0.5	150	100

All footings should be placed on an undisturbed compact to dense sand which have been approved by this office or on approved engineered fill and compacted to the satisfaction of this office. Construction surfaces and footing subgrades should be flat, thoroughly cleared of disturbed, loose, or softened material, or deleterious materials that may be present in the proposed building envelope prior to forming and the pouring of concrete.

Adjacent footings situated on approved subgrade materials and at different elevations should be stepped at no steeper than 2H:1V. If this is not possible, footings situated at the lower elevation, and the subgrade situated beneath these footings, should be designed to carry the loads associated with the footing at the





higher elevation. Updated foundation design specifications may result, and a decrease in allowable bearing pressures for the subgrade beneath the lower footing may be warranted.

Footings should be placed a minimum of 450 mm below final grade for frost protection requirements and to satisfy the bearing capacity and allowable bearing pressures presented herein. Strip footings and pad footings seated on undisturbed compact to dense sand or compacted engineered fill can be designed for an allowable bearing pressure of 100 kPa. This value represents SLS resistance based on a reasonable subsidence in the proposed structure of less than 25 mm over a 6.25 m length (CFEM, 2006).

Engineered fill material should be compacted on an approved, undisturbed subgrade. Engineered fill is generally described as clean sand to sand and gravel, of particles less than 75 mm in diameter, and containing silt and clay less than 5% by weight. Engineered fill should be implemented in loose, 300 mm lifts and compacted to 100% standard proctor maximum dry density (SPMDD) within 2% of optimum moisture content. Backfill utilized for foundation walls and retaining walls should be compacted to 98% SPMDD within 2% of optimum moisture content.

To minimize the chance of undesirable floor wetness, imported fill beneath all nonstructural, interior slab-on-grade components should consist of a minimum of 150 mm thick layer of 19 mm diameter, clear free draining gravel that serves as a capillary barrier between the subgrade material and the slab. An impermeable membrane should be placed over the gravel such as 6 mil polypropylene sheeting or an approved equivalent. The membrane may be covered with 50 mm of sand to protect it during construction and to mitigate undesirable effects that the membrane may have on the curing properties of the concrete.

### **6.3 Site Drainage**

A minimum 300 mm wide trench should be implemented adjacent to strip-footing elements for placement of perimeter drains. The trench should then be lined with a non-woven geotextile fabric, such as Nillex 4545 or approved equivalent, a 50 mm bedding layer of clear open-graded gravel (19 mm diameter) then be implemented in the trench, followed by the placement of the drain pipe (100 mm diameter, rigid, perforated drain pipe, set with perforations facing downward). The drainpipe should be set as close as practical to the heel of footing elements above the gravel bedding layer and backfilled with open-graded gravel as described above. It is recommended that drain rock extend to within 300 mm of the ground surface, and the entire rock/pipe unit should then be fully surrounded by the non-woven geotextile fabric. Surrounding the perforated drainpipes themselves, or "sleeving" these units, is not recommended.

The high end of the system and all 90° bends of the perimeter drainpipe should be connected to vertical risers consisting of closed 100 mm diameter pipes which extend to the surface and act as cleanouts. The use of cleanouts at 90° bends can be reduced by using either double 45° elbows or sweep 90° elbows. The drainpipes should be sloped at 2% gradients to promote positive drainage. All perforated pipes





should lead to non-perforated (solid wall) pipes that should be conveyed to appropriate discharge facilities.

All rainwater collected on the roof of the building should also be conveyed through gutters, downspouts, and closed pipes leading to appropriate discharge facilities. If hardscape features are to be implemented, they should be graded appropriately such that surface water runoff is conveyed towards an approved discharge location. The perimeter drainage system and the rainwater collection and conveyance system should remain independent systems, to prevent overloading of either system that could otherwise occur.

A septic dispersion system is not expected to be part of the proposed works. However, if septic design is to be implemented, this office should be contacted to review these components prior to construction.

#### **6.4 Excavation, Trenching and Retaining Walls**

An excavation depth of 0.5 m to 1.0 m is expected to uncover undisturbed, compact to dense sand (some silt to silty) in the proposed building area. However, on the eastern extent of the lot, an excavation depth on the order of 1.5 m will be required to seat footings on undisturbed, compact to dense sand (some silt to silty) and as needed to achieve a stable slope gradient at underside of footings as projected to the downhill, eastern property boundary. This excavation requirement is necessary to mitigate localized sloughing of backfill material (maintain frost protection), to provide for adequate bearing capacity, and to ensure permanent stability of soil slopes supporting footing components in both the static and seismic loading conditions. Therefore, it is expected that an approximate excavation depth on the order of 2.5 m will be realized on the western extent of the building area, as we understand that a flat building area is intended for the proposed works. If this is the case, temporary excavation stability works (shoring) may be required on the western extent of the excavation during construction.

In general, temporary excavation stability and shoring works are the responsibility of the contractor. WorkSafe BC guidelines for stable excavations should be followed for excavations in excess of 1.2 m. WorkSafe BC guidelines for excavations should be adhered to in accordance with Section 20 (20.78 - 20.95) of the Occupational Health and Safety Regulation. For excavations in granular material less than 1.2 m, a 2H:1V slope angle is recommended to promote excavation stability during construction.

Per WorkSafe BC guidelines, a qualified professional should be retained to conduct WorkSafe BC Excavation Reviews in the case that excavation in excess of 1.2 m is required for the project, which is expected at this time. This document should specify instructions to promote excavation stability during construction and may include such items as sloping and shoring requirements. This office is available to provide WorkSafe BC Excavation Reviews upon request, or as needed to satisfy WorkSafe BC criteria.

Trenching, utility installation, and backfilling for utility installation should be carried out in conformance with the Master Municipal Construction Documents Platinum Edition (MMCD), Specifications Section 31-23-01 (2009). For boulevards and easements, backfill material should be compacted to a minimum of 90% Modified Proctor Maximum Dry Density (MPMDD), whereas for roads, driveways, shoulders, re-



shaped ditches and sidewalks, approved materials should be compacted to a minimum of 95% MPMDD, as referenced in the MMCD (2009). Material specifications should conform to requirements as detailed in Section 31-05-17 of the MMCD.

### 6.5 Lateral Earth Pressures Coefficients

Below grade walls, foundations and grade beams should be adequately designed to resist the lateral earth pressures acting on them and any additional loads caused by surcharge loads on the adjoining ground surface. Lateral loading coefficients on these elements have been provided for several situations. Coefficients have been provided for At-Rest Pressure ( $K_0$ ) and Active Pressure ( $K_A$ ) conditions. Coulomb's theory was used to calculate the active pressure coefficient while the Mononobe-Okabe method was used to calculate an earthquake induced dynamic active pressure coefficient ( $K_{AE}$ ).

The PGA value detailed in Section 4.0 of this report was utilized in calculating the earthquake induced dynamic active pressure coefficient.

The coefficients have been calculated in accordance with the 4<sup>th</sup> edition of the Canadian Foundation Engineering Manual (CFEM, 2006). Table 2 provides the lateral earth pressure coefficients that should be used for applicable below grade elements.

**Table 2 – Lateral Earth Pressure Coefficients**

Pressure Condition	Coefficient Symbol	Coefficient Value
At-Rest Pressure	$K_0$	0.43
Active Pressure	$K_A$	0.23
Active Pressure (Including Seismic Effects)	$K_{AE}$	0.25

Lateral earth pressure coefficients were determined assuming a free draining backfill corresponding to the material specifications, and compaction specifications provided in Section 6.2. A unit weight of  $19 \text{ kN/m}^3$  should be considered for approved, compacted backfill.

It is assumed that free draining backfill will extend horizontally from the top of below grade elements, to a lateral distance equivalent to the element's height. In the case that a level backfill is not achievable, higher earth pressures can be expected and this office should be retained to provide updated design values.

The at-rest pressure, active pressure, and active (including seismic effects) pressure conditions can be designed according to the CFEM (2006).

### 6.6 Construction Field Reviews

Prior to issuance of a Schedule B, our office will require a review of structural, architectural, and civil design plans, issued for Building Permit (BP), and prior to conducting field reviews, our office will require a review of similar project plans issued for construction (IFC). The following field reviews are required by





this office prior to issuance of a Schedule C-B. Arya should be informed 48 hours in advance prior to the following field inspections:

1. Site preparation and excavation review;
2. Subgrade review;
3. Drainage installation prior to backfilling;
4. Approval and compaction of engineered fill and backfill;
5. Closure review (prior to Schedule C-B issuance).

Failure to engage the geotechnical engineer in the construction field review process may result in the non-issuance of a Schedule C-B.

## 7.0 CLOSURE

This report has been prepared for the exclusive use of Associated Environmental Consultants Inc. for the development activities proposed on the subject site at the time this assessment was conducted. The recommendations provided in this document reflect Arya's best judgment based on the information available to Arya at the time of preparation of this document. If conditions other than those are noted during subsequent phases of development, Arya should be notified immediately and given the opportunity to review and revise the current recommendations, if necessary.

This report remains the property of Arya Engineering Inc., and Arya does not accept damages caused by the unauthorized third-party use of the information contained herein. The information in this assessment can be considered valid for a period of 2 years, after which this office should be retained to review site conditions and verify the adequacy of the information contained herein. The assessment was conducted in accordance with current geotechnical engineering practice and principles.

We trust this report provides you with the information required at this time, and we appreciate the opportunity to be of service on this project. If you have any questions regarding the report, please do not hesitate to contact us.

Best Regards,  
**Arya Engineering Inc.**

Elvis Lu, EIT  
Geotechnical Project Engineer

Benjamin Tomasz, P.Eng.  
Principal | Senior Geotechnical Engineer





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## **APPENDIX A – Figures**




**SCRD Maps**
**Property Report**
**850 FISHER RD**

9/3/2019

Folio: 746.00168.000 PID: 014-051-354

Address: 850 FISHER RD

Jurisdiction: SCRCD

Lot: 1 Block: 1 Plan: VAP2075 District Lot: 687

2019 Assessed Value: 314200 Land Value: 312000 Improvement Value: 2200

Approximate Lot Size (BC Assessment): 5180 SQUARE FEET



## Test Pit Location Map

500 Elphinstone Avenue, Gibsons, British Columbia

Project Number

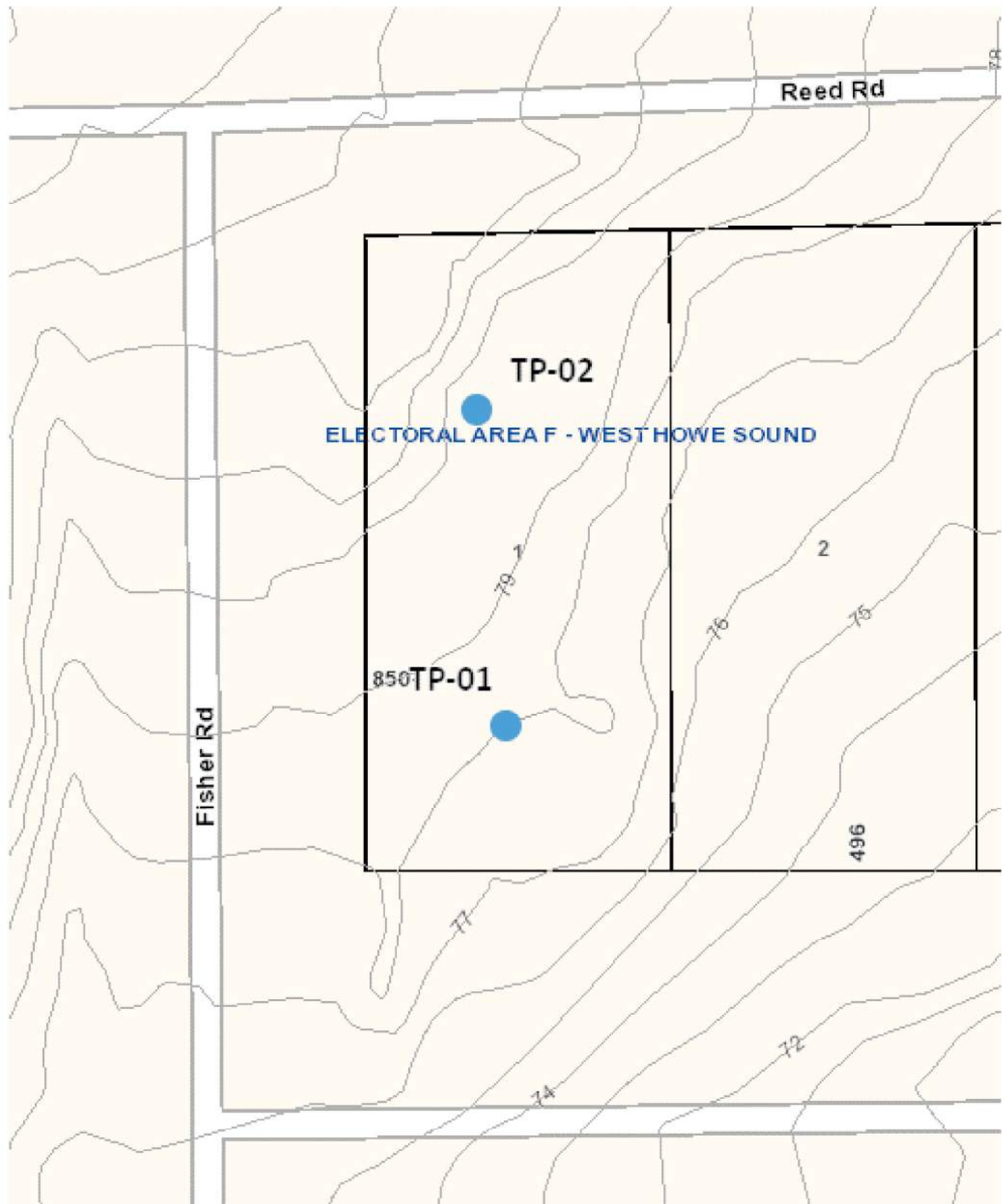
Date

Figure Number

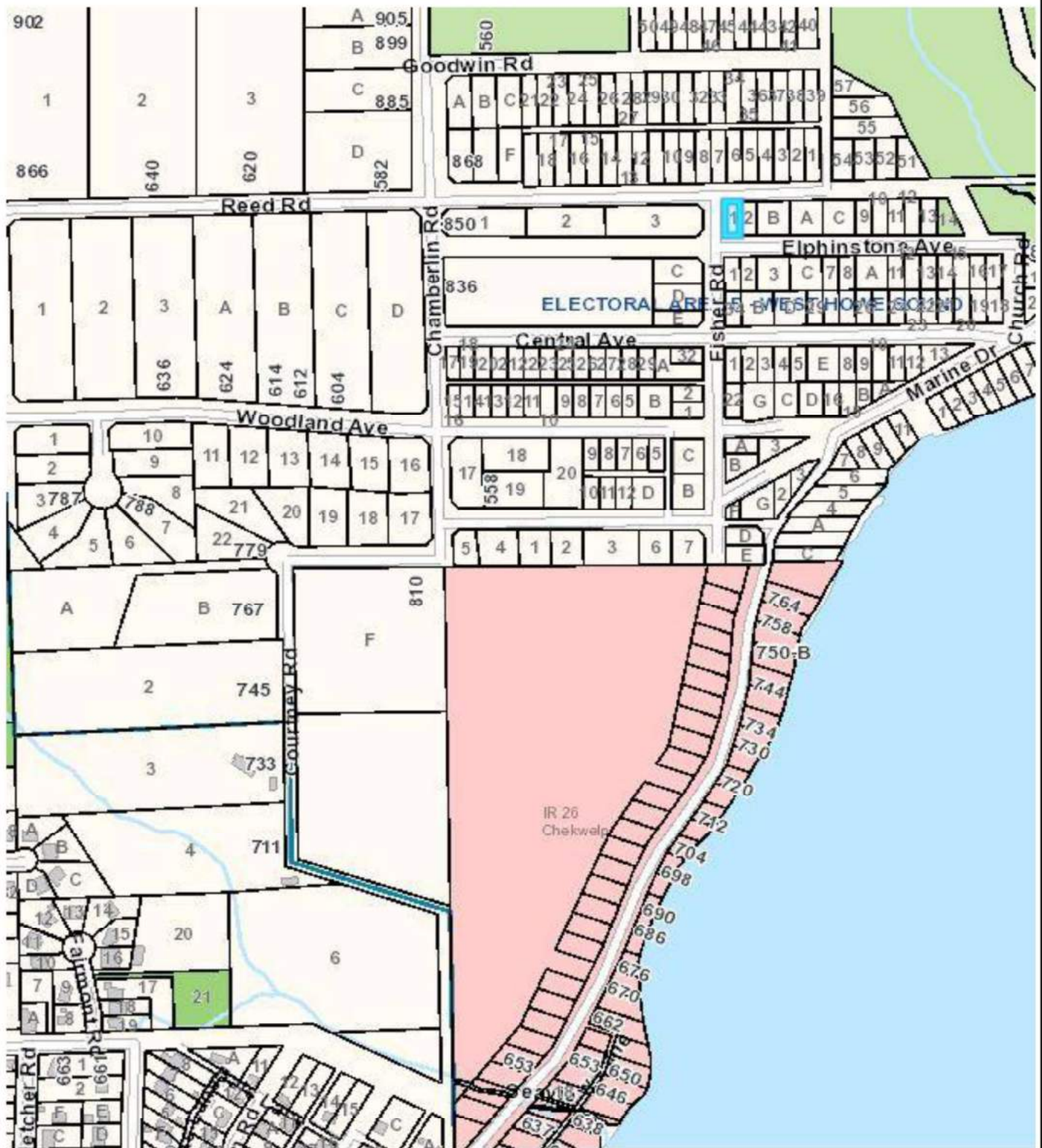
19-236-SC

11/4/2019

Figure 2



- Compiled through the utilization of the Sunshine Coast Regional District's (SCRD) web-based property viewer application



- Compiled through the utilization of the Sunshine Coast Regional District's (SCRD) web-based property viewer application



## 2015 National Building Code Seismic Hazard Calculation

**INFORMATION:** Eastern Canada English (613) 995-5548 français (613) 995-0600 Facsimile (613) 992-8836  
Western Canada English (250) 363-6500 Facsimile (250) 363-6565

Site: 49.414N 123.498W

2019-09-03 23:44 UT

Probability of exceedance per annum	0.000404	0.001	0.0021	0.01
Probability of exceedance in 50 years	2 %	5 %	10 %	40 %
Sa (0.05)	0.443	0.306	0.219	0.094
Sa (0.1)	0.673	0.467	0.336	0.145
Sa (0.2)	0.833	0.584	0.422	0.182
Sa (0.3)	0.839	0.593	0.428	0.183
Sa (0.5)	0.746	0.520	0.371	0.151
Sa (1.0)	0.425	0.290	0.200	0.076
Sa (2.0)	0.259	0.171	0.115	0.041
Sa (5.0)	0.083	0.048	0.028	0.009
Sa (10.0)	0.029	0.017	0.010	0.003
PGA (g)	0.363	0.255	0.183	0.078
PGV (m/s)	0.550	0.372	0.256	0.094

**Notes:** Spectral (Sa(T), where T is the period in seconds) and peak ground acceleration (PGA) values are given in units of g (9.81 m/s<sup>2</sup>). Peak ground velocity is given in m/s. Values are for "firm ground" (NBCC2015 Site Class C, average shear wave velocity 450 m/s). NBCC2015 and CSAS6-14 values are highlighted in yellow. Three additional periods are provided - their use is discussed in the NBCC2015 Commentary. Only 2 significant figures are to be used. **These values have been interpolated from a 10-km-spaced grid of points. Depending on the gradient of the nearby points, values at this location calculated directly from the hazard program may vary. More than 95 percent of interpolated values are within 2 percent of the directly calculated values.**

### References

**National Building Code of Canada 2015 NRCC no. 56190;** Appendix C: Table C-3. Seismic Design Data for Selected Locations in Canada

**Structural Commentaries (User's Guide - NBC 2015: Part 4 of Division B)**  
**Commentary J:** Design for Seismic Effects

**Geological Survey of Canada Open File 7893** Fifth Generation Seismic Hazard Model for Canada: Grid values of mean hazard to be used with the 2015 National Building Code of Canada

See the websites [www.EarthquakesCanada.ca](http://www.EarthquakesCanada.ca) and [www.nationalcodes.ca](http://www.nationalcodes.ca) for more information


Natural Resources  
Canada


Ressources naturelles  
Canada


**Canada**




## **APPENDIX B – Test Pit Logs**



		SUBSURFACE EXPLORATION LOG						
		500 Elphinstone Avenue, Gibsons, British Columbia						
		Project Number		Test Hole ID		Date Logged		
		19-236-SC		TP-01		August 28, 2019		
EXPLORATION METHOD:	Machine Excavation	SURFACE ELEVATION (m):		78 mASL		LOGGED BY:	EL	
TEST PIT DIMENSIONS:	1.8 m x 1.2 m	GROUNDWATER DEPTH (m):		N/A		CHECKED BY:	BT	
SOIL CLASSIFICATION				DEPTH (m)	SOIL TYPE	SAMPLE ID	WATER CONTENT (%)	OTHER TESTS
<b>SAND:</b> WELL-GRADED, TRACE GRAVEL, MEDIUM BROWN, SLIGHTLY MOIST, LOOSE - ORGANICS AND WOODY ROOTS OBSERVED				-	SW			
				-				
				-				
				-				
<b>SAND AND GRAVEL:</b> WELL-GRADED, SOME COBBLES, LIGHT BROWN TO STRONG BROWN, SLIGHTLY MOIST, LOOSE TO COMPACT - ORGANICS AND WOODY ROOTS OBSERVED				0.5	SW-GW			
				-				
				-				
				-				
<b>SAND:</b> FINE TO MED, SOME SILT TO SILTY, GREY WITH STRONG BROWN INCLUSIONS, SLIGHTLY MOIST TO MOIST, COMPACT TO DENSE  - INFERRED TO BE UNDISTURBED MATERIAL				1.0	SM			
				-				
				-				
				-				
NOTES: 1) TP-01 TERMINATED IN UNDISTURBED SOILS 2) NO GROUNDWATER ENCOUNTERED AT TP-01 3) TEST PIT BACKFILLED AT END OF DAY				-				
				-				
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				5.0				
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				-				
				-				

		SUBSURFACE EXPLORATION LOG					
		500 Elphinstone Avenue, Gibsons, British Columbia					
		Project Number		Test Hole ID		Date Logged	
		19-236-SC		TP-02		August 28, 2019	
EXPLORATION METHOD:	Machine Excavation	SURFACE ELEVATION (m):		79 mASL		LOGGED BY:	EL
TEST PIT DIMENSIONS:	1.2 m x 1.0 m	GROUNDWATER DEPTH (m):		N/A		CHECKED BY:	BT
SOIL CLASSIFICATION		DEPTH (m)	SOIL TYPE	SAMPLE ID	WATER CONTENT (%)	OTHER TESTS	
<b>SAND:</b> WELL-GRADED, TRACE GRAVEL, MEDIUM BROWN, SLIGHTLY MOIST, LOOSE		-	SW				
- ORGANICS AND WOODY ROOTS OBSERVED		-					
<b>SAND AND GRAVEL:</b> WELL-GRADED, SOME COBBLES, LIGHT BROWN TO STRONG BROWN,		-	SW-GW				
SLIGHTLY MOIST, LOOSE TO COMPACT		-					
- ORGANICS AND WOODY ROOTS OBSERVED		0.5					
		-					
		-					
		-					
<b>SAND:</b> FINE TO MED, SOME SILT TO SILTY, GREY WITH STRONG BROWN INCLUSIONS,		-	SM				
SLIGHTLY MOIST TO MOIST, COMPACT TO DENSE		1.0					
- INFERRED TO BE UNDISTURBED MATERIAL		-					
NOTES:		-					
1) TP-02 TERMINATED IN UNDISTURBED SOILS		-					
2) NO GROUNDWATER ENCOUNTERED AT TP-02		1.5					
3) TEST PIT BACKFILLED AT END OF DAY		-					
		-					
		-					
		2.0					
		-					
		-					
		-					
		2.5					
		-					
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		-					
		3.0					
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		4.0					
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		4.5					
		-					
		-					
		-					
		5.0					

				KEY TO SUBSURFACE EXPLORATION LOGS			
				*Unified Soil Classification System (ASTM D-2487)			
PRIMARY DIVISIONS				GROUP SYMBOL		SECONDARY DIVISIONS	
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS: MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines			
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines			
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand mixtures, non-plastic fines			
			GC	Clayey gravels, gravel-sand-clay mixtures			
	SANDS: MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines			
			SP	Poorly graded sands or gravelly sands, little or no fines			
		SANDS WITH FINES	SM	Silty sands, sand silt mixtures, non-plastic fines			
			SC	Clayey sands, sand-silt mixture, plastic fines			
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS: LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity			
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
			OL	Organic silts and organic silty clays of low plasticity			
	SILTS AND CLAYS: LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts			
			CH	Inorganic clays of high plasticity, fat clays			
			OH	Organic clays of medium to high plasticity, organic silts			
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils			
DEFINITION OF TERMS							
U.S. STANDARD SERIES SIEVE      CLEAR SQUARE SIEVE OPENINGS							
200                      40                      10                      4                      3/4"                      3"                      12"							
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
GRAIN SIZES							
SANDS AND GRAVELS	BLOWS/FOOT+		SILTS AND CLAYS		STRENGTH*		BLOWS/FOOT+
VERY LOOSE	0 - 4		VERY SOFT		0 - 0.25		0 - 2
LOOSE	4 - 10		SOFT		0.25 - 0.50		2 - 4
COMPACT	10 - 30		FIRM		0.50 - 1.0		4 - 8
DENSE	30 - 50		STIFF		1.0 - 2.0		8 - 16
VERY DENSE	OVER 50		VERY STIFF		2.0 - 4.0		16 - 32
			HARD		OVER 4.0		OVER 32
RELATIVE DENSITY			CONSISTENCY				
+ Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon 12 inches (ASTM D - 1586)							
* Unconfined compressive strength in tons per square foot, as determined by laboratory testing or approximated by the standard penetration test (ASTM D - 1586), pocket penetrometer, torvane, or visual observation							
2019 Arya Engineering Inc.   #203 - 1001 Gibsons Way, Gibsons, British Columbia, V0N 1V8   w. aryaeng.ca   t. 604.741.2118   info@aryaeng.ca							



## **APPENDIX C – Site Photographs**





**Photograph 1 – Existing Structure**



**Photograph 2 – Area of Proposed Development**



**Photograph 3 – Undisturbed Material  
Observed at TP-01 Location**



**Photograph 4 – Compact to Dense Sand  
(Some Silt to Silty) at TP-02 Location**



## APPENDIX G - PROJECT SCHEDULES

\\s-ver-fs-01\projects\20198307\00\_PH3\_GW\_INVEST\Environmental\_Assessments\Task 030 Engineering\reporting\final report\y\_20198307\_SCRD\_GWInvest\_Ph3\_Prelim\_Eng\_Final\_public.docx

## Normal Schedule

Task	Days	Start	End
		Mar 01, 2020	Feb 05, 2022
<b>Task 100 - Construction Approvals, and Water Licence Application studies</b>	150	Mar 01, 2020	Jul 29, 2020
101 - Impact assessment for mitigation construction infrastructure and related DFO and FLNR applications	60	Apr 15	Jun 14
<i>Submit Impact Assessment Report and applications to DFO and FLNR</i>	0	Jun 14, 2020	Jun 14, 2020
<i>* Milestone - Receive DFO and FLNR approvals for works in a stream *</i>	90	Jun 14, 2020	Sep 12, 2020
102 - Groundwater level, Soames Creek flow monitoring, and EFN setting	30	May 07, 2020	Jun 06, 2020
<i>Submit Memo on EFN Assessment to FLNR</i>	0	Jun 06, 2020	Jun 06, 2020
103 - Ongoing Water Licence requests for clarifications	150	Mar 01, 2020	Jul 29, 2020
<i>Submit various requests for clarification to FLNR</i>	0	Sep 13, 2019	Sep 13, 2019
<b>Task 200 - Well Drilling and Testing</b>		Mar 01, 2020	Jul 30, 2020
201 - Drilling and testing program design	30	Mar 01, 2020	Mar 31, 2020
<i>Submit location memo to SCRD</i>		Mar 31	Mar 31
202 - Drilling and well installation	31	Mar 31, 2020	May 01, 2020
203 - Pumping test and water quality sampling	45	May 01, 2020	Jun 15, 2020
<i>* Milestone - drilling and testing complete*</i>	0	Jun 15, 2020	Jun 15, 2020
204 - GARP screening, well protection plan, and well completion reporting	45	Jun 15, 2020	Jul 30, 2020
<i>Submit Well Drilling and Pumping Test Completion Report to SCRD and FLNR</i>	0	Jul 30, 2020	Jul 30, 2020
<b>Task 300 - Detailed Engineering Design</b>	286	Mar 01, 2020	Dec 12, 2020
301 - 50% Design for mitigation infrastructure	45	Mar 01, 2020	Apr 15, 2020
302 - 60% Detailed design and BC Hydro application	45	Jul 30, 2020	Sep 13, 2020
<i>Submit 60% Design Drawings to SCRD</i>	0	Sep 13, 2020	Sep 13, 2020
303 - 90% Detailed design to SCRD	45	Sep 13, 2020	Oct 28, 2020
<i>Submit 90% Design Drawings to SCRD</i>	0	Oct 28, 2020	Oct 28, 2020
304 - Issued for tender (draft)	45	Oct 28, 2020	Dec 12, 2020
<i>* Milestone - feedback from BC Hydro*</i>	42	Sep 13, 2020	Oct 25, 2020
<i>Submit Draft Issue for Tender to SCRD</i>	0	Dec 12, 2020	Dec 12, 2020
305 - Issued for tender (Final)	30	Dec 12, 2020	Jan 11, 2021
<i>Submit Final Issue for Tender to SCRD and BC Hydro</i>	0	Jan 11, 2021	Jan 11, 2021
306 - Vancouver Coastal Health Construction permit application	30	Jan 11, 2021	Feb 10, 2021
<i>Submit Construction Permit Application to VCH</i>	0	Oct 31, 2020	Oct 31, 2020
<b>Task 400 - Construction Administration</b>	360	Feb 10, 2021	Feb 05, 2022
<i>* Milestone - Receive VCH Construction Permit *</i>	42	Feb 10, 2021	Mar 24, 2021
<i>* Milestone - Receive Water Licence *</i>	0	Oct 31, 2020	Oct 31, 2020
401 - Tendering and award (notice to proceed after receipt of Construction Permit and Water Licence)	60	Feb 10, 2021	Apr 11, 2021
402 - Construction and pre-commissioning	270	Apr 11, 2021	Jan 06, 2022
<i>* Milestone - BC Hydro Connection *</i>	300	Oct 31, 2020	Aug 27, 2021
<i>* Milestone - BC Hydro water system energization *</i>	0	Aug 27, 2021	Aug 27, 2021
403 - Construction of instream works (est. 2 days) during fish window	30	Jun 15, 2021	Jul 15, 2021
404 - Commissioning	30	Jan 06, 2022	Feb 05, 2022
<i>Submit various Construction Administration memos to SCRD and VCH</i>	0	Feb 10, 2021	Feb 05, 2022

## Accelerated schedule

Project Week #

Task	Days	Start	End
		Mar 01, 2020	Jul 28, 2021
<b>Task 100 - Construction Approvals, and Water Licence Application studies</b>	150	Mar 01, 2020	Jul 29, 2020
101 - Impact assessment for mitigation construction infrastructure and related DFO and FLNR applications	60	Apr 15	Jun 14
<u>Submit Impact Assessment Report and applications to DFO and FLNR</u>	0	Jun 14, 2020	Jun 14, 2020
<u>* Milestone - Receive DFO and FLNR approvals for works in a stream *</u>	90	Jun 14, 2020	Sep 12, 2020
102 - Groundwater level, Soames Creek flow monitoring, and EFN setting	30	May 07, 2020	Jun 06, 2020
<u>Submit Memo on EFN Assessment to FLNR</u>	0	Jun 06, 2020	Jun 06, 2020
103 - Ongoing Water Licence requests for clarifications	150	Mar 01, 2020	Jul 29, 2020
<u>Submit various requests for clarification to FLNR</u>	0	Sep 13, 2019	Sep 13, 2019
<b>Task 200 - Well Drilling and Testing</b>		Mar 01, 2020	Jul 30, 2020
201 - Drilling and testing program design	30	Mar 01, 2020	Mar 31, 2020
<u>Submit location memo to SCRD</u>		Mar 31, 2020	Mar 31, 2020
202 - Drilling and well installation	31	Mar 31, 2020	May 01, 2020
203 - Pumping test and water quality sampling	45	May 01, 2020	Jun 15, 2020
<u>* Milestone - drilling and testing complete*</u>	0	Jun 15, 2020	Jun 15, 2020
204 - GARP screening, well protection plan, and well completion reporting	45	Jun 15, 2020	Jul 30, 2020
<u>Submit Well Drilling and Pumping Test Completion Report to SCRD and FLNR</u>	0	Jul 30, 2020	Jul 30, 2020
<b>Task 300 - Detailed Engineering Design</b>	163	Mar 01, 2020	Aug 11, 2020
301 - 50% Design for mitigation infrastructure	45	Mar 01, 2020	Apr 15, 2020
302 - 60% Detailed design and BC Hydro application	45	Mar 01, 2020	Apr 15, 2020
<u>Submit 60% Design Drawings to SCRD and BC Hydro Application (&amp; deposit)</u>	0	Apr 15, 2020	Apr 15, 2020
303 - 90% Detailed design	60	Apr 15, 2020	Jun 14, 2020
<u>* Milestone - feedback from BC Hydro*</u>	42	Apr 15, 2020	May 27, 2020
<u>Submit 90% Design Drawings to SCRD</u>	0	Jun 14, 2020	Jun 14, 2020
304 - Issued for tender (draft)	30	Jun 14, 2020	Jul 14, 2020
<u>Submit Draft Issue for Tender to SCRD</u>	0	Jul 14, 2020	Jul 14, 2020
305 - Issued for tender (Final)	21	Jul 14, 2020	Aug 04, 2020
<u>Submit Final Issue for Tender to SCRD and BC Hydro</u>	0	Aug 04, 2020	Aug 04, 2020
306 - Vancouver Coastal Health Construction permit application	7	Aug 04, 2020	Aug 11, 2020
<u>Submit Construction Permit Application to VCH</u>	0	Aug 11, 2020	Aug 11, 2020
<b>Task 400 - Construction Administration</b>	351	Aug 11, 2020	Jul 28, 2021
<u>* Milestone - Receive VCH Construction Permit *</u>	42	Aug 11, 2020	Sep 22, 2020
401 - Tendering and award (notice of award only)	45	Aug 11, 2020	Sep 25, 2020
<u>* Milestone - Receive Water Licence * (issue notice to proceed)</u>	0	Oct 31, 2020	Oct 31, 2020
402 - Construction and pre-commissioning	210	Oct 31, 2020	May 29, 2021
<u>* Milestone - BC Hydro connection *</u>	240	Oct 31, 2020	Jun 28, 2021
<u>* Milestone - BC Hydro water system energization *</u>	0	Jun 28, 2021	Jun 28, 2021
403 - Construction of instream works outside of fish window (est. 2 days)	30	May 01, 2021	May 31, 2021
404 - Commissioning	60	May 29, 2021	Jul 28, 2021
<u>Submit various Construction Administration memos to SCRD and VCH</u>	0	Aug 11, 2020	Jul 28, 2021



## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

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**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Yuli Siao, Senior Planner

**SUBJECT:** **Sunshine Coast Regional District Zoning Amendment Bylaw No. 337.121, 2019 (Thomson) Consideration of First Reading – Electoral Area A**

---

### RECOMMENDATIONS

**THAT** the report titled **Sunshine Coast Regional District Zoning Amendment Bylaw No. 337.121, 2019 (Thomson) Consideration of First Reading – Electoral Area A** be received;

**AND THAT** *Sunshine Coast Regional District Zoning Amendment No. 337.121, 2019* be forwarded to the Board for consideration of First Reading;

**AND THAT** Bylaw No. 337.121, 2019 be referred to the Egmont / Pender Harbour Advisory Planning Commission, shíshálh Nation and the Ministry of Transportation & Infrastructure for comment;

**AND FURTHER THAT** a Public Information Meeting be held with respect to Bylaw No. 337.121, 2019 prior to consideration of Second Reading.

---

### BACKGROUND

SCRD has received an application to amend Zoning Bylaw No. 337 to allow a portion of a parcel (hereafter referred to as the subject parcel) to provide off-site parking for a proposed subdivision without on-site parking. An application summary and location maps for both parcels are provided below.

The purpose of this report is to introduce the application and obtain direction from the Planning and Community Development Committee prior to moving forward to the next stage of the application process.

Owner / Applicant:	Lauren Scott Thomson / Ventureland Management Ltd.
Civic Address:	Northwest of intersection of Milne Road and Lee Road
Legal Description:	Lot 8, District Lot 3921, Group 1 New Westminster District, Plan BCP23871
Electoral Area:	A – Egmont / Pender Harbour
Parcel Area:	3.1 acre
OCP Land Use:	Rural Residential A
Land Use Zone:	RU1 (Rural One)
Application Intent:	To amend zoning bylaw to allow off-site parking for other properties

Table 1 - Application Summary of Subject Parcel





Figure 1 – General locations

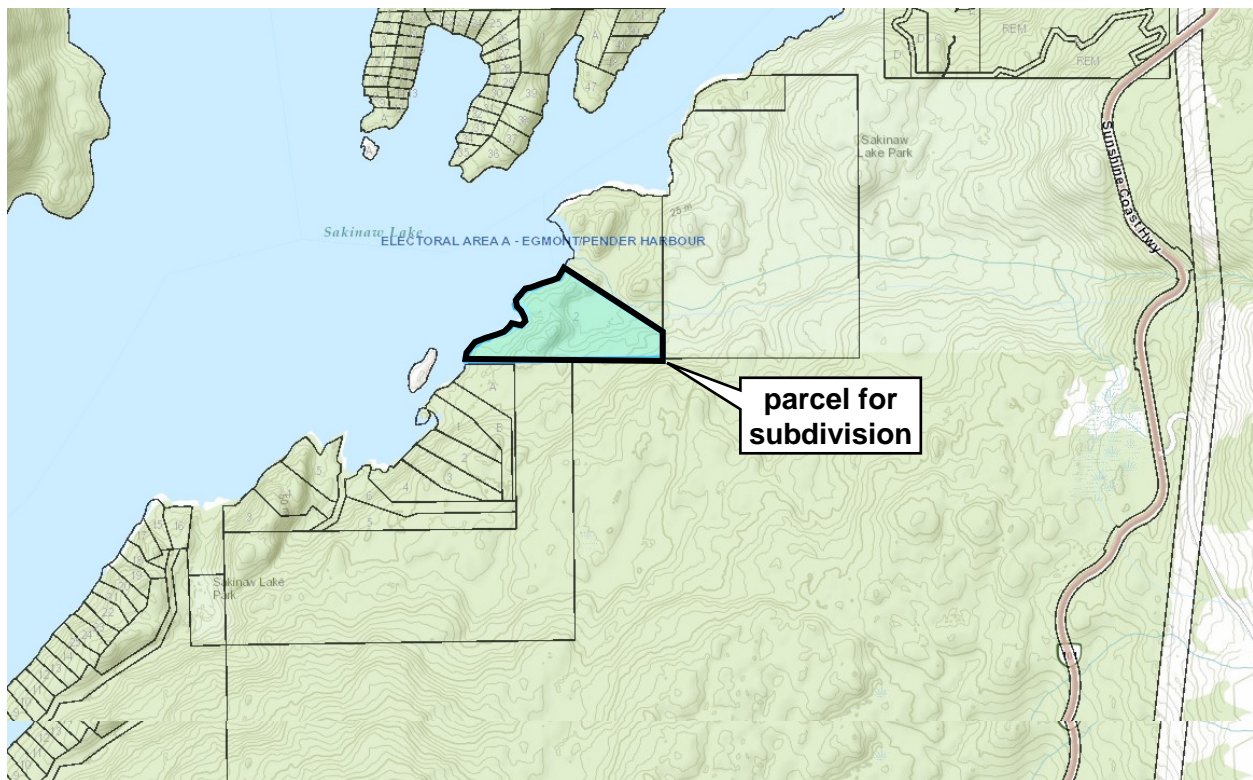


Figure 2 – Location of parcel for subdivision



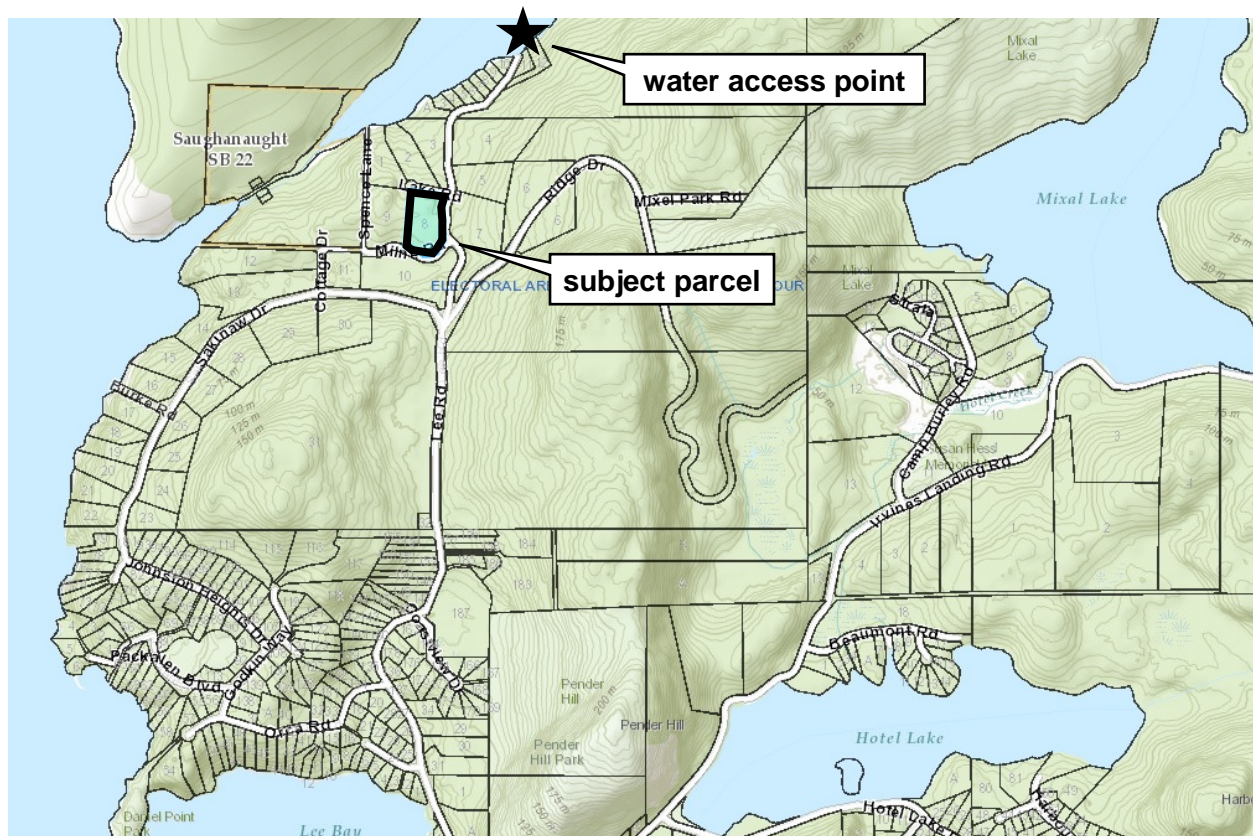


Figure 3 – Location of subject parcel and water access point

## DISCUSSION

### *Existing and Proposed Uses*

The subject parcel is located at the northwest corner of Milne Road and Lee Road, near the south end of Sakinaw Lake. It is currently covered with trees and other vegetation but devoid of structures.

The parcel for which parking is proposed to be provided is Lot 2 District Lot 4694 Plan LMP922, located on the northeast side of Sakinaw Lake. The parcel can be accessed by water only, as there is currently no road connection. The applicant proposes to subdivide this parcel into four parcels, with a potential for a total of seven dwellings, which will require a total of 14 off-site parking spaces in accordance with the zoning bylaw.

### *Official Community Plan and Zoning Bylaw No. 337*

Section 2.1.6 of the Egmont / Pender Harbour Official Community Plan (OCP) states that subdivision approval for water-access-only properties is contingent upon off-site parking on suitably zoned lands, and other properties within the Rural Residential designations may be considered in the future for off-site parking for water access lakefront properties, subject to review by the SCRD and the community in the zoning bylaw amendment process. Zoning Bylaw No. 337 requires off-street parking spaces with access to a road to be provided on the parcel or in an area permitted by zoning and secured by a covenant.

The proposed subdivision is on a water-access-only property, therefore the applicant is seeking to provide parking off-site on a portion of the subject parcel. The subject parcel is within the Rural Residential A designation of the OCP, hence it can be considered for off-site parking use. However, this parcel is zoned RU1, which does not permit parking for other properties (off-site parking). The zoning bylaw amendment process will review the suitability of this parcel to be used for off-site parking.

#### *Suitability for the Proposed Use*

The subject parcel is 3.1 acres (1.25 hectares) in size. The applicant proposes to designate by covenant an area of the parcel to provide parking for the proposed subdivision. There is an existing access water point to Sakinaw Lake at the north end of Lee Road. Boats can be launched from this point to reach the subdivision site. This area is within a walking distance of 600 m from the subject parcel. There is also an existing small dock in the Lake and connecting to the end of the road right of way. Photos of the water access area and dock are provided in Attachment B.

As the proposed third-party, off-site parking lot is currently not a permitted use in the RU1 zone, it should be made compatible with the character of the RU1 zone as much as possible. The parking lot should be sited and laid out in such a way that does not affect the parcel's future development potential, which may include two dwellings, a bed and breakfast inn, garden nursery, auxiliary light industry and agriculture as permitted in the RU1 zone. Access to the parcel, functionality of future uses, utility connection, water and sewage systems, topography, drainage, vegetation coverage and ground condition should also be taken into account in the design and integration of the parking lot.

If the parking lot is to be located adjacent to a public road, access to each parking stall should be provided by an internal drive aisle, rather than directly from the road, so that impact on traffic and road side drainage can be minimized. An allowance for boat trailers should be made in the layout. The parking lot should also be screened by a low fence or vegetation buffer to minimize visual impact. An example of a possible parking lot layout is provided in Figure 4.

If the parking lot is to be located within the interior of the subject parcel, an easement for a driveway to provide access to the parking lot through the subject parcel should also be required.

With consideration of the above requirements, the subject parcel can be considered suitable for the proposed parking use. Some of these requirements are incorporated into the proposed amendment bylaw (Attachment A). Further investigation for a suitable site and layout of the parking lot reflecting the above requirements should be conducted as the application progresses, and a design to be approved by SCRD will be incorporated into a covenant to secure the provision of the parking lot.





Figure 4 – Example of parking lot layout

#### *Organization and Intergovernmental Implications*

This application will be referred to the Egmont / Pender Harbour Advisory Planning Commission, shíshálh Nation and Ministry of Transportation and Infrastructure.

#### *Timeline for Next Steps*

The referral process (including a public information meeting to be held by the applicant) will provide feedback on whether or not the community desires to allow an off-site parking lot on the subject parcel.

A public information meeting will be organized by the applicant and consultation with agencies and First Nations will occur.

Comments received from the consultation process and public information meeting will be incorporated into another staff report to the Planning and Community Development Committee with recommendations relating to Second Reading of the bylaw, and if Second Reading proceeds, a public hearing would be arranged. After the public hearing conditions of final

approval can be presented to the SCRD Board. At that time the Board can decide if it wishes to proceed with adoption of the bylaw.

#### *Communications Strategy*

Staff recommend that the bylaws be referred to:

- Egmont / Pender Harbour Advisory Planning Commission;
- shíshálh Nation; and
- Ministry of Transportation & Infrastructure

### **STRATEGIC PLAN AND RELATED POLICIES**

The zoning bylaw amendment process supports the SCRD's strategy for community collaboration.

### **CONCLUSION**

The proposed rezoning of a portion of the subject parcel for off-site parking use for a water-access-only subdivision meets the criteria of the OCP for consideration of such uses. The proposed use may be suitable for the site if conditions discussed in this report can be met. The proposal may be supported subject to reviewing referral and public consultation input.

Staff recommend that the bylaw receive First Reading followed by the referral and public consultation process.

### **ATTACHMENTS**

Attachment A - Zoning Amendment Bylaw No. 337.121, 2019 for First Reading

Attachment B – Photos of water access area and dock

Reviewed by:			
Manager	X – D. Pady	Finance	
GM	X – I. Hall	Legislative	
A/CAO	X – T. Perreault	Other	



**Attachment A**

**SUNSHINE COAST REGIONAL DISTRICT  
BYLAW NO. 337.121**

A bylaw to amend the *Sunshine Coast Regional District Area A Zoning Bylaw No. 337, 1990*

---

The Board of Directors of the Sunshine Coast Regional District, in open meeting assembled, enacts as follows:

**PART A – CITATION**

1. This bylaw may be cited as *Sunshine Coast Regional District Zoning Amendment Bylaw No. 337.121, 2019*.

**PART B – AMENDMENT**

2. *Sunshine Coast Regional District Area A Zoning Bylaw No. 337, 1990* is hereby amended as follows:

Insert the following section immediately following Section 1011.6:

**Site Specific Uses**

1011.7 Notwithstanding Section 1011.1, on Lot 8, District Lot 3921, Group 1 New Westminster District, Plan BCP23871, a maximum area of 630 m<sup>2</sup> is permitted to be used as a parking lot to provide a maximum of 14 off-site parking spaces for dwellings to be created by subdivision of Lot 2 District Lot 4694 Plan LMP922, subject to the following conditions:

- (1) no parking stalls of the parking lot shall have direct access onto a highway;
- (2) if any part of the parking is located within 1 m from any parcel line, a fence or a vegetation buffer with a height of 1.2m shall be in place between the parcel line and the parking lot.

**PART C – ADOPTION**

READ A FIRST TIME this	####	DAY OF MONTH ,	YEAR
READ A SECOND TIME this	####	DAY OF MONTH ,	YEAR
PUBLIC HEARING HELD PURSUANT TO THE LOCAL GOVERNMENT ACT this	####	DAY OF MONTH ,	YEAR
READ A THIRD TIME this	####	DAY OF MONTH ,	YEAR

APPROVED PURSUANT TO SECTION 52 OF  
THE *TRANSPORTATION ACT* this

#### DAY OF MONTH , YEAR

ADOPTED this

#### DAY OF MONTH , YEAR

---

Corporate Officer

---

Chair

**Attachment B**

**Photos of water access area and dock**



## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

---

**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Yuli Siao, Senior Planner

**SUBJECT:** FRONTAGE WAIVER FRW00006 (ROCKFORD) – ELECTORAL AREA F

---

### RECOMMENDATIONS

**THAT** the report titled Frontage Waiver FRW00006 (Rockford) – Electoral Area F be received;

**AND THAT** the requirement for 10 per cent perimeter road frontage for the proposed creation of Lots 14 to 26 in the subdivision of District Lot 1354 Group 1 New Westminster District Except Firstly Part in Highway Plan 14999 Secondly Part Subdivided by Plan BCP4076 be waived.

---

### BACKGROUND

The SCRD has received a Frontage Waiver Application in relation to a 13-lot subdivision known as the Elphinstone Crossing Phase Two near Storvold Road in West Howe Sound (Attachment A – Subdivision Plan).

Section 512 of the Local Government Act requires that all new parcels have at least 10 per cent of their perimeter to front on a public road unless a local government waives the requirement. Neither the parent parcel nor the proposed lots meet the 10 per cent perimeter road frontage requirement and therefore the applicant is requesting the SCRD Board consider waiving the road frontage requirement to permit the proposed subdivision.

The purpose of this report is to provide information on the application and obtain direction from the Planning and Community Development Committee.

*Table 1 - Application Summary*

Owner / Applicant:	Tim Rockford
Civic Address:	Storvold Road
Legal Description:	DISTRICT LOT 1354 GROUP 1 NEW WESTMINSTER DISTRICT EXCEPT: FIRSTLY; PART IN HIGHWAY PLAN 14999 SECONDLY; PART SUBDIVIDED BY PLAN BCP4076
Electoral Area:	F – West Howe Sound
Parcel Area:	153.4 Acres (62.1 hectares)
OCP Land Use:	Rural Residential B
Land Use Zone:	Residential 2 (R2)
Subdivision District:	RU2
Application Intent:	To waive the requirements for 10% frontage along a public road for the proposed creation of Lots 14-26 in the proposed subdivision of DL1354

[illegible]

## Analysis

The applicant chose such lot shape and layout in order to fit the parent parcel, and also provide reasonable separation and privacy between lots. The applicant indicates that the 60 m lot width is considered common in similar-sized acreage properties on the Sunshine Coast.

---

2019-Dec-12-PCDC report Frontage Waiver (Rockford)



The West Howe Sound Advisory Planning Commission has reviewed the application and supports the application as proposed.

*Options*

Possible options to consider:

**Option 1: Issue the frontage waiver.**

The proposed subdivision conforms to zoning regulations and issuance of the frontage waiver will enable the subdivision to receive final approval.

Staff recommend this option as listed in the recommendation.

**Option 2: Deny the frontage waiver.**

The proposed subdivision could not proceed.

**STRATEGIC PLAN AND RELATED POLICIES**

N/A

**CONCLUSION**

A waiver for the frontage requirement is required by the SCRD Board for the proposed subdivision to proceed.

Staff support this application and recommend issuing a road frontage waiver for the proposed Lots 14-26, which will allow the subdivision to be considered for final approval by the Ministry of Transportation and Infrastructure.

*Attachments*

Attachment A – Proposed Subdivision Plan

Reviewed by:			
Manager	X – D. Pady	Finance	
GM	X – I. Hall	Legislative	
A/CAO	X – T. Perreault	Other	



## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

---

**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Yuli Siao, Senior Planner

**SUBJECT:** DEVELOPMENT VARIANCE PERMIT DVP00049 (WATSON) - ELECTORAL AREA E

---

### RECOMMENDATIONS

**THAT** the report titled Development Variance Permit DVP00049 (Watson) - Electoral Area E be received;

**AND THAT** Development Variance Permit DVP00049 to vary Zoning Bylaw No. 310 Section 502.8(b) for the maximum floor area of a freestanding auxiliary dwelling, from 55 m<sup>2</sup> to 88.5 m<sup>2</sup>, be issued subject to:

1. A new covenant in accordance with Vancouver Coastal Health requirements be registered to replace the covenant for the existing septic system.
  2. Comments received from Skwxwú7mesh Nation within the 60-day referral period.
- 

### BACKGROUND

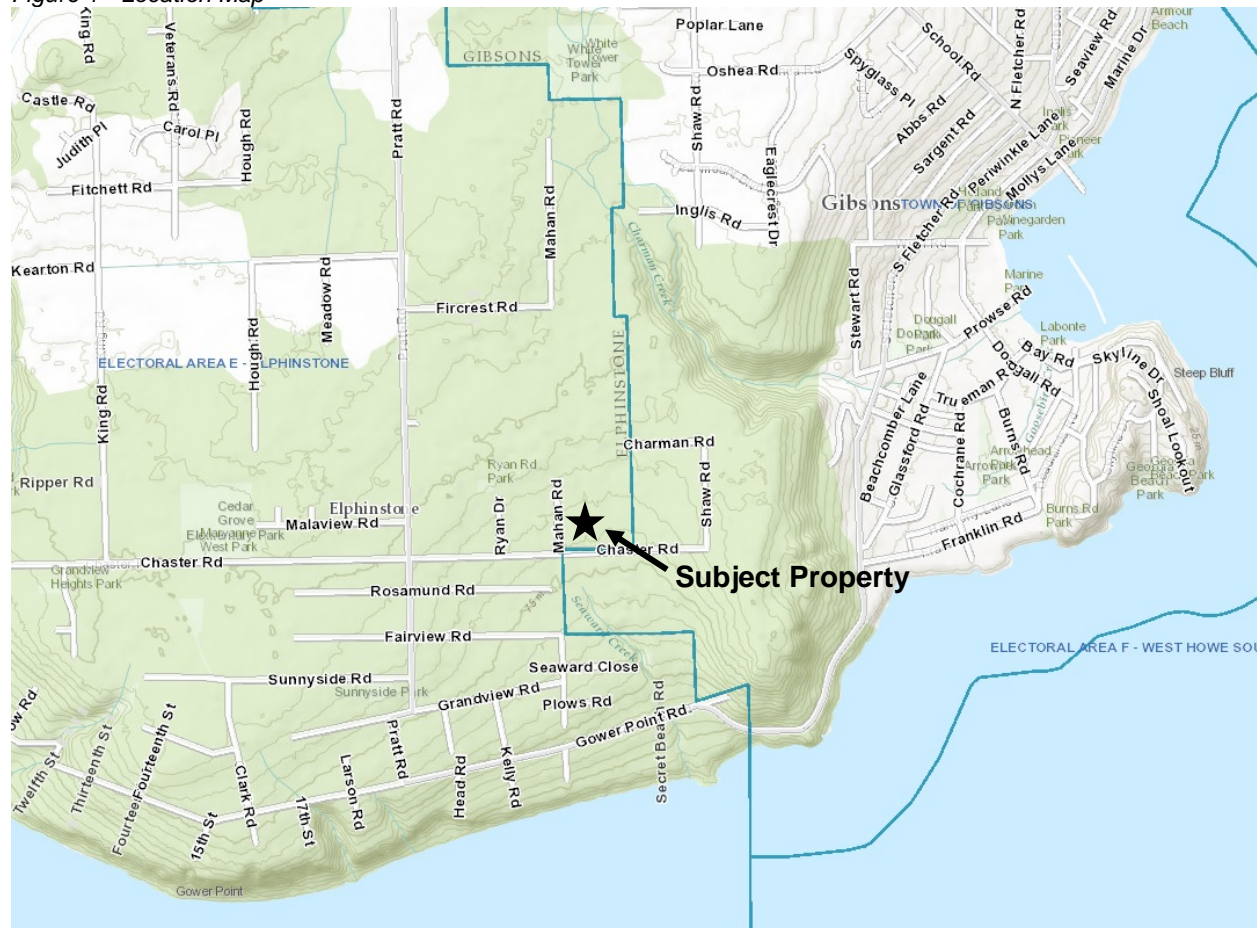
The SCRD received an application for a Development Variance Permit to vary the maximum floor area of an auxiliary dwelling unit from 55 m<sup>2</sup> to 88.5 m<sup>2</sup>.

The purpose of this report is to provide a land use planning analysis on the application and obtain direction from the Planning and Community Development Committee on moving forward.

Owner / Applicant:	Graeme Watson
Civic Address:	268 Mahan Road
Legal Description:	LOT B DISTRICT LOT 684 GROUP 1 NEW WESTMINSTER DISTRICT PLAN EPP20154, PID: 029-058-155
Electoral Area:	E – Elphinstone
Parcel Area:	3529 m <sup>2</sup>
OCP Land Use:	Rural Residential
Land Use Zone:	RU1 - Rural One
Application Intent:	To vary the maximum floor area of an auxiliary dwelling unit from 55 m <sup>2</sup> to 88.5 m <sup>2</sup> .

Table 1 - Application Summary

Figure 1 - Location Map



## DISCUSSION

The proposed free standing auxiliary dwelling will have a floor area of 88.5 m<sup>2</sup> (Attachment A – Building Plans). There is an existing single family dwelling on the property. The proposed auxiliary dwelling will be located on the vacant east part of the parcel and to the rear of the existing dwelling (Figure 2 – Site Plan).

The RU1 zoning for the parcel permits a single family dwelling and an auxiliary dwelling. The parcel size of the subject property can accommodate a larger auxiliary dwelling that can meet requirements for separation from the existing dwelling, setback from parcel lines and parcel coverage. There is ample space around the auxiliary dwelling to provide landscaping or screening to enhance privacy. A larger floor area can help to create more functional floor space that is more practical and suitable for a wider range of occupants of various housing needs.

Increasing the maximum auxiliary dwelling floor area to 90 m<sup>2</sup> is currently under consideration through the Zoning Bylaw No. 310 review.

The Elphinstone Official Community Plan recognizes the role auxiliary dwellings can play in providing diverse housing options.



As required by Vancouver Coastal Health (VCH), a covenant for the existing septic system will be replaced by a new covenant that meets all VCH requirements for servicing the existing and proposed dwellings.

Figure 2 – Site Plan



Based on the above analysis, the proposed variance meets all criteria to be considered for approval, including consistency with the intent of the Zoning Bylaw and Official Community Plan, and no adverse impact on adjacent properties or natural environment.

### Options

Possible options to consider:

#### **Option 1: Issue the permit.**

This would authorize the applicant to proceed with constructing the proposed auxiliary dwelling on the property. Planning staff consider this option would



support the provision of a more versatile housing option for the property owner without negative impact on the surrounding neighbourhood.

Planning staff recommend this option.

**Option 2: Deny the permit.**

The existing regulation requiring a maximum floor area of 55 m<sup>2</sup> for auxiliary dwellings in the RU1 zone would continue to apply.

*Organization and Intergovernmental Implications*

The development variance permit has been referred to the following agencies for comment:

Referral Agency	Comments
SCRD Building Division	No concerns with application.
Skwxwú7mesh Nation	Referred on October 30, 2019. No response received to date.
Elphinstone Advisory Planning Commission	The APC supports issuing the permit
Neighbouring Property Owners/Occupiers	Notifications were distributed on October 30, 2019 to owners and occupiers of properties within a 100m radius of the subject property. No comments received to date.

**STRATEGIC PLAN AND RELATED POLICIES**

Review of the application for the development variance permit supports the SCRD's strategy for community collaboration.

**CONCLUSION**

The proposed development variance permit to increase auxiliary dwelling floor area meets all criteria for variance considerations and helps to provide a more practical housing option that can be integrated into the existing neighbourhood.

Staff recommend support of this application subject to registration of a new septic covenant and receiving comments from the Skwxwú7mesh Nation within the 60-day referral period.

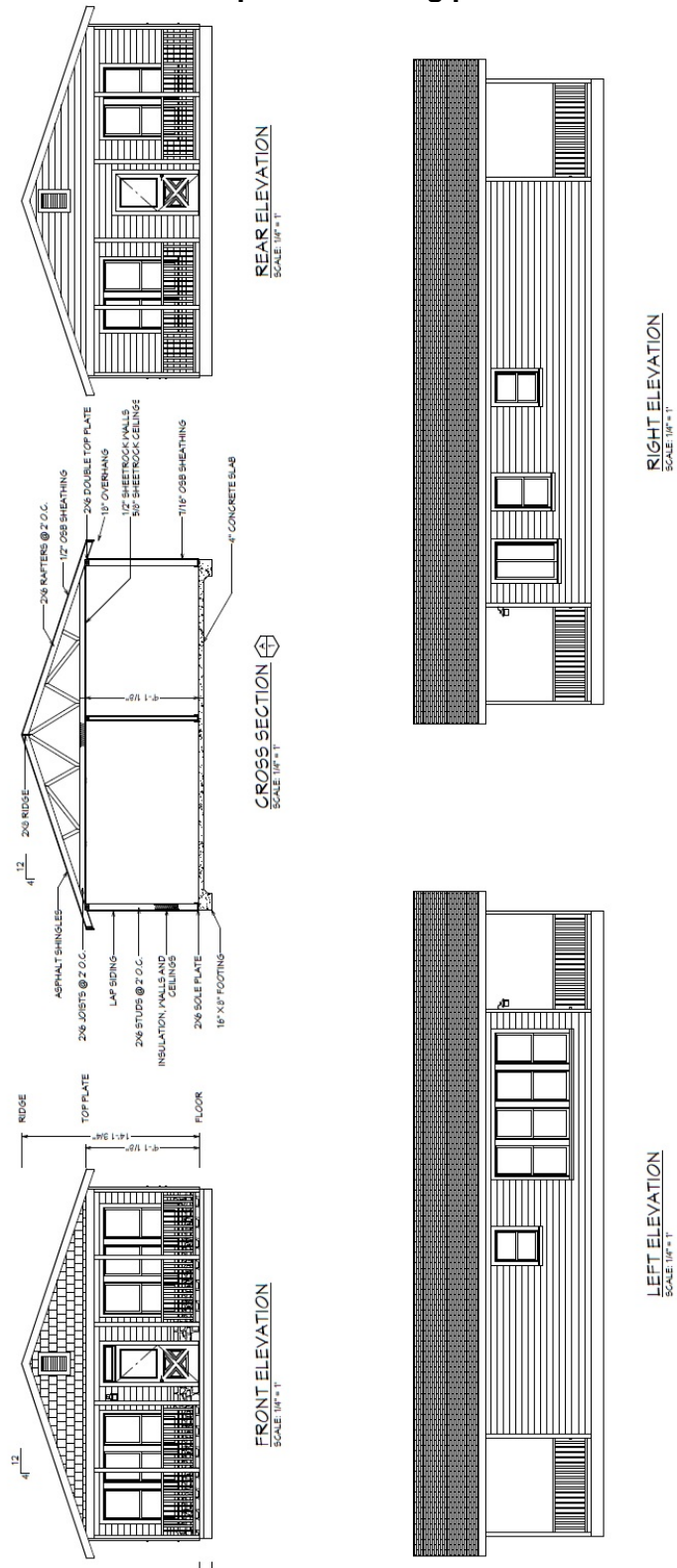
**ATTACHMENTS**

Attachment A – Proposed building plans

Attachment B - Applicant's response to variance criteria questions

Reviewed by:			
Manager	X - D. Pady	Finance	
GM	X - I. Hall	Legislative	
I/CAO	X – T. Perreault	Other	

**Attachment A    Proposed building plans**



**Attachment B Applicant's response to variance criteria questions**

- ① The variance should not defeat the intent of the bylaw standard or significantly depart from the planning principle or objective intended by the bylaw. Please elaborate how the requested variance meets this criteria:

THIS PROPOSAL IS LESS FLOOR SPACE THAN IS BEING CONSIDERED TO CHANGE IN BYLAW 310. AS STATED IN B.C. BUILDING CODE AN AUXILIARY DWELLING IS DESCRIBED AS BEING 90M<sup>2</sup>. THIS APPLICATION IS FOR AN AMENDMENT TO BUILD AN 88.5M<sup>2</sup> BUILDING WHERE CURRENTLY 55M<sup>2</sup> BUILDING IS PERMITTED.

- ② The variance should not adversely affect adjacent or nearby properties or public lands. Please elaborate how the requested variance meets this criteria:

BUILDING OVER SET BACK ALLOWANCE FARAWAY FROM OTHER PROPERTIES. WITH LANDSCAPING WILL NOT BE VISIBLE.

- ③ The variance should not be considered a precedent, but should be considered as a unique solution to an unusual situation or set of circumstances. Please elaborate how the requested variance meets this criteria:

THIS IS AN AREA INCREASE FOR AUXILIARY DWELLING. ALL OTHER REQUIREMENTS ARE MET.

- ④ The variance represents the best solution for the proposed development after all other options have been considered. Please elaborate how the requested variance meets this criteria:

ALL OTHER REQUIREMENTS ARE MET BUILDING HEIGHT, SETBACKS, AND A MATCHED MATERIAL ROOF TO EXISTING BUILDINGS. TO BUILD A TWO BEDROOM DWELLING THE FLOOR SPACE NEEDS TO BE EXPANDED.

- ⑤ The variance should not negatively affect the natural site characteristics or environmental qualities of the property. Please elaborate how the requested variance meets this criteria:

THE BUILDING IS SET FAR BACK ON LOT AND FAR FROM ANY PROPERTY LINES. IT WILL NOT BE VISIBLE FROM STREET AFTER LANDSCAPING.

## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

---

**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Kasha Janota-Bzowska, Planning Technician I

**SUBJECT:** Development Variance Permit Application DVP00052 (Van Hatten) – Area A

---

### RECOMMENDATION(S)

1. **THAT** the report titled Development Variance Permit Application DVP00052 (Van Hatten) – Area A be received;
  2. **AND THAT** Development Variance Permit Application DVP00052 to vary Zoning Bylaw No. 337 Section 516(1)(c) for setback distance from the natural boundary, from 20 metres to 17.42 metres, be issued subject to:
    - a. Comments received from shishálh Nation within the 60-day referral period.
- 

### BACKGROUND

The SCRD has received a Development Variance Permit application for the subject property located at 14837 Sunshine Coast Highway, Pender Harbour (as shown in Figure 1).

The variance is to reduce the natural boundary setback from 20 metres to 17.42 metres to permit the construction of a covered deck on a single family dwelling (SFD) currently under construction.

*Table 1 – Application Summary*

<b>Owner / Applicant:</b>	Larry and Beverley Van Hatten
<b>Legal Description:</b>	Lot B, District Lot 6384, BCAGRP 1, Plan EPP88611
<b>P.I.D.:</b>	030-853-761
<b>Electoral Area:</b>	A – Pender Harbour / Egmont
<b>Civic Address:</b>	14837 Sunshine Coast Highway, Madeira Park
<b>Zoning Bylaw No. 337:</b>	RU-1A Zone
<b>OCP Designation:</b>	Rural Residential A
<b>Parcel Area:</b>	3.60 ha (8.89 acres)
<b>Proposed Variance:</b>	To vary Section 516.1(c) of Zoning Bylaw No. 337 from 20 metres to 17.42 metres.

The purpose of this report is to provide information on the application and obtain direction from the Planning and Community Development Committee on moving forward.



## **DISCUSSION**

### *Zoning Bylaw 337*

The applicant is requesting a variance to the required natural boundary setback of Sakinaw Lake from 20 metres to 17.42 metres to permit the construction of a covered deck on a new single family dwelling currently under construction. This represents a setback variance of 2.58 metres.

The applicant used the 20 metre setback stakes of the survey plan to locate the foundation of the dwelling. Foundation forms were put in place before a building permit was approved.

The survey provided as part of the building permit submission showed the location of the deck footing but did not show the roof overhang of the covered porch, resulting in the projection of 2.58 metres into the 20 metre setback area in the proposed design.

### *Analysis*

A development permit was issued on September 3<sup>rd</sup>, 2019 for the subject property.

The appointed Qualified Environmental Professional provided a Riparian Areas Regulations report which recommends a Streamside Protection and Enhancement Area (SPEA) measuring 15 metres from the natural boundary of the lake. Despite the recommendation, the Zoning Bylaw requires a minimum setback distance of 20 metres from the natural boundary.

The applicant redesigned the roof overhang to conform to the 20 metre setback requirement, and a building permit was issued based on this amended design. The construction of the house has commenced without the covered deck. The applicants are seeking the variance in order to proceed with construction including the covered deck.

*Figure 1 – Siting for the proposed Covered Deck as part of the new Single Family Dwelling.*





*Figure 2 – Siting for the proposed Covered Deck as part of the new Single Family Dwelling.*



#### *Board of Variance*

An application to the Board of Variance was received on August 22<sup>nd</sup>, 2019 and the application proceeded to the Board of Variance meeting held on October 25<sup>th</sup>, 2019. The request was to vary the required setback to the natural boundary from 20 metres to 18.18 metres, as shown on the site survey supplied by the applicant as part of the application submission.

The applicant provided a rationale of hardship including the following:

- Foundation forms already in place based on a survey plan that does not indicate roof overhangs;
- Aesthetically pleasing and structurally functional design for the covered porch would be difficult without the projecting roof overhang; and
- Disruption of the intended use and enjoyment of the proposed deck.

At their meeting the Board of Variance determined that the application did not constitute a situation of hardship and passed a resolution to deny the application and recommend the applicant proceed to the Board with a Development Variance Permit to consider the proposed variance.

### *Site Plan Discrepancy*

The applicant has provided the submission requirements for the Development Variance Permit.

Upon further review of the application, a discrepancy was discovered in the site survey as provided as part of the Board of Variance application, which did not include a portion of the roof overhang into the setback.

Staff have determined that in order to include the roof overhang, the requested variance must be from 20 metres to 17.42 metres to account for the extension of covered deck beyond the footing location shown on the plan. This results in a variance of 2.58 metres.

The development variance permit application request has been amended from the proposed Board of Variance report and is now for 17.42 metres from the natural boundary of Sakinaw Lake.

### *Consultation*

The application has been referred to the following groups and agencies for comment.

*Table 2 – Consultation Summary*

<b>Group / Agency</b>	<b>Comments</b>
shíshálh Nation	No comments received to date.
SCRD Building Division	The building division has no objections.
Advisory Planning Commission	The Egmont/Pender Harbour APC met on November 27, 2019 The APC recommended approval of Variance application DVP00052.
Neighbouring Property Owners / Occupiers	Notifications sent on November 12, 2019. No comments received to date.

Planning Staff have notified neighbours within a one hundred (100) metre radius of the subject property, as per the Planning and Development Fees and Procedures Bylaw No. 522 and Section 499 of the *Local Government Act*.

This application was referred to the shíshálh Nation by the SCRD in accordance with the Protocol Agreement on Heritage. No comments have been received by the Nation to date. The applicant is responsible for ensuring all work undertaken complies with the Heritage Conservation Act.

### *Options / Staff Recommendations*

The proposed variance will result in construction of a covered deck as part of a new single family dwelling. This is consistent with other development in the Sakinaw Lake area and will not create an impact on the 15 metre SPEA as identified by the Qualified Environmental Professional.

Possible options to consider:

**Option 1:      Issue the permit.**

This would allow for the natural boundary setback to Sakinaw Lake to be varied from 20 metres to 17.42 metres.

The proposed setbacks will accommodate the architectural design and functionality for the wrap around covered deck of the proposed new single family dwelling as originally intended.

Staff recommend this option, subject to the following conditions:

1. Comments from the *shíshálh* Nation be received within the 60-day referral period and any requests from the *shíshálh* Nation be addressed by the property owners.

**Option 2:      Deny the permit.**

Zoning Bylaw No. 337 requirements for 20 metre minimum building setback from the natural boundary of a lake would apply.

*Organization and Intergovernmental Implications*

This application was referred to the SCRD Building Department. No objections have been received.

*Financial Implications*

None at this time.

*Timeline for next steps or estimated completion date*

Should this application be approved, the applicant could revise the building design through the building permit process.

*Communications Strategy*

As per Section 541 of the Local Government Act adjacent residents were notified of the application. No concerns have been received to date.

**STRATEGIC PLAN AND RELATED POLICIES**

N/A

**CONCLUSION**

The applicant is requesting a variance to the required natural boundary setback under section 516(1)(c) in Zoning Bylaw No. 337, 1990 from 20 metres to 17.42 metres in order to permit the construction of a covered deck on a proposed new single family dwelling.

This represents a setback variance of 2.58 metres

Planning staff support this application subject to the conditions listed in the recommendation.

*Attachments*

Attachment A – Building Plans

Attachment B – Site Plan

Attachment C – Riparian Assessment

Attachment D – Applicant's Rationale Letter

Reviewed by:			
Manager	X – D. Pady	Finance	
GM	X – I. Hall	Legislative	
A/CAO	X – T. Perreault	Other	



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NOTE TO GENERAL CONTRACTOR:

It is the contractors responsibility to verify all dimensions on site and report any discrepancies to the Architect prior to construction. Do not scale this drawing.

Materials and assemblies may not be substituted without the Architect's written authorization.

All drawings and specifications are the property of the Architect and all rights are reserved.

This drawing may not be used for construction unless stamped "For Construction" and sealed by the Architect.

R2 ISSUED WITH  
REVISIONS TO  
WINDOWS & DOORS  
MAR 5, 2019

PROJECT NAME:  
  
BEV AND LARRY

DRAWING TITLE:  
  
CONTEXT  
PLAN

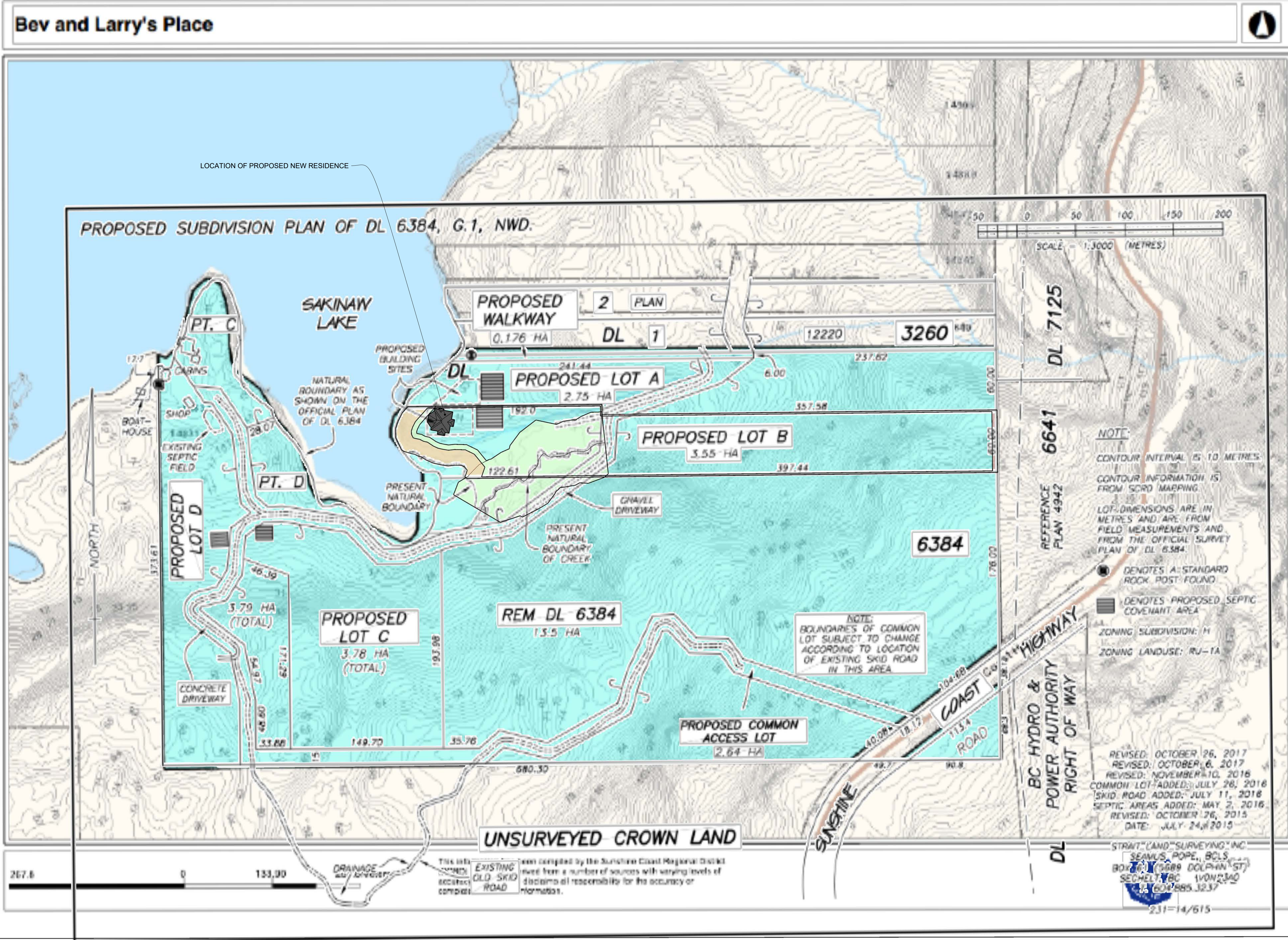
DRAWING NUMBER AND REVISION:  
  
A1.0R2

ISSUES AND REVISIONS:

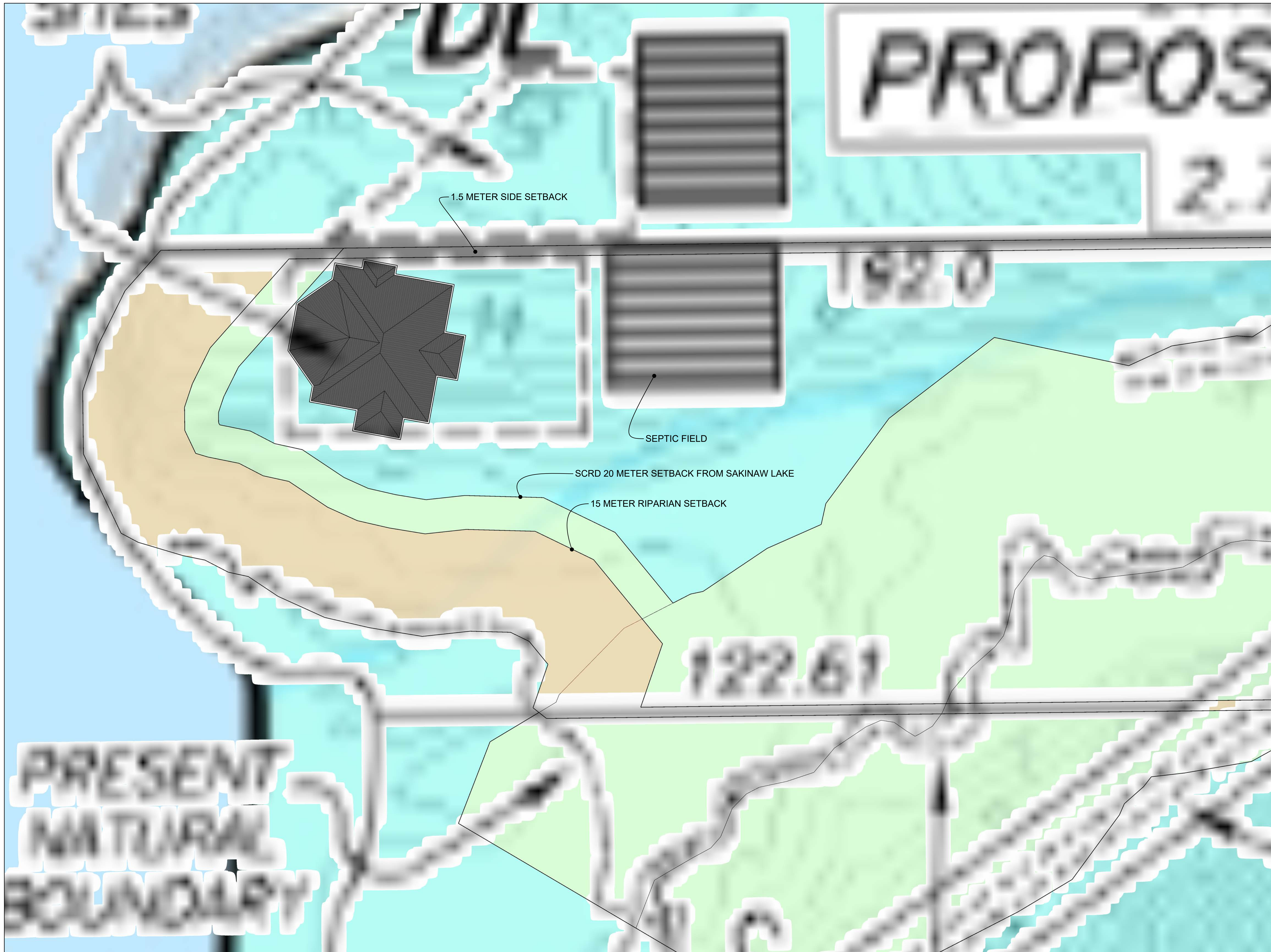
REV	DATE	ISSUE
	7/24/2018	Issued for building permit
R2	02/25/19	Revisions to windows & doors

SCALE:  
  
NA

ISSUE DATE:  
  
MAR 5, 2019







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R2 ISSUED WITH  
REVISIONS TO  
WINDOWS & DOORS  
MAR 5, 2019

PROJECT NAME:

BEV AND LARRY

DRAWING TITLE:

CONTEXT  
PLAN

DRAWING NUMBER AND REVISION:

# A1.0R2

ISSUES AND REVISIONS:

IV	DATE	ISSUE
	7/24/2018	Issued for building permit
R2	02/25/19	Revisions to windows & doors

SCALE:

$$1'' = 20'$$

ISSUE DATE:

MAR 5, 2019



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R2 ISSUED WITH  
REVISIONS TO  
WINDOWS & DOORS  
MAR 5, 2019

PROJECT NAME:  
BEV AND LARRY

DRAWING TITLE:  
MAIN FLOOR  
FRAMING

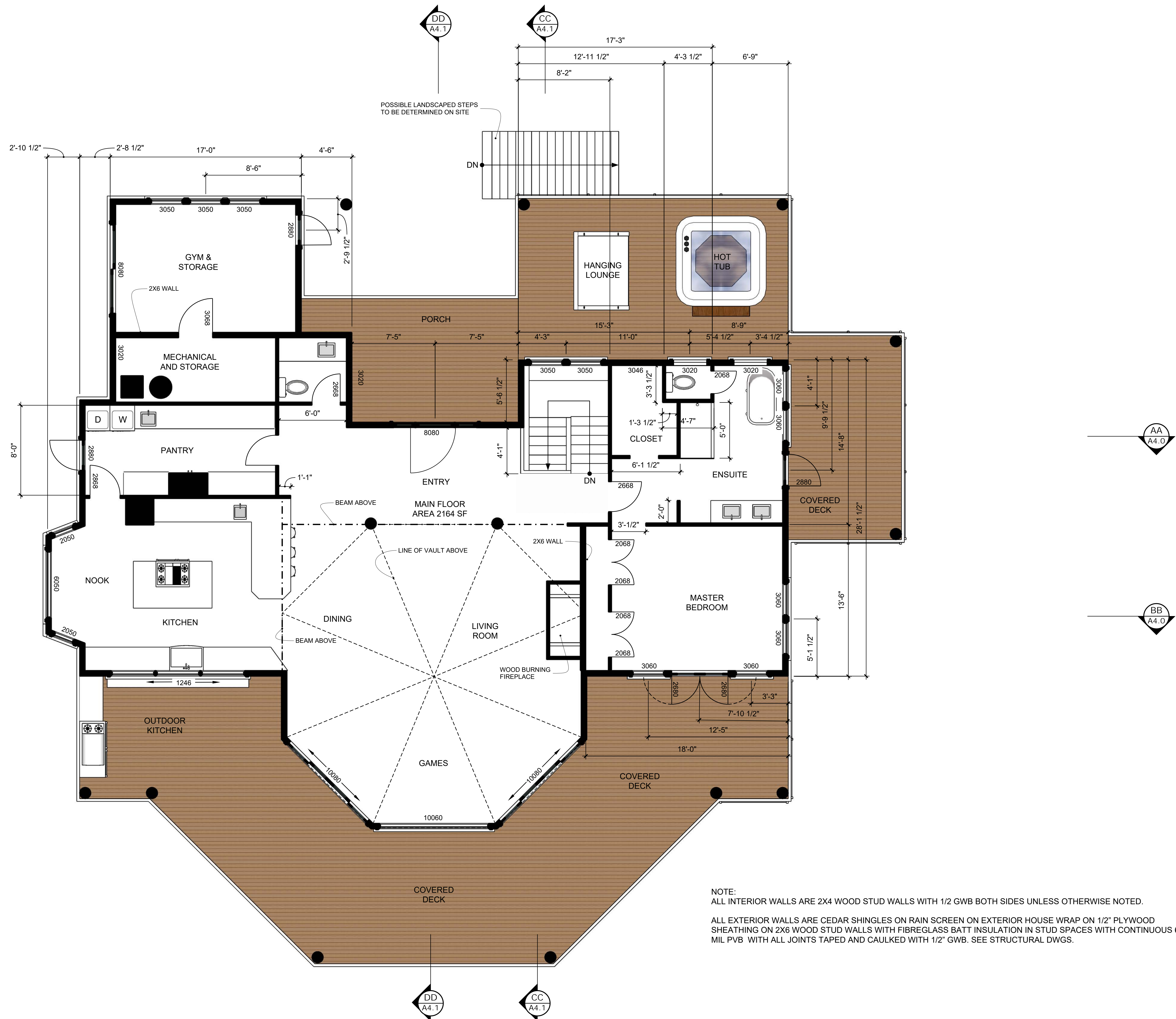
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A2.2R2

ISSUES AND REVISIONS:

REV	DATE	ISSUE
	7/24/2018	Issued for building permit
R2	02/25/19	Revisions to windows & doors

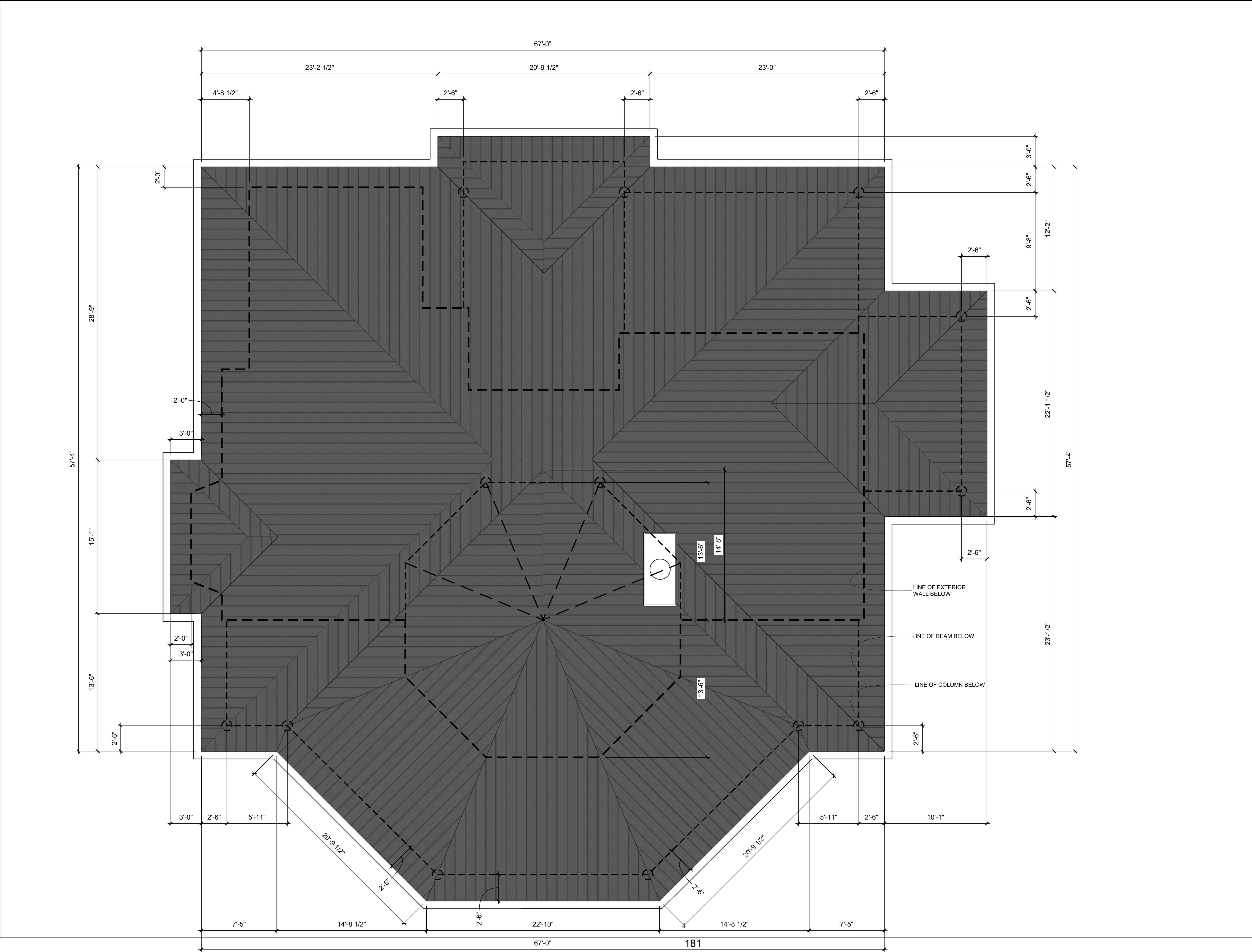
SCALE:  
1/4" = 1'-0"

ISSUE DATE:  
MAR 5, 2019



NOTE:  
ALL INTERIOR WALLS ARE 2X4 WOOD STUD WALLS WITH 1/2 GWB BOTH SIDES UNLESS OTHERWISE NOTED.  
ALL EXTERIOR WALLS ARE CEDAR SHINGLES ON RAIN SCREEN ON EXTERIOR HOUSE WRAP ON 1/2" PLYWOOD SHEATHING ON 2X6 WOOD STUD WALLS WITH FIBREGLASS BATT INSULATION IN STUD SPACES WITH CONTINUOUS 6 MIL PVB WITH ALL JOINTS TAPED AND CAULKED WITH 1/2" GWB. SEE STRUCTURAL DWGS.





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R2 ISSUED WITH REVISIONS TO WINDOWS & DOORS  
MAR 5, 2019

PROJECT NAME:  
BEV AND LARRY

DRAWING TITLE:  
ROOF PLAN

DRAWING NUMBER AND REVISION:  
A2.3R2

ISSUES AND REVISIONS:

REV	DATE	ISSUE
	7/24/2018	Issued for building permit
R2	02/25/19	Revisions to windows & doors

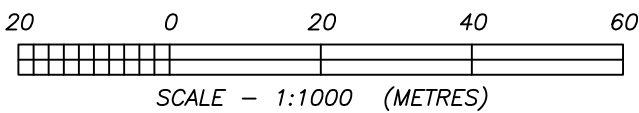
SCALE:

1/4" = 1'-0"

ISSUE DATE:

MAR 5, 2019

BC LAND SURVEYOR'S CERTIFICATE OF LOCATION (FORM SURVEYS) FOR LOT B DISTRICT LOT 6384 G.1 NWD PLAN EPP88611



ALL DISTANCES ARE IN METRES.

DIMENSIONS OF THE LOT ARE FROM FIELD MEASUREMENTS AND FROM REGISTERED PLAN EPP88611.

THIS DOCUMENT IS NOT VALID UNLESS ORIGINALLY SIGNED AND SEALED.

LOT B MAY BE AFFECTED BY THE FOLLOWING ENCUMBRANCES:

- XXXXX

THIS PLAN WAS PREPARED FOR LARRY VAN HATTEN.

THE REGISTERED OWNER OF LOT B IS LARRY VAN HATTEN.

COPYRIGHT 2019.

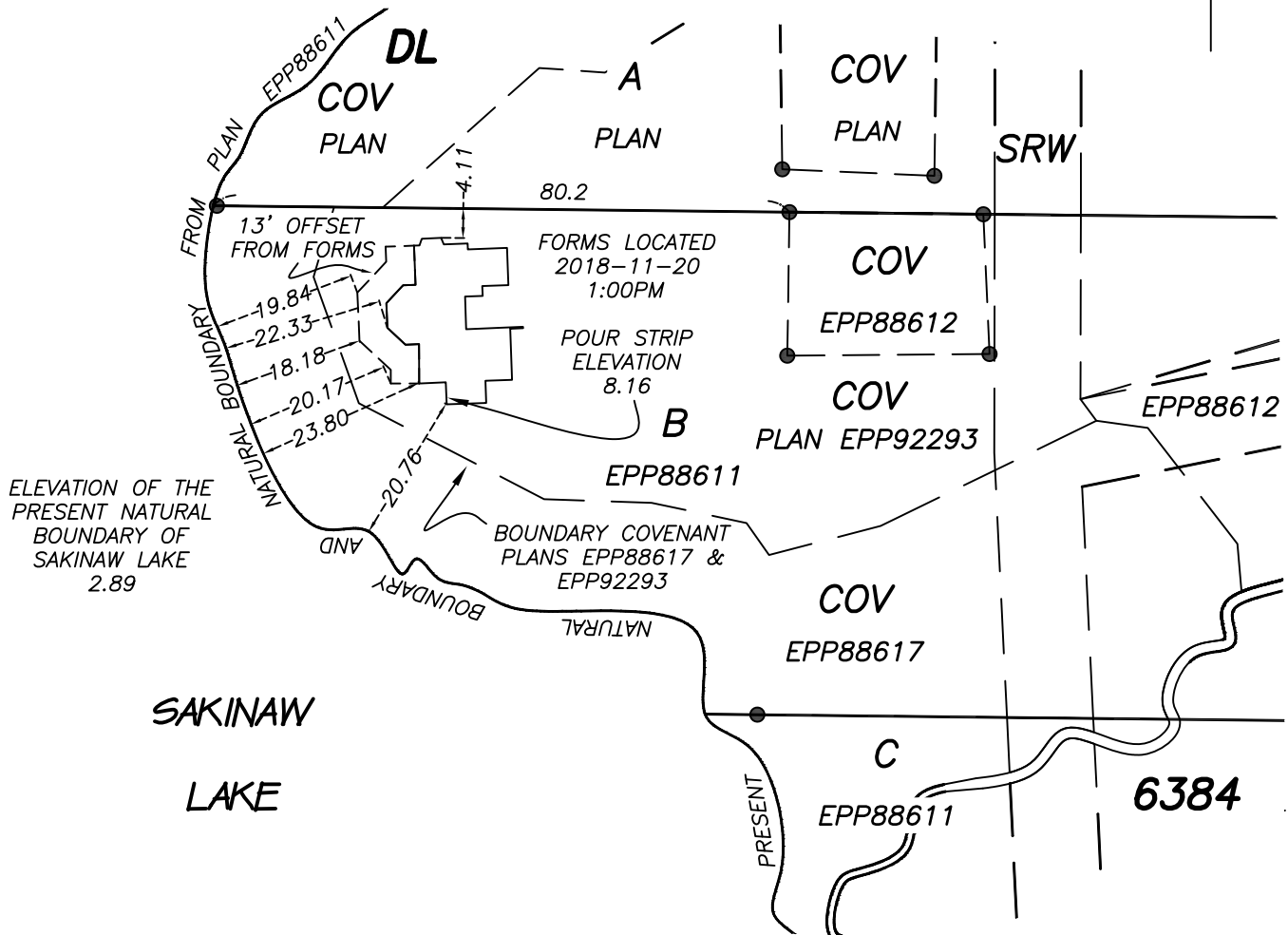
LOCATION: SUNSHINE COAST HIGHWAY, SAKINAW LAKE, BC

PID: XXX-XXX-XXX

NOTE:

- DENOTES A STANDARD IRON POST FOUND.

PRELIMINARY



THE INFORMATION SHOWN HEREON IS FOR THE SUNSHINE COAST REGIONAL DISTRICT BUILDING DEPARTMENT PURPOSES ONLY AND IS FOR THE EXCLUSIVE USE OF THE CLIENT FOR WHOM IT WAS PREPARED. IT IS CERTIFIED CORRECT AND VALID ONLY IN RESPECT TO THE IMPROVEMENTS AS SHOWN AND LOCATED ON THE 20TH DAY OF NOVEMBER, 2018. THE SURVEYOR ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR ANY DAMAGES THAT MAY BE SUFFERED BY A THIRD PARTY AS A RESULT OF ANY DECISIONS MADE OR ACTIONS TAKEN BASED ON THIS DOCUMENT. THIS DOCUMENT SHOWS THE RELATIVE LOCATIONS OF THE SURVEYED STRUCTURES AND FEATURES WITH RESPECT TO THE REGISTERED BOUNDARIES OF THE LAND. THIS DOCUMENT IS NOT A BOUNDARY SURVEY AND MAY NOT BE USED TO DEFINE PROPERTY CORNERS OR PROPERTY LINES. ALL RIGHTS RESERVED. NO PERSON MAY COPY, REPRODUCE, TRANSMIT, ALTER, DISTRIBUTE, OR STORE COPIES OF THIS DOCUMENT IN WHOLE OR IN PART WITHOUT THE PRIOR WRITTEN CONSENT OF THE UNDERSIGNED.

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PER: RAFAEL REBOLONE

BCLS

18240-615

**Riparian Areas Regulation: Assessment Report**

Date 2019-08-20

**I. Primary QEP Information**

First Name	Cam	Middle Name	S
Last Name	Forrester		
Designation	R.P.F.	Company: Cam Forrester & Associates	
Registration #	#2118	Email: <a href="mailto:cam_forrester@telus.net">cam_forrester@telus.net</a>	
Address	6231 Sunshine Coast Highway		
City	Sechelt	Postal/Zip	V0N 3A7
Prov/state	BC	Country	CAN
		Phone #	604.885.7112

**II. Secondary QEP Information: Not Applicable****III. Developer Information**

First Name	Larry	Middle Name	
Last Name	Van Hatten		
Company	N/A		
Phone #	604.898.4804		
Address	4668 Headland Drive		
City	West Vancouver	Postal/Zip	V7W 3J3
Prov/state	BC	Country	CAN

**IV. Development Information**

Development Type – residential single family	Rural Residential A		
Area of Development (ha)	0.1ha	Riparian Length (m)	Affected area - 350m
Lot Area (ha)	1.0ha	Nature of Development	Residential build.
Proposed Start Date	2019	Proposed End Date	Dec 2020

**V. Location of Proposed Development**

Street Address (or nearest town)	Pender Harbour		
Local Government	Sunshine Coast Regional District	City	Pender Harbour
Lake Name	Sakinaw Lake – 00435JERV		
Legal Description (PID)	Lot B DL6384 Group 1 NWD 030-853-761	Region	New Westminster
Stream/River Type	Lake	DFO Area	2
Watershed Code	900-147300		
Latitude	49	39	12
Longitude	123	03	47



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## **Section 1. Description of Fisheries Resources Values and a Description of the Development proposal**

(Provide as a minimum: Species present, type of fish habitat present, description of current riparian vegetation condition, connectivity to downstream habitats, nature of development, specific activities proposed, timelines)

The area of interest is small portion of the Sakinaw Lake riparian zone in parent lot DL 6384, which has been sub-divided, and the sub-divided Lot B owners have would like to construct a legal and conforming cottage.

The approach of this assessment is:

- to define the SPEA along the shoreline of Lot B and along the watercourse in the southern portion of Lot B;
- to define the SPEA along the portion of Lot B affected by Haskins Ck;
- to document and provide guidance for RAR-based building setback covenants; and,
- attest that the proposed development will not result in any alteration to fish habitat.

The Egmont & Pender Harbour OCP indicates that the watercourse (Haskins Creek has inventoried coho, cut-throat trout and kokanee salmon. Reach 1 is the upper reach, characterized by a narrow channel, steep gradient, and a distinct barrier to fish passage just above an existing road crossing (See Photo 1). Reach 2 (Photos 3-12) is shallow gradient and is accessible to fish from Sakinaw lake.

Sakinaw Lake is 681ha in size and has 35.3 km of shoreline. The lake and its feeder streams support Chum, Coho, Pink, Sockeye, Cutthroat Trout, Rainbow Trout and Kokanee Salmon. There are noteworthy salmonid enhancement structures at the mouth of the lake in the southwest ocean outfall area, which include a fish ladder, counting station, associated shed and log boom/walkway.

- Lot B - foreshore: The lake shoreline habitat in the vicinity of Lot B is composed of a littoral zone that is in a natural state and terrestrial native vegetation composed of mainly second growth conifer and a salal understory. The littoral zone is functionally intact and is characterized by a moderately steep incline, dipping towards the northwest at 8-30%, and appears to be consistent for 20+ metres from the shoreline. The lake substrate is mainly sloping bedrock with angular cobble/boulders. Coarse woody debris in the littoral zone is sparse and is composed of minor amounts of submerged fine and moderate sized woody debris with occasional logs and root wads. There are no shoal structures and minimal aquatic vegetation adjacent to Lot B. The riparian upland is a rocky, thin-soiled Douglas-fir, cedar-salal site with a moderately productive stand of pole-sized second growth conifer(major) and deciduous (minor). The southwest corner of Lot B is transitional to a shallow bay and to the swampy, seasonally flooded low area associated with the lower reach and estuary of Haskins Creek. The proposed building site is characterized by a rocky, thin-soiled knoll, where minimal trees will be removed for construction.
- Lot B – Haskins Creek: Reach-1: Reach-1 is the upper, steep sloped stream segment. No development is proposed along this reach. The riparian vegetation is a mixed stand of second growth composed of conifer (western hemlock, Douglas-fir and western red-cedar) and deciduous (big-leafed maple and red alder). The understory is characterized by various mid-slope rich site indicators such as ubiquitous sword fern and salmonberry. Channel slope is 10-20%, substrate is gravel cobble. A natural barrier to fish passage was identified as the reach break between Reach-2/Reach-1. Reach-2: is a low gradient riffle-pool structure with sand/gravel substrate overlaying deep organic parent materials. Lake and channel seasonal flooding/high water is evident and the natural boundary between the Sakinaw Lake shoreline and the Reach-2 channel and estuary is blurred by a transitional flat swamp landform. This transitional environment is characterized by sedge hummocks, deep saturated organics, seasonal flooding, skunk cabbage, and scrub willow. Further east towards the reach break, the riparian environment is characterized by a broken and open mixed second growth stand. Flooded stream margins with dense prolific salmonberry and skunk cabbage are common. Special measures along Reach-2 prescribe inclusion of these flooded margins in the SPEA as part

of a zone themed as 'sensitive soils (Photos 8-12). No development of the Reach-2 riparian zone is proposed except for upgrades to the pre-existing road access, which will be designed in such a way as to mitigate any further impacts to Reach-2. See Special Measures.

No new trees will be removed from the watercourse riparian zone.

The Egmont & Pender Harbour OCP indicates that:

- the Environmentally Sensitive Area Lake Sensitivity rating is 'Moderate'; 20m Lakeshore Setback and 'Power Craft Safety Area;
- the General Land Use Designation is Rural Residential 'A'; and,
- the Development Permit Area indicates a Riparian Area Assessment is required.

The existing development condition of Lot B consists solely of access roads and BC Hydro RoW. Adjacent lots are developed with established legal conforming cottages and associated permanent structures and landscaping, such as unattached decks, stairs, docks, driveways, a garage and rustic pathways.

The Lot B proposed cottage location will be outside of the RAR-derived SPEA for Sakinaw Lake, which in this case is 15m for most of the lot.

It is the opinion of the writer that the measures identified in this Assessment Report are necessary to protect the integrity of the terrestrial and aquatic habitat areas from the effects of the development, and are adequate to prevent harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

## ***Section 2. Results of Detailed Riparian Assessment***

**Description of Water bodies involved (number, type):**

Sakinaw Lake is 681ha in size and has 35.3 km of shoreline. The lake and feeder streams support Chum, Coho, Pink, Sockeye, Cutthroat Trout, Rainbow Trout and Kokanee Salmon. The proposed development does not impact any streams.

Wetland	N/A
Lake	Sakinaw Lk
Area	681ha

**Channel width and slope and Channel Type – Not Applicable**

-	I, <u>Cam Forrester, R.P.F.</u> , hereby certify that:
-	a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ;
-	b) I am qualified to carry out this part of assessment of the development proposal made by the developer <u>Larry Van Hatten</u> ;
-	c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
-	d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Existing or Potential Vegetation Category 

	Yes	No**
Fish bearing	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Segment 

LWD, Bank and Channel Stability ZOS (m)	<input type="text" value="15m"/>
Litter fall and insect drop ZOS (m)	<input type="text" value="15m"/>
Shade ZOS (m) max	<input type="text" value="&lt;30m (variable)"/>
Southwest bank	<input type="text" value="Yes"/> <input checked="" type="checkbox"/>

**Max SPEA width:**

15m. Variable 15-<30m, mainly 15m.  
See Section 3 Site Plan Figures.

\*\*If non fish-bearing, insert non-fish bearing status report. – N/A

I, Cam Forrester, R.P.F., hereby certify that:

a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*;

b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Larry Van Hatten;

c)

d) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and

e) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

**Results of Detailed Riparian Assessment – Haskins Ck**

Date: <input type="text" value="April, 2018"/>	
Description of Water bodies involved (number, type)	<input type="text" value="Haskins"/>
Stream	<input type="text" value="Haskins"/>

## FORM 1

Number of reaches	2		
Reach #	1		
Channel Width(m)			Gradient (%)
	0.3	-	-
	1.2	-	8
	0.7	-	-
	1.0	-	15
	1.1	-	-
	0.7	-	-
	1.3	-	-
	1.0	-	-
	1.0	-	-
	0.7	-	-
	0.8	-	-
Total: minus high /low mean	7.8	-	-
	0.9	-	12
	R/P	C/P	S/P
Channel Type	-	-	X

I, Cam Forrester, R.P.F., hereby certify that:  
 I am a qualified environmental professional, as defined in the  
 Riparian Areas Regulation made under the *Fish Protection Act*,  
 a) I am qualified to carry out this part of the assessment of the  
 development proposal made by the developer Van Hatten.  
 b) I have carried out an assessment of the development proposal  
 and my assessment is set out in this Assessment Report; and  
 c) In carrying out my assessment of the development proposal, I  
 have followed the assessment methods set out in the Schedule  
 to the Riparian Areas Regulation.

Site Potential Vegetation Type (SPVT)

	Yes	No	
SPVT Polygons		X	
Polygon No:	1		Method employed if other than TR.
	LC	SH	TR
SPVT Type			X
			N/A

**Zone of Sensitivity (ZOS) and resultant SPEA**

LWD, Bank and Channel Stability ZOS (m)	10	
Litter fall and insect drop ZOS (m)	10	
Shade ZOS (m) max	N/A	Southwest bank
		Yes
<b>Max SPEA width:</b>	10m	

Date: April 2018

Description of Water bodies involved (number, type) Haskins

Stream Haskins

Number of reaches 2

Reach # 2



FORM 1

Channel width and slope and Channel Type		Channel Width(m)		Gradient (%)	
		1.7	-	-	
		2.0	-	2	
		1.0	-	-	
		1.2	-	4	
		1.6	-	-	
		1.4	-	-	
		1.4	-	-	
		1.6	-	-	
		1.6	-	-	
		1.3	-	-	
		1.5	-	-	
Total: minus high /low		13.3	-	-	
mean		1.4	-	3	
		R/P	C/P	S/P	
Channel Type		X	-	-	

I, Cam Forrester, R.P.F., hereby certify that:  
 I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the *Fish Protection Act*,  
 d) I am qualified to carry out this part of the assessment of the development proposal made by the developer Wei Lai.  
 e) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and  
 f) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation.

Site Potential Vegetation Type (SPVT)

	Yes	No
SPVT Polygons		X

Polygon No: 1

	LC	SH	TR
SPVT Type			X

Method employed if other than TR.  
N/A

**Segment No:** 2

LWD, Bank and Channel Stability ZOS (m)	10
Litter fall and insect drop ZOS (m)	10
Shade ZOS (m) max	N/A

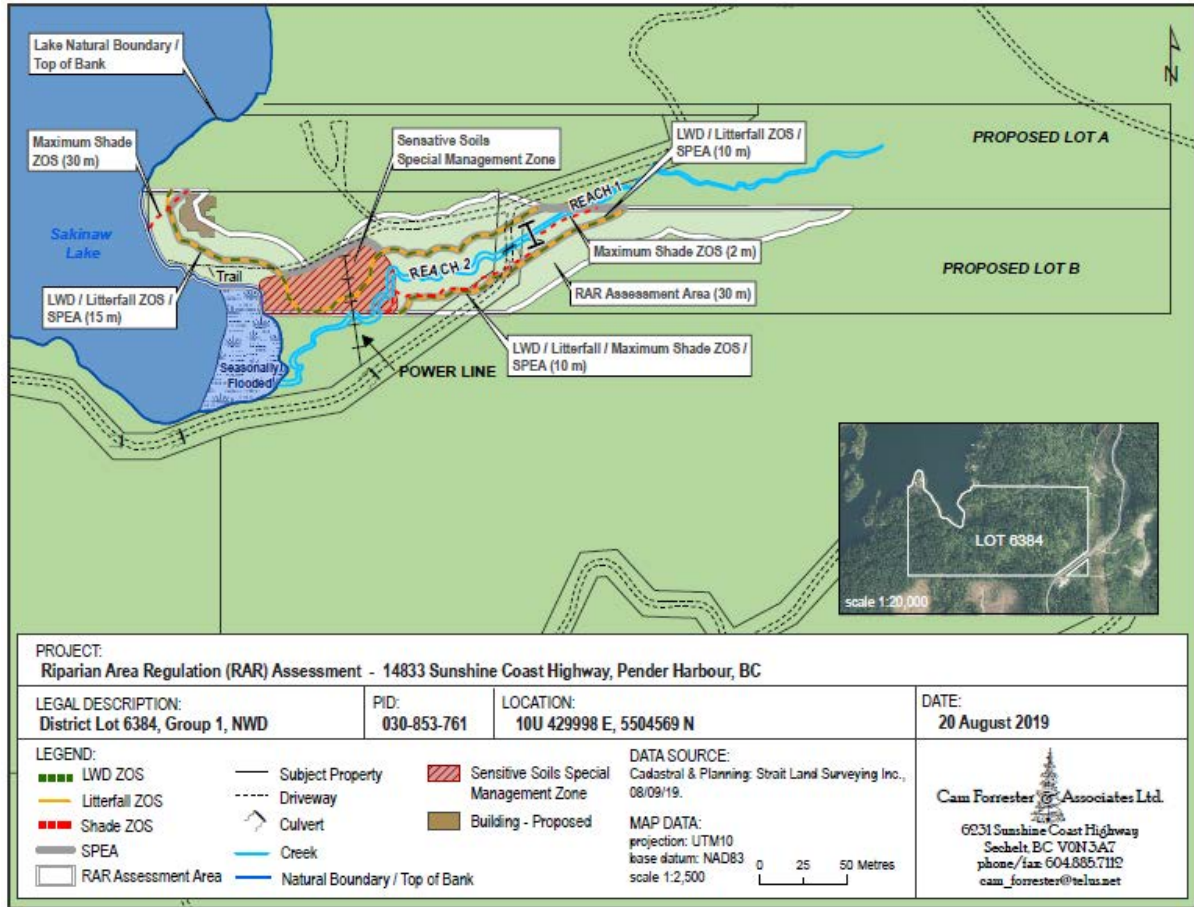
Southwest bank **Yes** ☐

**Max SPEA width:** 10m

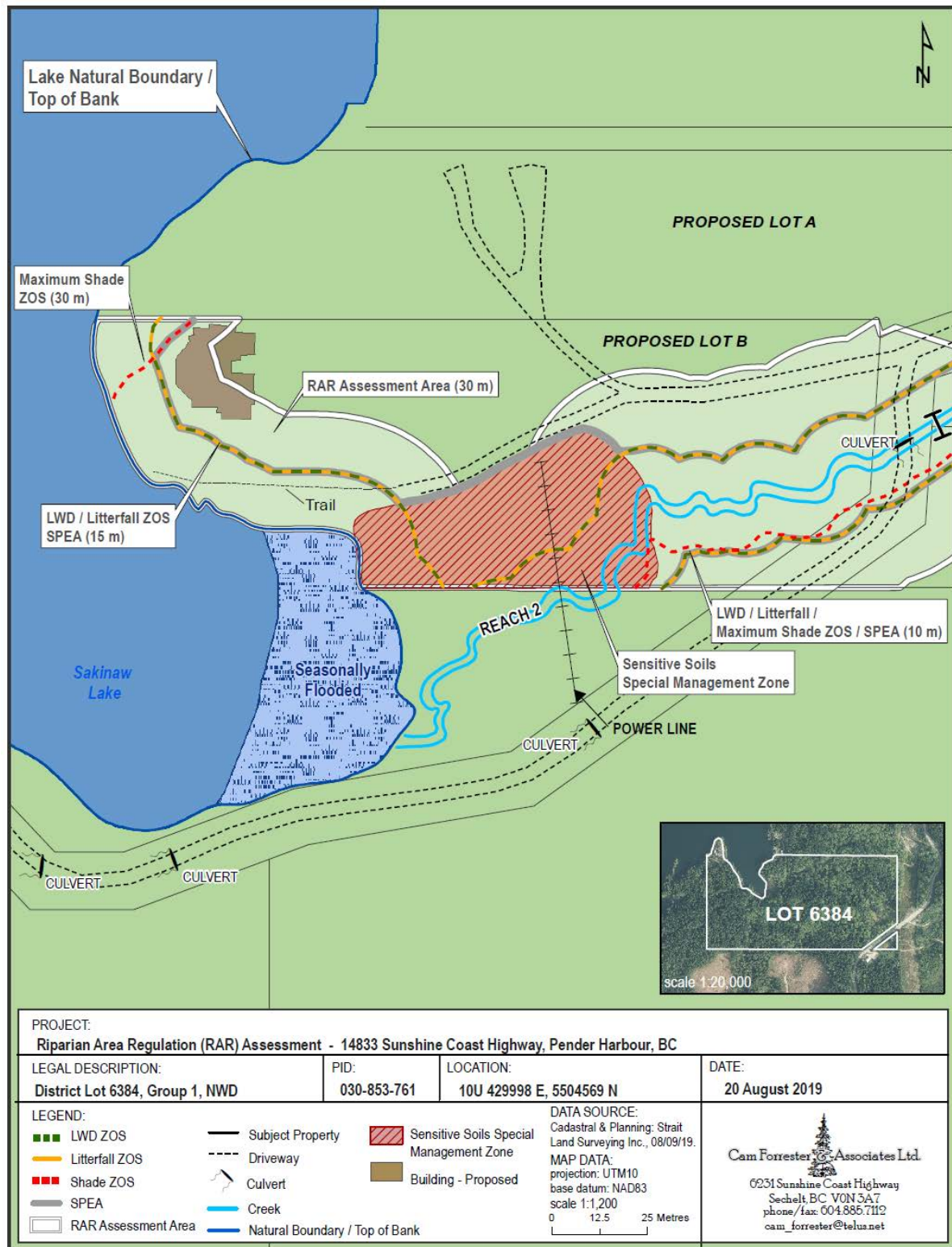
**Comments**

Measures to protect the SPEAs: See attachment.

**Section 3. Site Plan Figure 1 (Overview)**



# Site Plan Figure 2 (Detail)



## Section 4. Measures to Protect and Maintain the SPEA

1. Danger Trees	See attachment.
I, <u>Cam Forrester, R.P.F.</u> , hereby certify that: a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; b) I am qualified to carry out this part of the assessment of the development proposal made by the developer Larry Van Hatten c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
2. Windthrow	See attachment.
I, <u>Cam Forrester, R.P.F.</u> , hereby certify that: d) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; e) I am qualified to carry out this part of the assessment of the development proposal made by the developer Larry Van Hatten; f) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
a. Slope Stability	See attachment.
I, <u>Cam Forrester, R.P.F.</u> , hereby certify that: g) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; h) I am qualified to carry out this part of the assessment of the development proposal made by the developer Larry Van Hatten; i) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
b. Protection of Trees	See attachment.
I, <u>Cam Forrester, R.P.F.</u> , hereby certify that: j) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; k) I am qualified to carry out this part of the assessment of the development proposal made by the developer Larry Van Hatten; l) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
a. Encroachment	See attachment.
I, <u>Cam Forrester, R.P.F.</u> , hereby certify that: m) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; n) I am qualified to carry out this part of the assessment of the development proposal made by the developer Larry Van Hatten; o) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	
b. Sediment and Erosion Control	See attachment.
I, <u>Cam Forrester, R.P.F.</u> , hereby certify that: p) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i> ; q) I am qualified to carry out this part of the assessment of the development proposal made by the developer Larry Van Hatten; r) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation	

#### **Section 4. Measures to Protect and Maintain the SPEA (Continued)**

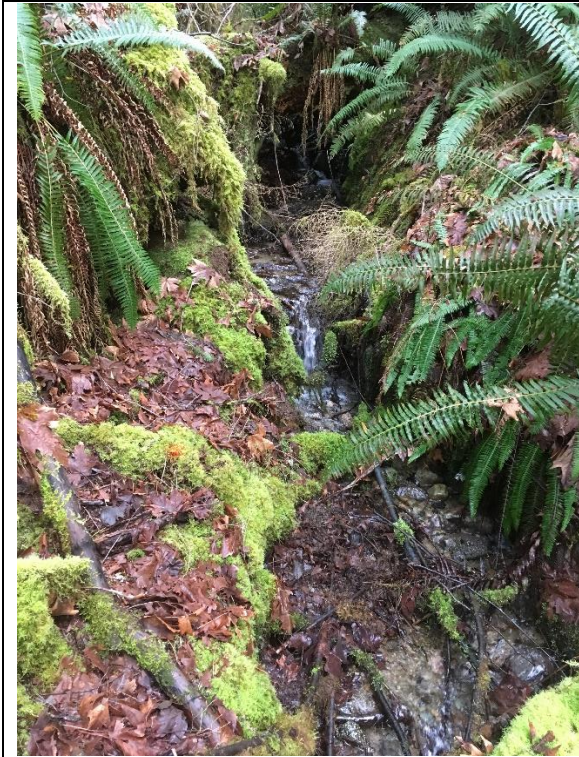
a. Stormwater Management	See attachment.
<p>I, <u>Cam Forrester, R.P.E.</u>, hereby certify that:</p> <p>s) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>t) I am qualified to carry out this part of the assessment of the development proposal made by the developer Larry Van Hatten;</p> <p>u) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p>	
b. Floodplain Concerns (highly mobile channel)	See attachment.
<p>I, <u>Cam Forrester, R.P.E.</u>, hereby certify that:</p> <p>v) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the <i>Fish Protection Act</i>;</p> <p>w) I am qualified to carry out this part of the assessment of the development proposal made by the developer Larry Van Hatten;</p> <p>x) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation</p>	

#### **Section 5. Environmental Monitoring**

<p>An environmental monitoring program is required during the construction phase to ensure that the SPEA is understood and protected. This will consist of :</p> <ul style="list-style-type: none"> <li>• crew education and standard operating procedures for construction, hazardous materials, pollution prevention, spill preparedness and fuel management around the lake;</li> <li>• pre-work meeting, pre-work plan and crew sign-offs;</li> <li>• on-site monitoring as required to ensure SPEA integrity is maintained by following the pre-work plan;</li> <li>• the ability for the qualified monitor to direct and advise works related to protection of the SPEA, especially on the implementation of erosion and sediment controls;</li> <li>• the ability to issue stop work orders in the case of practices that are illegal or damaging to the SPEA or Sakinaw Lake;</li> <li>• the ability to report environmental infractions related to stream protection regulations;</li> <li>• Photographs and notes should be taken to document the various phases of construction, any observed environmental events and their resolution.</li> <li>• A Post Development Report is to be completed and submitted to MOE-RAR notification system as a requirement of the regulation by a QEP. The report must document that setbacks and measures were adhered to during construction.</li> </ul>
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**Section 6. Photos**



**Photo 1: Reach 1 Haskins Crk**



**Photo 2: Reach 1 Haskins Crk**



**Photo 3: Reach 2 Haskins Crk at road culvert looking west downstream.**



**Photo 4: Reach 2 Haskins Crk at road culvert looking west downstream.**





**Photo 5: Reach 2 Haskins Crk mid-reach, streamside veg'n.**



**Photo 6: Reach 2 Haskins Crk mid-reach, streamside veg'n.**



**Photo 7: Reach 2 Haskins Crk mid-reach, streamside veg'n.**



**Photo 8: Reach 2 Haskins Crk mid-reach, streamside 'sensitive soils' zone.**





**Photo 9: Reach 2 Haskins Crk mid-reach, streamside veg'n.**



**Photo 10: Reach 2 Haskins Crk lower-reach.**



**Photo 11: Reach 2 Haskins Crk lower-reach.**



**Photo 12: Reach 2 Haskins Crk lower-reach transition to the lakeside seasonally flooded zone.**





**Photo 13: Sakinaw Lake - seasonally flooded zone, south of Lot B.**



**Photo 14: Sakinaw Lake - seasonally flooded zone, south of Lot B.**



**Photo 15: Sakinaw Lake - seasonally flooded zone and natural boundary along Lot B.**



**Photo 16: Sakinaw Lake - seasonally flooded zone and natural boundary along Lot B.**





**Photo 17: Upland Lot B, beyond the building site area.**



**Photo 18: Upland Lot B, beyond the building site area.**



**Photo 19: Lot B SPEA adjacent to Sakinaw Lk in southwest portion of lot.**



**Photo 20: Lot B SPEA adjacent to Sakinaw Lk in southwest portion of the lot.**



## **Section 7. Professional Opinion**

### **Assessment Report Professional Opinion on the Development Proposal's riparian area.**

Date Aug 09, 2019

I, Cam Forrester

Please list name(s) of qualified environmental professional(s) and their professional designation that are involved in assessment.)

hereby certify that:

- a) I am a qualified environmental professional, as defined in the Riparian Areas Regulation made under the Fish Protection Act;
  - b) I am qualified to carry out the assessment of the proposal made by the developers Larry Van Hatten, which proposal is described in section 3 of this Assessment Report (the "development proposal"),
  - c) I have carried out an assessment of the development proposal and my assessment is set out in this Assessment Report; and
  - d) In carrying out my assessment of the development proposal, I have followed the assessment methods set out in the Schedule to the Riparian Areas Regulation;
- AND

2. As qualified environmental professional(s), I/we hereby provide my/our professional opinion that:

- a) if the development is implemented as proposed by the development proposal there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed, OR
- b) CF if the streamside protection and enhancement areas identified in this Assessment Report are protected from the development proposed by the development proposal and the measures identified in this Assessment Report as necessary to protect the integrity of those areas from the effects of the development are implemented by the developer, there will be no harmful alteration, disruption or destruction of natural features, functions and conditions that support fish life processes in the riparian assessment area in which the development is proposed.

## ATTACHMENT – Special Measures

### Windthrow recommendations

Hazard Rating					Risk
-	Topographic Exposure	Soil Description	Stand Description	Summary Windthrow Hazard	Hazard X Consequence
-	West facing orientation/aspect, adjacent to a major coastal water body HIGH	MOD-HIGH	LOW	LOW	LOW-MOD
<p>Description: This assessment applies to the entire shoreline of the subject lot. The area is characterized by second growth Douglas-fir with scattered western red-cedar \ hemlock (minor deciduous). The height:diameter ratio of dominant trees is favourable (50-70%). Trees are adapted to wind loads. Soils are thin well-drained sandy loams with moderate coarse fragment content of 40-50+%. Windthrow likelihood and risk are low–moderate.</p>					

### Danger Trees

The property owner may modify trees within their property, and inside the RAR assessment area utilizing accepted arboriculture methodology for tree risk assessment and treatment. Within the SPEA, a QEP must provide a recommendation stating that any trees prescribed for removal or modification represent a hazard to life or property.

Currently there is no requirement to remove or modify any trees within the SPEA.

**Encroachment**

In order to maintain the effectiveness of the riparian protection area, vegetation and trees and tree rooting zones should be protected from machine traffic during construction and later from excessive foot traffic and any further clearing.

Property owners shall avoid additional trails; refuse dumping, soil disturbance, vegetation conversion or tree clearing in the existing riparian zone of Sakinaw Lake or Haskins Ck.

**Protection of trees during construction**

The shoreline vegetation and existing boundary trees should be protected during construction. A tree protection zone that includes as much of the rooting zone as possible, and at a minimum, the area of the tree drip line, should be established by creating a clear barrier to construction equipment and activity. These measures shall be established to ensure contractors and their agents respect the tree protection zone.

Within the tree protection zone, the following practices will apply:

- Do not change ground level;
- Do not change grade;
- No trenching through root zone;
- No paving over root zone;
- No parking or equipment traffic;
- No pollutants or chemical disposal.
- Avoid damage to tree stems.

**Stormwater Management**

Management of stormwater within the RAR Assessment area associated with this construction project is expected to be related to the sediment and erosion control considerations. See below.

Residential or other building construction within the RAR assessment area will follow building code requirements for site drainage.

**Terrain Stability**

A geotechnical assessment conducted by Chehalis Consulting Ltd, December 2017. No special geotechnical considerations with respect to the SPEA and aquatic habitat are required.

## **Sensitive Soils Special Measures Zone**

This area represents a continuation of the Haskins Ck riparian zone and transition to the Sakinaw seasonally flooded area. Soils are saturated organics and the area supports a rich riparian vegetation community. No machine traffic or vegetation/ground disturbance should occur in this area.

## **Road Upgrades and Maintenance**

Road Repair and Maintenance The segment of road that runs through Haskins Ck R-1 in Lot B is legal and conforming. The current condition is that the road surface is mainly compacted coarse fragments. The subgrade is stable, well drained and does not appear to be negatively affecting water quality or habitat in its current configuration. The fills along the watercourse are well vegetated with no signs of erosion.

Any maintenance should avoid sheet flow on the road and should crown and direct water directly to the ditches. Any resurfacing should be done during dry periods and should use clean material (low fine content) for new material.

Lot B near Sakinaw Lake and Sensitive Soil Zone The access route into Lot B is outside the SPEA and will be improved by adding drainage structures, elevating a portion of the road surface and spurring into the building site (See map). Culvert cross drain installation could include 2 or 3 corrugated metal pipes. Work will be done during drier periods and will shutdown during heavy rainfall. Road material will be clean with a low fine content. Any encountered ground water capable of releasing sediment will be sumped and pumped to surrounding vegetation to allow fines to settle out. Any bare and disturbed ground will be mulched and revegetated. See also SEC measures below.

## **Sediment and Erosion Control**

Management of sediment and erosion within the RAR Assessment area is related to minimizing soil disturbance from the construction of the cottages within the RAR assessment area. Bare soil should be minimized in extent and also by timing, clearing as close to construction as possible to avoid long periods of bare soil being exposed to rain and run-off erosion. Interception and diversion of run-off, including from the driveway access to manage erosion and sediment and to maintain water quality should consider the appropriate combination of interception/settlement ponds, diversion, mulching, re-vegetation, infiltration, sediment fences and/or plastic covers on exposed soils.



**Floodplain Channel Stability**

No encroachment or impact to any active floodplain is necessary under this proposal.  
No changes to stream floodplains, channels or streambanks are proposed.

Beverley and Larry Van Hatten  
4668 Headland Drive, West Vancouver, BC V7W 3J3

**August 23<sup>rd</sup>, 2019**

Sunshine Coast Regional District  
Planning and Community Development Department  
1975 Field Road, Sechelt, BC V0N 3A0

**Attn: Dave Pady, Planning Manager and Kasha Janota-Bzowska, Planning Technician I:**

This request is respectfully submitted by Bev and Larry Van Hatten, owners of Lot B, DL 6384.

Request:

We are requesting that you consider a Development Variance Permit based on the structural hardship created by a pinning error which was outside of our control and despite the fact that a Development Variance has not yet been issued.

Personal Background:

We are not new to Sakinaw Lake, having owned a boat access family cabin here for 36 years. We utilized the Board of Variance in 1983 to site our cabin and again in 2007 when we constructed an addition behind it. During the sale of that cabin, our realtor commented that it was the only fully permitted conforming cabin he had ever seen or listed on the lake. We have had a good working relation with an SCR D building inspector, who was our building inspector 36 years ago and we look forward to working with him again on this build. We covet this lake and have always worked to protect her water, forest and wildlife.

Purchase History:

In 2015, after many years of discussions with our friends, Bruce Barclay and Peter and Val Pedersen, the owners of DL6384, their 10 year Subdivision Saga appeared to be coming to a conclusion and we verbally agreed to purchase one of the two lots they were trying to create. We wrote an offer to purchase in Dec. 2018 and the subdivision was finally granted in July 2019.

Architectural Design:

We hired Walter Powell to design the retirement home of our dreams and when he revealed his vision to us in February 2018, it was love at first sight. We were most thrilled with the octagonal great room and its extension to a practical and necessary covered porch. Not only would it provide our family and grandkids the ability to enjoy the outdoors on a rainy day but it would also protect us and the south/west exposure of the home from the intense afternoon summer sun. Neighbours to this lot can have kitchens of 103 degrees in the summer and the covered porch was an important request to the architect. We worked with Walter to create a level entry and porch to facilitate wheelchair use.

Approval Timeline:

March 2018 (approx.) building plans to the building department for their files  
July 2018 - received a 15m setback approval from Cam Forrester in his Riparian Report;  
July 2018 (approx.) received a Geotechnical report from Chehalis Consulting Ltd

August 2018 - Development Permit applied for by Seamus Pope, on behalf of Barclay/Pederson.  
A Planning staff member authorized that DP in a memo to file Nov. 2018 but it was never issued, nor was anyone contacted to say there was a problem  
Sept 2018 Variance process regarding our hooked property;  
Oct. 2018 consulted with local First Nations for their approval;  
July 2019 Subdivision Permit granted, despite internal error of Development Permit not being issued.  
August 2019 - purchase of Lot B completed  
August 2019 - We continue to be held back from receive a building permit due to an internal error and the DP never being issued. Fines are also being contemplated for not having a building permit.

#### Contractor and Commitments:

Contractors are in short supply on the Sunshine Coast. We booked our Vancouver based contractor a year in advance and rented accommodation on the Sunshine Coast with the anticipated start date of July, 2018. The summer passed without the completion of the subdivision and we were sick about the commitment we could not meet to his crew and their families. Bruce Barclay and Val Pedersen were empathetic to our situation and felt responsible for not being able to speed up the subdivision. They granted us permission to clear our proposed property, build our access road and blast so that building could get underway as soon as possible once the subdivision was granted. Naturally, the blasting and layout was based entirely on a survey image of the lot and pinning prepared by Seamus Pope. It is shown here - Please note that the setback to the structure of the building, as determined by Seamus, is shown as 22.33 m. from the Natural Lake Boundary. The covered porch had not been included as Seamus informed us it was not a concern.

By September, 2018 we had postponed our contractor for as long as he felt his business could tolerate and decided we had no choice but to go ahead and build our forms. Tor Skei visited the site and was fully aware we were beginning and would stop all work and cover the foundations until we owned the land and could pour concrete after his next inspection. We have always been fully cognizant of the 15m Riparian setback and not one plant, tree or fern has been removed from that within that covenant.

In October 2018 Seamus had his crew return to install orange flagging to indicate the 20m setback.

#### Pinning Error:

Due to the survey image not showing the covered porch, it now extends by between 1.82m down to .12m for a total of 6.4m in width. We don't pretend to be without fault here - we wrongly trusted that a professional, who makes his living pinning residences would know that all portions of the building must be displayed on the survey in order to determine if it is appropriately placed. Seamus originally worked with us to have the two front posts re-engineered to be moved out of the 20m setback. It is clear to us that Seamus was under the impression that the roof of this porch did not represent a problem or he would have included it in all of the drawings. When the building department laid the structure outline out last month, we were shocked to learn that moving the posts was not a solution at all - the porch roof overhang was the problem.

After requesting this be prepared, we received this corrected complete structure image in July of 2019. The roof overhangs 18.18m down to 19.84m as opposed to the necessary 20m.

A Devastating Solution:

We returned to our architect and were told that the only way to amend the design would be to reduce all sides of the octagon - impossible at that construction stage. Our obligations to our builders drove our decision to have the architect remove the entire porch, order the trusses to facilitate the change and carry on building something we both despise.

We are asking that a Development Variance Permit be considered on the basis that this hardship not only destroys the design but also removes the important protection afforded by this simple open porch. If it were not for the pinning error, we would not be required to make this request. The overhang, at its furthest extent will still be 3.18 meters from the Riparian setback we have been granted and offers no risk of any type. Bylaw 337 515(2) makes the necessary concession but is not allowed adjacent to Sakinaw Lake, despite our granted 15m Riparian setback. If this variance is granted, our Engineer and Architect can design an addition to the trusses to facilitate the beautiful and practical original design.

Thank you for the opportunity to submit this request,

Bev and Larry Van Hatten

4668 Headland Drive, West Vancouver, B.C. V7W 3J3

[REDACTED]



## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

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**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Julie Clark, Planner

**SUBJECT:** Provincial Referral CRN00094 for a Private Moorage 2412231 (Bessie) – Electoral Area B

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### RECOMMENDATIONS

1. **THAT** the report titled Provincial Referral CRN00094 for a Private Moorage 2412231 (Bessie) – Electoral Area B be received;
2. **AND THAT** the following comments be forwarded to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development:

Subject to the following conditions, SCRD has no objections to the proposed residential private moorage fronting 9281 Truman Road or Lot 33, District Lot 2394, Plan VAP 13970 New Westminster District, Provincial Referral Number 2412231:

- a. SCRD will require a building permit and/or a development variance permit if any structures are constructed to access the moorage facility;
  - b. The proponent should implement both Provincial and *shíshálh* Nation's Best Management Practices for building and maintaining marine moorage facilities and in particular the most stringent of any overlapping policy to protect the foreshore ecosystems, including;
    - Species At Risk and species of regional significance in or near the tenure area should be identified by dive assessment and protected;
    - This property and others nearby consider shared moorage facilities;
  - c. Ensure that the *shíshálh* Nation is consulted and that all activities undertaken comply with the *Heritage Protection Act*.
  3. **AND FURTHER THAT** comments from the Halfmoon Bay Advisory Planning Commission be provided to the Ministry.
  4. **AND FURTHER THAT** the recommendations be forwarded to the Regular Board meeting of December 12, 2019.
-

## BACKGROUND

SCRD has received a Provincial referral from the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) for a specific permission for a private residential moorage fronting Lot 33, District Lot 2394 New Westminster District (referred to as the upland parcel), located on the north shore of Halfmoon Bay). The referral package can be found in Attachment A. A location map and a plan of the moorage (Figures 1 & 2) and an application summary (Table 1) are provided below.

The purpose of this report is to provide an analysis of the proposal and recommend a response to FLNRORD.

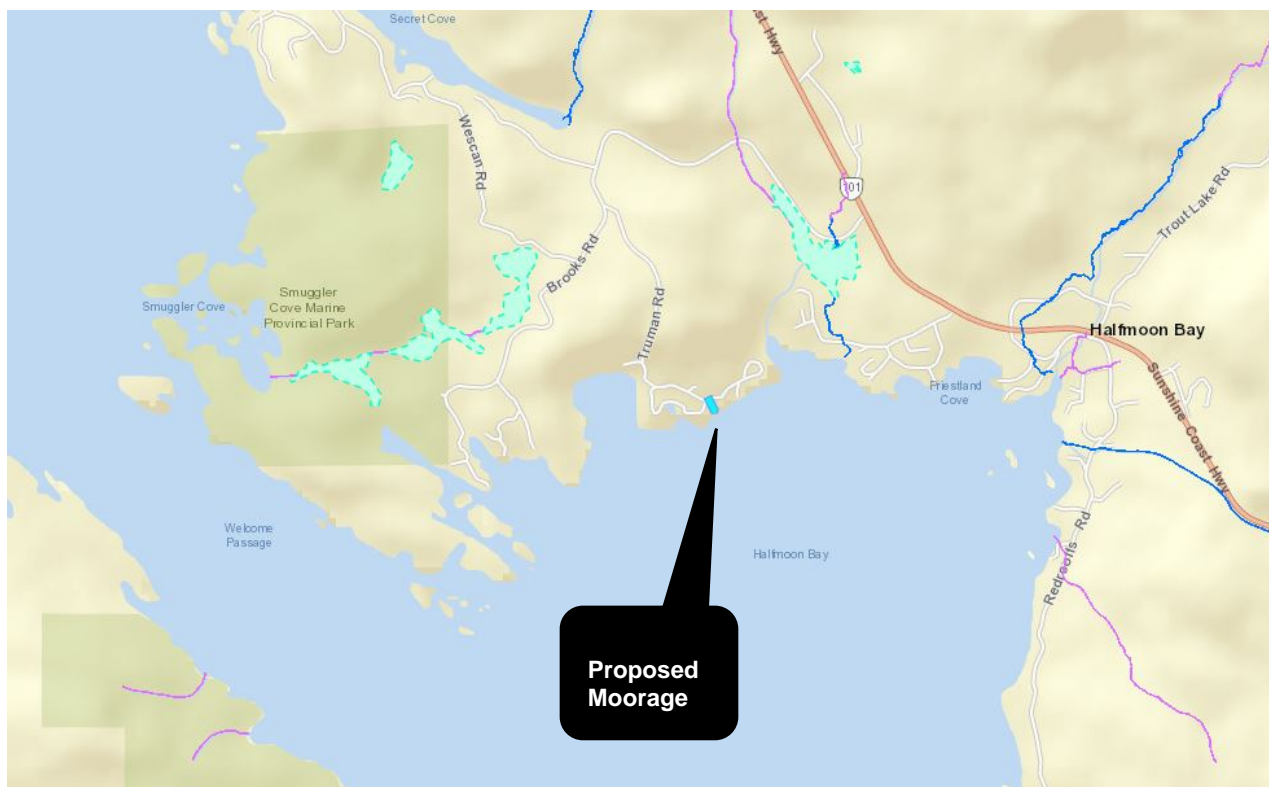


Figure 1 – Location Map 9821 Trueman Road, Halfmoon Bay



Figure 2 – Aerial imagery of property location (blue) and existing Provincial Tenure (green)

Owner / Applicant:	Craig Bessie
Purpose:	Private residential moorage
Tenure Type:	Specific Permission
Tenure Length:	More than 30 years
Size:	0.087 ha (870 m <sup>2</sup> )
Location:	9821 Trueman Road, Halfmoon Bay
Legal Description:	fronting Lot 33, District Lot 2394 VAP 13970 New Westminster District, PID 002-759-179 (upland parcel)
Electoral Area:	B – Halfmoon Bay
OCP Land Use:	Residential A
Land Use Zone:	R1 (Residential One) for upland parcel, W1 (Water One) over the water
Comment deadline:	November 30, 2019

Table 1 - Application Summary

## DISCUSSION

The applicant wishes to secure a private moorage tenure for more than 30 years from the Province for an existing dock located on the north shore of Halfmoon Bay.

The tenure application area is for 870m<sup>2</sup> to accommodate 24 metres (80 feet) of approach and gangway, a 37m<sup>2</sup> (400sq ft) float and anchor chains. The intent is to moor private vessels.

### *SCRD Official Community Plan and Zoning Analysis*

The subject area is within the boundary of Halfmoon Bay Official Community Plan (OCP).

- The land use designation for this area within the OCP is residential A.

The upland parcel fronting the moorage is 959m<sup>2</sup> in size and zoned R1, a residential use zone with small parcels. The foreshore and surface of the water on which the proposed moorage is located is zoned Water One (W1). A private dock is consistent with the residential use of the upland property and is a permitted use in the W1, once Provincial tenure is in place.

If the applicant wishes to construct any structure or building to access the private moorage facility, a Building Permit would be required.

### *Ecological and Cultural Impact Analysis*

The subject area is outside the Pender Harbour Dock Management Plan area.

It is recommended that a condition of tenure-approval be that the applicant ensures the dock construction is consistent with the [Best Management Practices for Marine Docks](#) the Province and the *shíshálh* Nation whichever is more stringent.

- The Best Management Practices include that “*no critical habitat can be impacted within the vicinity of the proposed dock.*” Staff note that eelgrass and others species data is incomplete in this area, hence a desktop or surface water investigation would be insufficient to determine the presence of Species At Risk, Critical Habitat or species of local significance. Staff recommend that a dive assessment be required.
- The Best Management Practices include that “*Wherever possible, proponents are encouraged to develop dock facilities that can facilitate numerous upland owners. In pursuing multi-owner/use facilities the footprint on the sub/intertidal habitats is minimized. These types of facilities also help to alleviate potential cumulative impacts from high density, individual dock infrastructures.*” Staff note the density of parcels along this shoreline and recommend this area as one that could benefit from shared private moorages to reduce marine and foreshore impacts.

The applicant indicates that they have not contacted First Nations. Staff recommend that the applicant review the proposal for private moorage with *shíshálh* Nation Rights and Title Department. Staff recommend that comments or concerns received from the *shíshálh* Nation be addressed as a condition of Provincial approval.



### *Options*

The Province requests SCRD to decide on one of the following options in response to the referral:

1. Interests unaffected
2. No objection to approval of project
3. No objection to approval of project subject to conditions
4. Recommend refusal of project due to reasons

Staff recommend Option 3, subject to comments outlined in the Recommendations.

### *Consultation*

The Province referred this application to First Nations, SCRD and other agencies it identifies as appropriate. The applicant is responsible for advertising the application in a local paper to enable comments from the public.

The proposal will be referred to the Halfmoon Bay Advisory Planning Commission for review in January 2020. Comments will be forwarded to the Province.

### *Timeline for Next Steps*

The Province extended the deadline to comment on this application to November 30, 2019 in order to obtain a Board Resolution staff have advised the Province of the December 12, 2019 Board meeting date. The Resolution will be forwarded to FLNRORD and final decision will be made by the Province.

## **STRATEGIC PLAN AND RELATED POLICIES**

The following SCRD Strategic Plan objectives and success indicators relate to the subject of this report:

- Advocacy: foreshore and marine environments are a common interest, regulated by the Provincial and Federal governments. SCRD provides referral comments to assist applicants and government agencies in ensuring common interests are accessed appropriately and cared for with the long term in mind.

## **CONCLUSION**

The SCRD was provided an opportunity to comment on a Provincial referral to permit a private residential moorage on the northshore of Halfmoon Bay. The proposal was analyzed against applicable SCRD policies, bylaws and regulations, as well as Best Management Practices for (marine) Moorage Facilities. Staff recommend responding to the Province with the option that the SCRD has no objection to the project subject to conditions identified in this report.

*Attachments*

Attachment A – Referral Package

Reviewed by:			
Manager	X – D. Pady	Finance	
GM	X – I. Hall	Legislative	
A/CAO	X – T. Perreault	Other	



# Crown Land Tenure Application

Tracking Number: 100293650

File. 2412231

ATS. 505596

## Applicant Information

If approved, will the authorization be issued to an Individual or Company/Organization? Individual

Are you the Individual this application will be issued to? No

What is your relationship to the individual? Agent

vSUS868

## APPLICANT CONTACT INFORMATION

Applicant is an Individual or an Organization to whom this authorization Permit/Tenure/Licence will be issued, if approved.

**Name:** Craig Anthony Bessie  
**Phone:** 604-616-9744  
**Daytime Phone:**  
**Fax:**  
**Email:** creg.bessie@rbc.com  
**Mailing Address:** 9281 Truman Rd.  
 Halfmoon Bay BC V0N1Y2

## AGENT INFORMATION

Please enter the contact information of the Individual/Organization who is acting on behalf of the applicant.

**Name:** Adam Mark Thomsen  
**Doing Business As:** All Tides Consulting & Design Inc.  
**Phone:** 604-885-8465  
**Fax:**  
**Email:** alltidesconsulting@gmail.com  
**BC Incorporation Number:**  
**Extra Provincial Inc. No:**  
**Society Number:**  
**GST Registration Number:**  
**Contact Name:** Adam Thomsen  
**Mailing Address:** 5431 Carnaby Place  
 Sechelt BC V0N3A7  
**Letter(s) Attached:** Yes (Signed Letter of Agency.png)

## CORRESPONDENCE E-MAIL ADDRESS

If you would like to receive correspondence at a different email address than shown above, please provide the correspondence email address here. If left blank, all correspondence will be sent to the above given email address.

**Email:** alltidesconsulting@gmail.com  
**Contact Name:** Adam Thomsen

## ELIGIBILITY

Question	Answer	Warning
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Do all applicants and co-applicants meet the eligibility criteria for the appropriate category as listed below?	Yes	
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Applicants and/or co-applicants who are Individuals must:

1. be 19 years of age or older and
2. must be Canadian citizens or permanent residents of Canada. (Except if you are applying for a Private Moorage)

Applicants and/or co-applicants who are Organizations must either:

1. be incorporated or registered in British Columbia (Corporations also include registered partnerships,

- cooperatives, and non-profit societies which are formed under the relevant Provincial statutes) or
2. First Nations who can apply through Band corporations or Indian Band and Tribal Councils (Band or Tribal Councils require a Band Council Resolution).

## TECHNICAL INFORMATION

Please provide us with the following general information about you and your application:

### EXISTING TENURE DETAILS

Do you hold another Crown Land Tenure? No

### ALL SEASONS RESORTS

The All Seasons Resorts Program serves to support the development of Alpine Ski and non-ski resorts on Crown land. For more detailed information on this program please see the operational policy and if you have further questions please contact FrontCounter BC.

Are you applying within an alpine ski resort? No

### WHAT IS YOUR INTENDED USE OF CROWN LAND?

Use the "Add Purpose" button to select a proposed land use from the drop down menu.

If you wish to use Crown land for a short term, low impact activity you may not need to apply for tenure, you may be authorized under the Permissions policy or Private Moorage policy.

To determine if your use is permissible under the Land Act please refer to either the Land Use Policy - Permissions or Land Use Policy - Private Moorage located here.

Purpose	Tenure	Period
<b>Private Moorage</b> Personal use by upland property owner and guests to access deep water	Specific Permission	More than thirty years

### ACCESS TO CROWN LAND

Please describe how you plan to access your proposed crown land from the closest public road: via water and the upland lot

### PRIVATE MOORAGE

Private Moorage is the allocation of aquatic Crown land (inland and coastal) for private moorage facilities such as a dock or float. Moorage facilities for group or strata title/ condominium developments of over three berths are administered under the provisions of the Residential program where they have no related commercial facilities (e.g. gas bars) and are intended for private use of tenants. Group moorage with commercial activities are administered under the Marina program.

**Specific Purpose:** Personal use by upland property owner and guests to access deep water  
**Period:** More than thirty years  
**Tenure:** Specific Permission

### MOORING BUOY

Is this only for a mooring buoy for private moorage? No

### TOTAL APPLICATION AREA

Please give us some information on the size of the area you are applying for.

Please specify the area: .087 hectares

### PROJECT DETAILS

Please provide us with further details on your dock.

**Is the water freshwater or marine?** Marine  
**Are you proposing 4 or more slips?** No  
**Are you applying on behalf of a Strata** No



corporation?

Are you the waterfront upland owner? Yes

Are you planning to sell gas at the proposed marina? No

### IMPORTANT CONSIDERATIONS

Selecting yes to any of the following questions may indicate that you will require further or additional authorizations under the Land Act or other legislation.

Is your proposed activity within the Kootenay Region? No

Is your proposed activity within the Okanagan, Kalamalka and Wood Lakes, Skaha Lake, Vaseux Lake, or Christina Lake areas? No

Is your proposed activity within the Shuswap, Mara, Mable, or Little Shuswap Lake areas? No

### ADDITIONAL QUESTIONS

In many cases you might require other authorizations or permits in order to complete your project. In order to make that determination and point you in the right direction please answer the questions below. In addition, your application may be referred to other agencies for comments.

Is the Applicant or any Co-Applicant or their Spouse(s) an employee of the Provincial Government of British Columbia? No

Are you planning to cut timber on the Crown Land you are applying for? No

Are you planning to use an open fire to burn timber or other materials? No

Do you want to transport heavy equipment or materials on an existing forest road? No

Are you planning to work in or around water? Yes

1. If you will be working in or around fresh water, you will require a Water Sustainability Act Change Approval or Notification from the Province. 2. The federal Department of Fisheries and Oceans might need to review your project. 3. Review the Transport Canada website if the Navigation Protection Act applies.

Does your operation fall within a park area? No

### LOCATION INFORMATION

### LAND DETAILS

### DRAWINGS

Please provide information on the location and shape of your Crown land application area. You can use one or more of the tools provided.

☒ I will upload a PDF, JPG or other digital file(s)

### MAP FILES

Your PDF, JPG or other digital file must show your application area in relation to nearby communities, highways, railways or other land marks.

Description	Filename	Purpose
Metes and Bounds for FLNRO Shape file plotting	Bessie. Crown Land Tenure A...	Private Moorage

## ATTACHED DOCUMENTS

Document Type	Description	Filename
General Location Map	Plans A-D	Bessie. Crown Land Tenure A...
Management Plan	MP	Management Plan - Bessie Pr...
Other	Land Title	State of Title Certificate.pdf
Other	LoA	Signed Letter of Agency.png
Side Profile	Plans A-D	Bessie. Crown Land Tenure A...
Site Photographs	photo	IMG_6641.JPG
Site Photographs	photo	IMG_6642.JPG
Site Photographs	photo	IMG_6643.JPG
Site Photographs	photo	IMG_6644.JPG
Site Photographs	photo	IMG_6645.JPG
Site Plan	Plans A-D	Bessie. Crown Land Tenure A...

## PRIVACY DECLARATION

☒ Check here to indicate that you have read and agree to the privacy declaration stated above.

## REFERRAL INFORMATION

Some applications may also be passed on to other agencies, ministries or other affected parties for referral or consultation purposes. A referral or notification is necessary when the approval of your application might affect someone else's rights or resources or those of the citizens of BC. An example of someone who could receive your application for referral purposes is a habitat officer who looks after the fish and wildlife in the area of your application. This does not apply to all applications and is done only when required.

Please enter contact information below for the person who would best answer questions about your application that may arise from anyone who received a referral or notification.

**Company / Organization:** All Tides Consulting & Design Inc.  
**Contact Name:** Adam Thomsen  
**Contact Address:** 5431 Carnaby Place  
**Contact Phone:** 604-885-8465  
**Contact Email:** alltidesconsulting@gmail.com

☒ I hereby consent to the disclosure of the information contained in this application to other agencies, government ministries or other affected parties for referral or First Nation consultation purposes.

#### IMPORTANT NOTICES

- Once you click 'Next' the application will be locked down and you will NOT be able to edit it any more.

#### DECLARATION

☒ By submitting this application form, I, declare that the information contained on this form is complete and accurate.

#### OTHER INFORMATION

Is there any other information you would like us to know?

Please contact Agent Adam Thomsen for any and all government inquiries regarding this application. Thank you!

#### APPLICATION AND ASSOCIATED FEES

Item	Amount	Taxes	Total	Outstanding Balance
Crown Land Tenure Application Fee	\$250.00	GST @ 5%: \$12.50	\$262.50	\$0.00

#### OFFICE

Office to submit application to:

Surrey

#### PROJECT INFORMATION

Is this application for an activity or project which requires more than one natural resource authorization from the Province of BC?

No

#### APPLICANT SIGNATURE

Applicant Signature

Date

#### OFFICE USE ONLY

Office Surrey	File Number 2412231	Project Number 505596
	Disposition ID 936825	Client Number 298215

# Crown Land Tenure Application for Private Moorage Management Plan

Proponent – Craig Bessie

June 2019

## **1.0 Background**

### **Project Details**

**Description of existing structures such as type (dock, wharf, etc.), construction (pilings, floats, etc.), and materials (include any preservatives);**

There are no exiting structures located at the site.

**Size and dimensions of planned improvements including floating docks, wharves, boathouses, retaining walls, pilings or areas to be filled or dredged as well as construction material used;**

The proposed moorage structure fronts Lot 33, DL 2394, PLAN VAP13970, PID:002-759-179 inm Halfmoon Bay, BC. A 30' x 4.5' aluminum approach bears at one end on a 5' x 3' x 2' concrete abutment (situated above the natural boundary), and two steel pipe piles at the other. The two steel piles also support one end of a 50' x 4.5' counterbalanced aluminum gangway which rests on a floating private moorage dock. The gangway extends to a 10' x 40' timber framed float. The float is anchored seaward using typical mooring chain and concrete anchor blocks and is anchored towards shore using typical anchor chains and anchor pins. The float is for private moorage use only, there will be no income generated by the moorage facility. If additional specific information about the structure components is required, please contact Mr. Bessie's Agent Adam Thomsen with All Tides Consulting & Design Inc. A point form list of the private moorage structure components is included below.

#### **Proposed Private Moorage Structure Components:**

- One 5' x 3' x 2' concrete abutment
- One 30' x 4.5' aluminum approach
- Two steel pipe piles
- One 50' x 4.5' counterbalanced aluminum gangway
- One 10' x 40' timber framed float
- Four anchor chains
- Two anchor pins
- Two concrete anchor blocks



**Include dimensions and distances from property lines**

The concrete abutment is located approximately 2.5m from the property line and natural boundary intersection (the tenure application areas Point of Commencement).

**If other docks are located within 25 meters of the site plan, please include these docks on the site sketch;**

There are no docks located within 25m of the proposed structure.

**Indicate how public access is maintained along the beach;**

The gangway structure is greater than 2.0m above the highwater line maintaining public access along the shoreline.

**Type of use - number of boats, seasons, etc., and**

The owners of the upland property and their guests use the moorage system exclusively. There will be no services to the float. The private moorage will not be used for commercial purposes and no income will be generated by the facility. The float typically provides moorage for the owner's single boat and their guests. The private moorage and the residence is used by the owner part time, generally more so in the spring and summer months.

**Proposed use – what is proposed including any phased development details – should sync with****“Purpose” chosen:**

The proposed private moorage system is for the use of the upland property owner. The private moorage will allow moorage space for the owner's private boat year round (more frequently in the spring and the summer). The upland owner will not charge money for moorage or any other amenity provided by the float system.

**Why here and now:**

Mr. Bessie and his family need a private moorage to be able to safely access deep water fronting their waterfront property. He often accesses the property via private boat bringing guests and supplies to his residence.

**Details of any preliminary investigative work and any other approvals obtained:**

N/A

**Current zoning:**

Upland Lot - Zoned “R1” – Residential Resource

Aquatic Crown Land – W1

**For commercial activity – the location of competition, potential market statement:**

N/A

## **2.0 Location**

**General description of:**

The proposed moorage structure fronts Lot 33, DL 2394, PLAN VAP13970, PID:002-759-179 in Halfmoon Bay, BC

**Traffic including volume of traffic and phase or season:**

The tenure area will see little vessel traffic. The moorage will only be use by the proponent's private boat and occasional guests. The moorage will see a slightly larger volume of traffic in the summer season.

**Seasonal expectations of use:**

Year round use is necessary.

**Land use on parcel:**

Upland Lot - Zoned "R1" (private moorages permitted)

Aquatic Crown Land – W1 (private moorages permitted)

**Confirmation of Safety plan including first aid:**

Any contractor conducting works at the site will have standard company health and safety plans. The proponent's boat is equipped with all required Transport Canada safety equipment.

## **3.0 Infrastructure**

**Access plans – how will you or your clients be accessing the parcel:**

The tenure will be accessed from the water and from the upland waterfront property.

**Existing and proposed roads and their use by season, and any proposed connections to public or FSR roads:**

N/A

**Utility (power, electrical, telecommunications) requirements and sources:**

No utility requirements are necessary at this time.

**Water supply; (use and quantity if known) and,**

N/A

**Waste disposal (note if septic system required), sewage, sanitation facilities and refuse disposal.**

N/A

#### **4.0 First Nations**

Describe any contact you may have had, including the name of the First Nation(s) and individuals contacted. Provide copies of or a description of any information you may have acquired from or provided to the First Nation(s) (potential benefits, partnership opportunities, special interests, concerns, etc.) and any information regarding archaeological resources and areas of cultural significance you are aware of in the vicinity of the proposed project.

We have not had any contact with First Nations. We are not aware of any areas of cultural significance close to the proposed moorage site.

#### **5.0 Environmental**

Describe any significant impacts and proposed mitigation with respect to:

**Land Impacts:**

N/A

**Cutting of vegetation:**

N/A

**Soil disturbance:**

No soil disturbance is expected.

**Riparian encroachment:**

There are no fresh water streams located near the proposed structure location.

**Management of pesticides, herbicides:**

N/A

**Visual impacts:**

Visual impacts are kept to a minimum due to the low profile design of the moorage structure and there are no structures built on the float itself. The natural boundary is a 30'-40' cliff to the water which will have steep stairs to the moorage facility. The neighbouring properties are elevated in this fashion as well. The proposed moorage will have little to no visual impact on the public.

**Known archaeological sites:**

We are not aware of any areas of cultural significance close to the proposed moorage site.

**Types of construction methods and materials used:**

- We anticipate minimal land impact.
- All system components will be transported in by barge with no impact to the foreshore or sea floor.
- No machinery will work in the intertidal zone.
- The bearing piles will be installed during tides which allow the barge and crane to place them. None of the installation equipment used will come in contact with the sea floor.
- The float will have a minimum clearance from the sea floor of more than 1.5m at low water (0' chart datum).
- Two holes will be drilled into bedrock at the low water line to accommodate the 1" anchor pins.
- The anchor blocks will be set on the sea floor (not dragged) minimizing environmental impact.
- All applicable Best Management Practices, Operational Statements, and Timing Windows will be followed during all build and installation phases.
- Construction materials to be used for the project are noted in previous sections.
- Continuing routine maintenance necessary will be conducted during applicable Timing Windows and all Operational Statements and Best Management Practices (BMP's) will be followed.

**Atmospheric Impacts****Sound:**

- There are no audio impacts at the moorage site now.
- Besides the proponent's personal boat there will be no audio impacts at the moorage site.
- Structure installation will be conducted in an efficient and timely manner minimizing sound impacts. Pile installation works will be short in duration.



**Odor:**

- There are no odor impacts at the moorage site now.
- Besides the proponent's personal boat exhaust there will be no odor impacts at the moorage site.
- Minimal odor impacts will occur during structure installation.
- Any routine maintenance will be conducted in an efficient and timely manner minimizing odor impacts.

**Gas:**

Minimal fuel emissions will occur during structure installation and from the proponent's private boat once the installation is complete. Water quality will remain the same.

**Fuel emissions:**

Minimal fuel emissions will occur during structure installation and from the proponent's private boat once the installation is complete. Water quality will remain the same.

**Explain current conditions, source, type and range of emission:**

Minimal fuel emissions will occur during structure installation and from the proponent's private boat once the installation is complete. Water quality will remain the same.

**Water or Land covered by water Impacts****Drainage effect:**

N/A

**Sedimentation:**

Minimal water turbidity will occur. Water quality will remain the same.

**Water diversion:**

N/A

**Water quality:**

Minimal water turbidity will occur. Water quality will remain the same.

**Public access:**

The gangway structure is approximately 2.0m above the high water line maintaining public access on the foreshore.

**Flood potential:**

N/A

**Fish and Wildlife Habitat****Provide current status of fish or wildlife habitat:**

- Typical BC west coast foreshore bedrock, boulder and cobble were observed.
- No eelgrass, kelp fields or salt marsh vegetation have been observed from the surface of the water at low tide.
- Barnacles, fucus, sargassum, green algae, red algae, and brown algae were observed at the site.

**Disturbance to wildlife habitat:**

- No drainage effects will occur.
- Water quality will remain the same.
- All machinery and tools present on site during installation will be inspected for fluid leaks and be deemed in good working order prior to any arrival to minimize the chance of a spill.
- All applicable Timing Windows, Operational Statements and Best Management Practices (BMP's) will be followed during routine maintenance.
- All mandatory mitigation measures noted in the BMP's will be taken to ensure the least amount of negative effects on fish and wildlife habitat.
- The addition of system components will be introduced habitat for wildlife and marine organisms to accumulate on.

**Disturbance to fish habitat or environment:**

- No drainage effects will occur.
- Water quality will remain the same.
- All machinery and tools present on site during installation will be inspected for fluid leaks and be deemed in good working order prior to any arrival to minimize the chance of a spill.
- All applicable Timing Windows, Operational Statements and Best Management Practices (BMP's) will be followed during routine maintenance.
- All mandatory mitigation measures noted in the BMP's will be taken to ensure the least amount of negative effects on fish and wildlife habitat.
- The addition of system components will be introduced habitat for wildlife and marine organisms to accumulate on.

**Threatened or endangered species in the area:**

We are not aware of any threatened or endangered species in the area.

**Seasonal considerations:**

All applicable Timing Windows, Operational Statements and Best Management Practices (BMP's) will be followed with all maintenance works conducted.

**6.0 Socio- Community**

**Land Use**

**Land management plans:**

N/A

**Public recreation areas:**

There are no public recreation areas located on land adjacent to the proposed moorage location. The structure does not impact water recreation such as swimming or kayaking.

**Socio-Community Conditions**

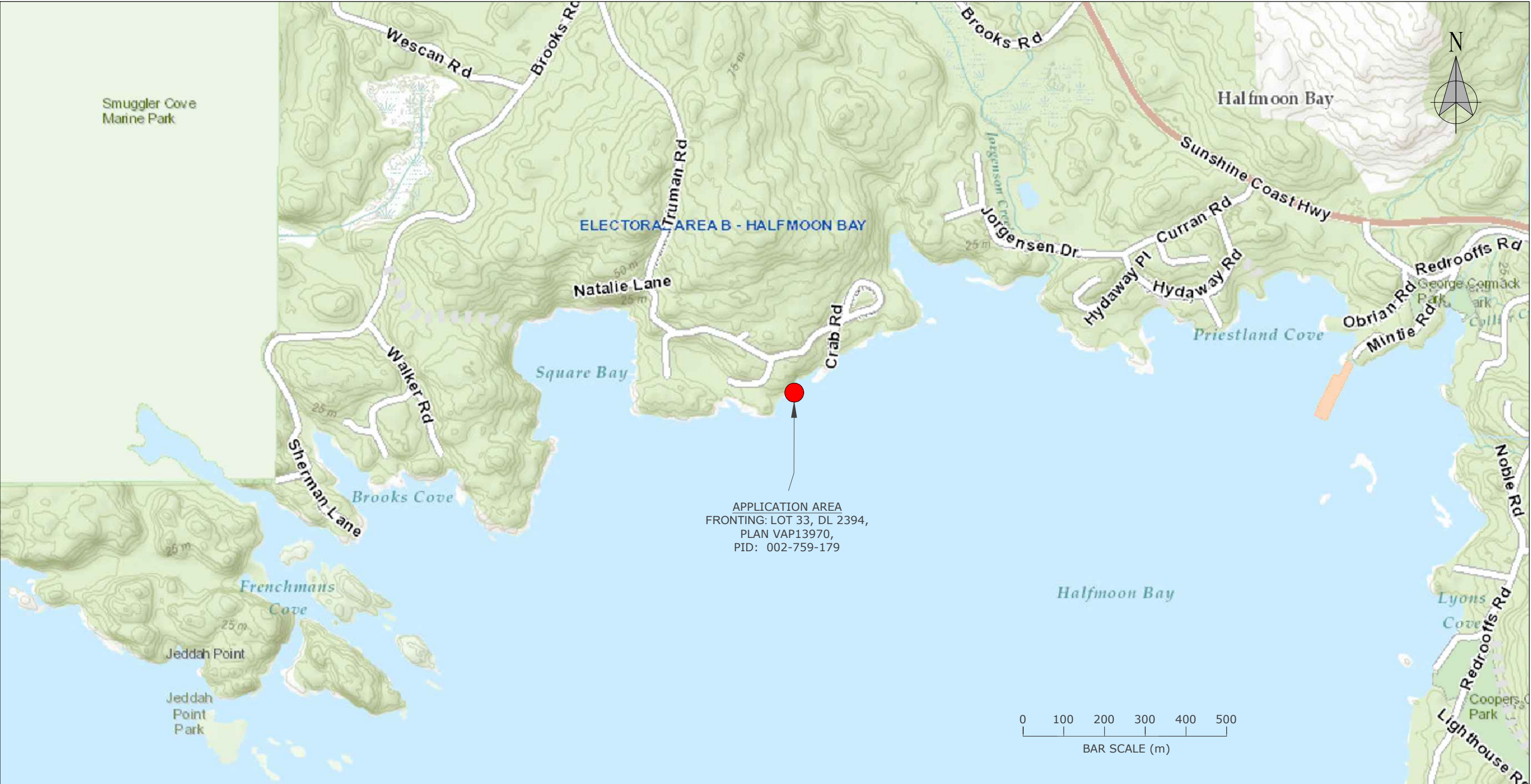
**Provide a description of the demand on fire protection or emergency services:**

The private moorage increases the demand on emergency services by a negligible amount.

Signature: \_\_\_\_\_

Craig Bessie

Date: \_\_\_\_\_

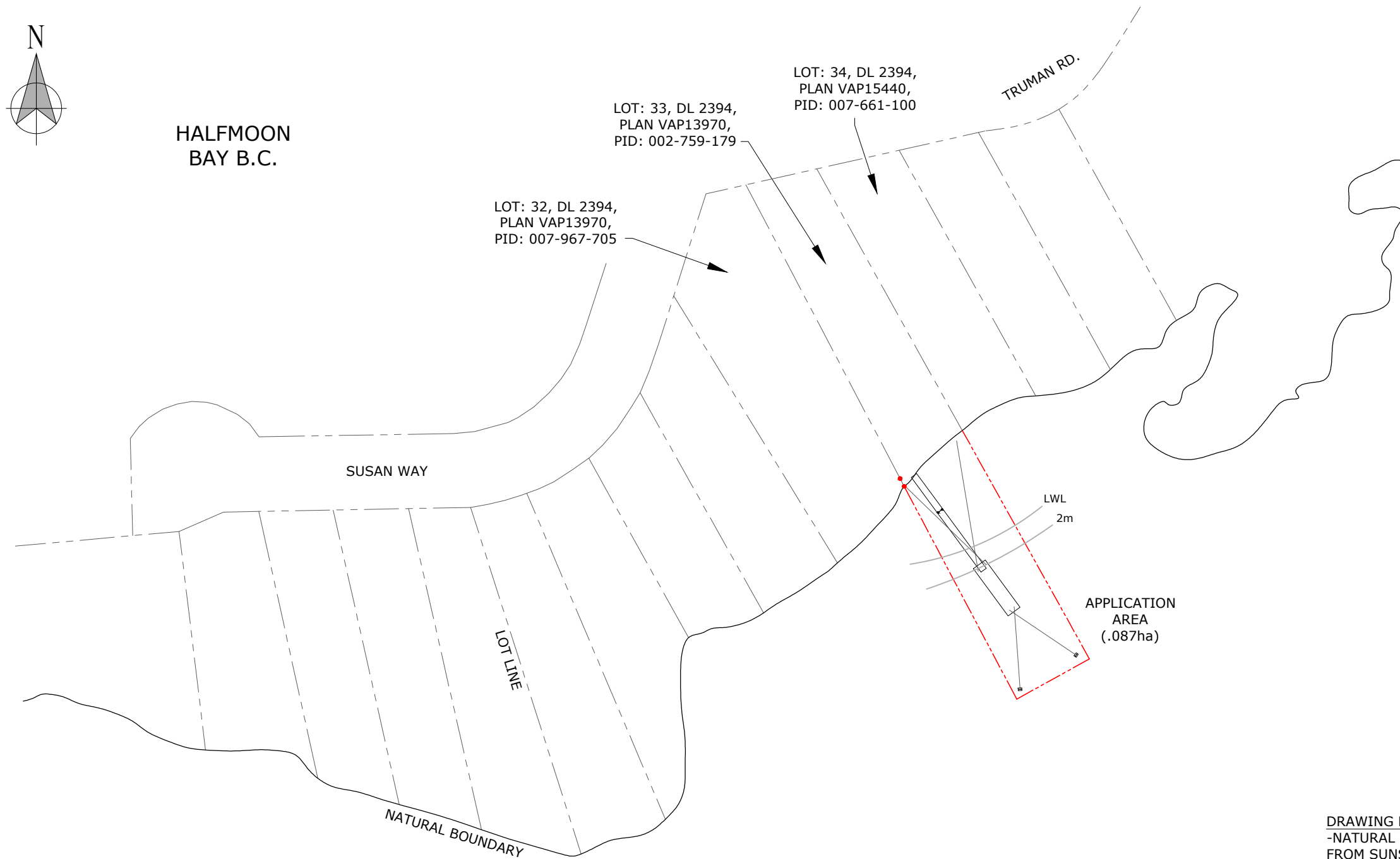


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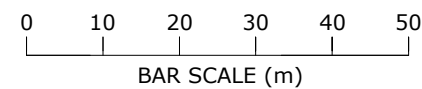
Client: BESSIE			
Drawing Title: LOCATION MAP PLAN A		Location: HALFMOON BAY, BC	
Drawn By: A.T.	Date: JUNE 2018	Check'd and Signed-off By: Date:	Scale: 1 : 10,000
Drawing Number: P-1793-01		Sheet No. 1 OF 4	Rev. No.



HALFMOON  
BAY B.C.



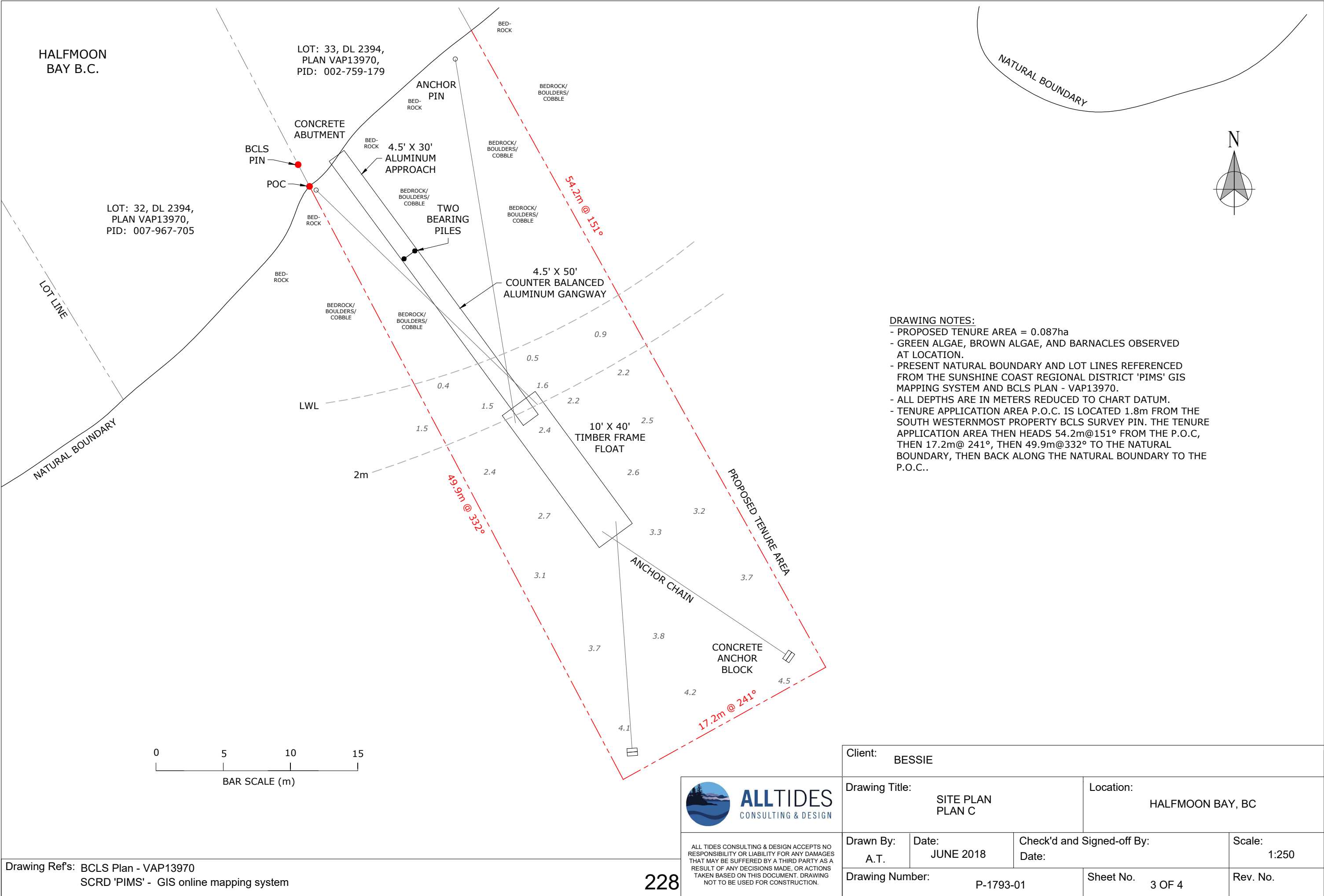
DRAWING NOTE:  
-NATURAL BOUNDARY AND LOT LINES REFERENCED  
FROM SUNSHINE COAST REGIONAL DISTRICT WEB  
BASED GIS PROPERTY INFORMATION TOOL AND  
BCLS PLAN - VAP13970.

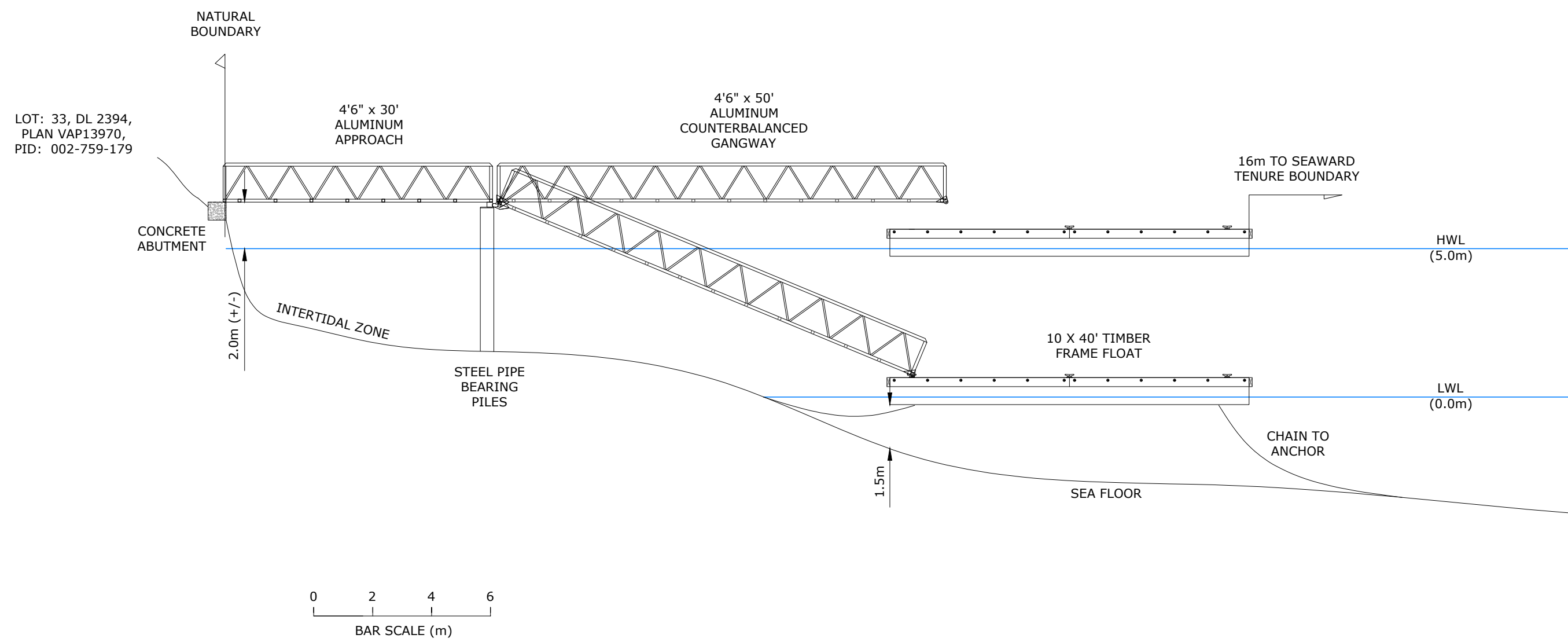



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NOT TO BE USED FOR CONSTRUCTION.

Client: BESSIE			
Drawing Title: SITE MAP PLAN B		Location: HALFMOON BAY, BC	
Drawn By: A.T.	Date: JUNE 2018	Check'd and Signed-off By: Date:	Scale: 1 : 1,000
Drawing Number: P-1793-01		Sheet No. 2 OF 4	Rev. No.







 <small>ALL TIDES CONSULTING &amp; DESIGN ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR ANY DAMAGES THAT MAY BE SUFFERED BY A THIRD PARTY AS A RESULT OF ANY DECISIONS MADE, OR ACTIONS TAKEN BASED ON THIS DOCUMENT. DRAWING NOT TO BE USED FOR CONSTRUCTION.</small>	Client: BESSIE			
	Drawing Title: ELEVATION PLAN D		Location: HALFMOON BAY, BC	
Drawn By: A.T.	Date: JUNE 2018	Check'd and Signed-off By: Date:		Scale: 1 : 150
Drawing Number: P-1793-01		Sheet No. 4 OF 4	Rev. No.	















## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

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**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Julie Clark, Planner

**SUBJECT:** Provincial Referral CRN00093 for a Private Moorage 2412264 (Shortt) – Electoral Area A

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### RECOMMENDATIONS

1. THAT the report titled Provincial Referral CRN00093 for a Private Moorage 2412264 (Shortt) – Electoral Area A be received;
2. AND THAT the following comments be forwarded to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development:

Subject to the following conditions, SCRD has no objections to the proposed residential private moorage fronting District Lot REM3551, PID 015-871-002 New Westminster District, Provincial Referral Number 2412264):

- a) SCRD will require a building permit and/or a development variance permit if any structures are constructed to access the moorage facility;
  - b) The proponent should implement both Provincial and *shíshálh* Nation's Best Management Practices for building and maintaining marine moorage facilities and in particular the most stringent of any overlapping policy to protect the foreshore ecosystems, including:
    - Species At Risk and species of regional significance in or near the tenure area should be identified by dive assessment and protected
  - c) Ensure that the *shíshálh* Nation is consulted and that all activities undertaken comply with the *Heritage Protection Act*;
  3. AND THAT comments from the Egmont / Pender Harbour Advisory Planning Commission be provided to the Ministry;
  4. AND FURTHER THAT the recommendations be forwarded to the Regular Board meeting of December 12, 2019.
-



## BACKGROUND

SCRD has received a Provincial referral from the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) for specific permission for a private residential moorage fronting District Lot REM3551, PID 015-871-002 (referred to as the upland parcel), located on Nelson Island. The referral package can be found in Attachment A. A location map and a plan of the moorage (Figures 1 & 2) and an application summary (Table 1) are provided below.

The purpose of this report is to provide an analysis of the proposal and recommend a response to FLNRORD.



Figure 1 – Location Map upland parcel PID 015-871-002, Nelson Island



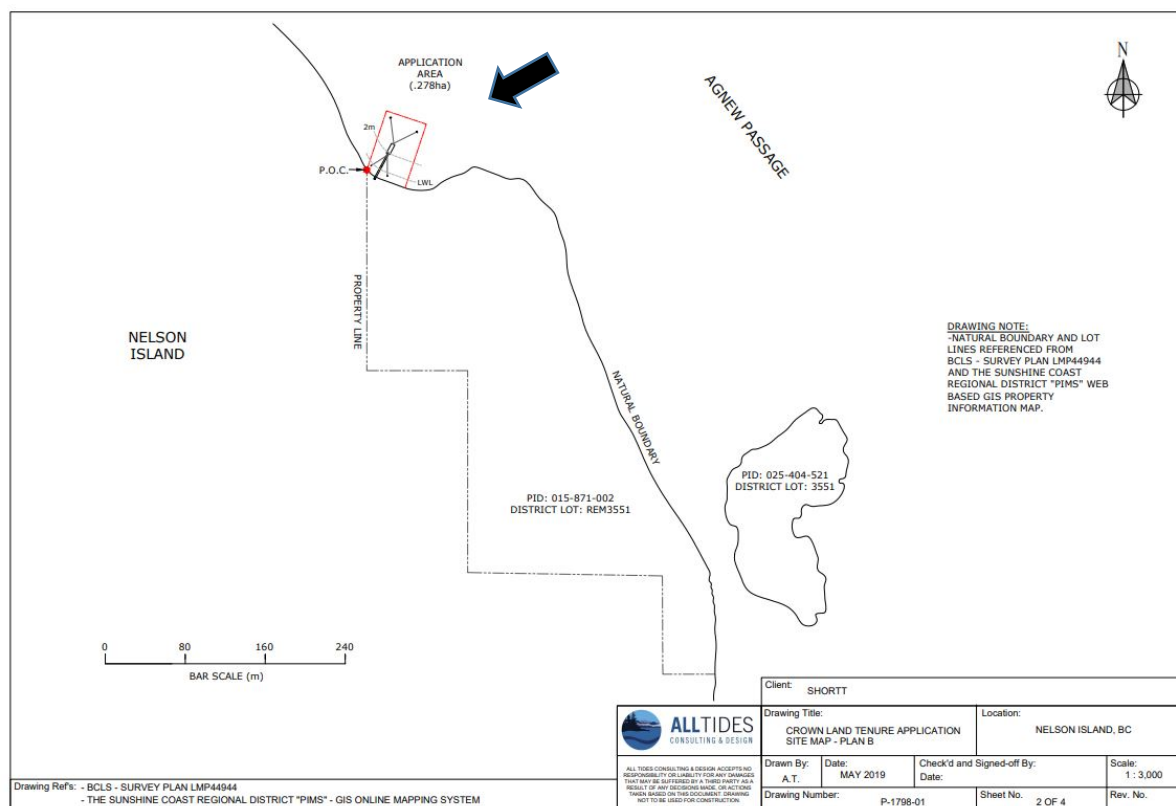


Figure 2 – Moorage facility

Owner / Applicant:	David Shortt
Purpose:	Private residential moorage
Tenure Type:	Specific Permission
Tenure Length:	More than 30 years
Size:	0.278 ha (2780 m2)
Location:	Nelson Island
Legal Description:	fronting District Lot REM3551 PID 015-871-002 (upland parcel)
Electoral Area:	A – Nelson Island
OCP Land Use:	Not designated
Land Use Zone:	RU2 (Rural Resource) for upland parcel, no zoning over the water
Comment deadline:	November 30, 2019

Table 1 - Application Summary

## DISCUSSION

The applicant wishes to secure a private moorage tenure from the Province.

The tenure application area is for 2780m<sup>2</sup> to accommodate a 23m gangway and a 35.67m<sup>2</sup> float. The intent is to moor private vessels.

### *SCRD Official Community Plan and Zoning Analysis*

The subject area is within the boundaries of SCRD Electoral Area A, but not within the boundaries of the Area A Official Community Plan.

The 19.596 acres (7.93 ha) upland parcel fronting the moorage is zoned RU2 which permits residential use on the property. A private dock is consistent with the residential use of the upland property. This parcel on Nelson Island can be accessed only by water.

If the Province approves the application, the Regional District will require a building permit and/or a Development Variance Permit if any further structures are constructed to access the private moorage.

### *Ecological and Cultural Impact Scan*

The subject area is outside the Pender Harbour Dock Management Plan area.

It is recommended that a condition of tenure-approval be that the applicant ensures the dock construction is consistent with the [Best Management Practices for Marine Docks](#) the Province and the *shíshálh* Nation whichever is more stringent.

- The Best Management Practices include that “no critical habitat can be impacted within the vicinity of the proposed dock.” Staff note that eelgrass and others species data is incomplete in this area, hence a desktop or surface water investigation would be insufficient to determine the presence of Species At Risk, Critical Habitat or species of local significance. Staff recommend that a dive assessment be required.

The applicant indicates that they have not contacted First Nations. Staff recommend that the applicant review the proposal for private moorage with *shíshálh* Nation Rights and Title Department. Staff recommend that comments or concerns received from the *shíshálh* Nation be addressed as a condition of Provincial approval.

### *Options*

The Province requests SCRD to decide on one of the following options in response to the referral:

1. Interests unaffected
2. No objection to approval of project
3. No objection to approval of project subject to conditions
4. Recommend refusal of project due to reasons

Staff recommend Option 3, subject to comments outlined in the Recommendations.

### *Consultation*

The Province referred this application to First Nations, SCRD and other agencies it identifies as appropriate. The applicant is responsible for advertising the application in a local paper to enable comments from the public.

The proposal will be referred to the Egmont / Pender Harbour Advisory Planning Commission for review in January. Comments will be forwarded to the Province.

### *Timeline for Next Steps*

The Province extended the deadline to comment on this application to November 30, 2019 in order to obtain a Board Resolution. The Province has been made aware of the committee date of December 12, 2019. The Resolution will be forwarded to FLNRORD and final decision will be made by the Province.

## **STRATEGIC PLAN AND RELATED POLICIES**

The following SCRD Strategic Plan objectives and success indicators relate to the subject of this report:

- Advocacy: foreshore and marine environments are a common interest, regulated by the Provincial and Federal governments. SCRD provides referral comments to assist applicants and government agencies in ensuring common interests are accessed appropriately and cared for with the long term in mind.

## **CONCLUSION**

The SCRD was provided an opportunity to comment on a Provincial referral to permit a private residential moorage in Agnew Passage, fronting PID 015-871-002 on Nelson Island. The proposal was analyzed against applicable SCRD policies, bylaws and regulations, as well as Best Management Practices for (marine) Moorage Facilities. Staff recommend responding to the Province with the option that the SCRD has no objection to the project subject to conditions identified in this report.

### *Attachments*

Attachment A – Referral Package

Reviewed by:			
Manager	X – D. Pady	Finance	
GM	X – I. Hall	Legislative	
A/CAO	X – T. Perreault	Other	



# Crown Land Tenure Application

Tracking Number: 100291534

ATS: 494876

FILE: 2412264

## Applicant Information

If approved, will the authorization be issued to an Individual or Company/Organization? Individual

Are you the Individual this application will be issued to? No

What is your relationship to the individual? Agent

## APPLICANT CONTACT INFORMATION

Applicant is an Individual or an Organization to whom this authorization Permit/Tenure/Licence will be issued, if approved.

**Name:** David Owen Rodden-Shortt  
**Phone:** 604-723-4102  
**Daytime Phone:**  
**Fax:**  
**Email:** dave@nilepoint.ca  
**Mailing Address:** 1502-1159 Main Street  
 Vancouver BC V6A 4B6

## AGENT INFORMATION

Please enter the contact information of the Individual/Organization who is acting on behalf of the applicant.

**Name:** Adam Mark Thomsen  
**Doing Business As:** All Tides Consulting & Design Inc.  
**Phone:** 604-885-8465  
**Fax:**  
**Email:** alltidesconsulting@gmail.com  
**BC Incorporation Number:**  
**Extra Provincial Inc. No:**  
**Society Number:**  
**GST Registration Number:**  
**Contact Name:** Adam Thomsen  
**Mailing Address:** 5431 Carnaby Place  
 Sechelt BC V0N3A7  
**Letter(s) Attached:** Yes (Letter of Agency.pdf)

## CORRESPONDENCE E-MAIL ADDRESS

If you would like to receive correspondence at a different email address than shown above, please provide the correspondence email address here. If left blank, all correspondence will be sent to the above given email address.

**Email:** alltidesconsulting@gmail.com  
**Contact Name:** Adam Thomsen

## CO-APPLICANTS

In addition to the principal applicant, Co-applicant(s) is an Individual(s) or a Company/Organization(s) who wish to be listed as the Tenure holder(s).

**Are there co-applicants for this application?** Yes

**Co-applicants who are Organizations must consent to providing their name, address and phone number and Individuals must consent to providing their name and email address. Do you have permission from the co-applicants to enter their personal information?** Yes

You have indicated earlier in the application that there is one or more co-applicant. Please add each co-applicant by clicking on the 'Add Individual' or 'Add Organization' button below depending if the co-applicant is an individual or an organization. Due to Freedom of Information and Protection of Privacy Act regulations you are only able to enter the name and email address for an individual.

**Name:** Carmen Maria Schaedeli



**Phone:** 778-859-6310  
**Daytime Phone:**  
**Fax:**  
**Email:**  
**Mailing Address:** 1502-1159 Main Street  
Vancouver BC V6A 4B6

**Name:** Eli Mark Puterman  
**Phone:** 778-387-4012  
**Daytime Phone:**  
**Fax:**  
**Email:**  
**Mailing Address:** 1502-1159 Main Street  
Vancouver BC V6A 4B6

## ELIGIBILITY

Question	Answer	Warning
Do all applicants and co-applicants meet the eligibility criteria for the appropriate category as listed below?	Yes	

Applicants and/or co-applicants who are Individuals must:

1. be 19 years of age or older and
2. must be Canadian citizens or permanent residents of Canada. (Except if you are applying for a Private Moorage)

Applicants and/or co-applicants who are Organizations must either:

1. be incorporated or registered in British Columbia (Corporations also include registered partnerships, cooperatives, and non-profit societies which are formed under the relevant Provincial statutes) or
2. First Nations who can apply through Band corporations or Indian Band and Tribal Councils (Band or Tribal Councils require a Band Council Resolution).

## TECHNICAL INFORMATION

Please provide us with the following general information about you and your application:

### EXISTING TENURE DETAILS

**Do you hold another Crown Land Tenure?** No

### ALL SEASONS RESORTS

The All Seasons Resorts Program serves to support the development of Alpine Ski and non-ski resorts on Crown land. For more detailed information on this program please see the operational policy and if you have further questions please contact FrontCounter BC.

**Are you applying within an alpine ski resort?** No

### WHAT IS YOUR INTENDED USE OF CROWN LAND?

Use the "Add Purpose" button to select a proposed land use from the drop down menu.

If you wish to use Crown land for a short term, low impact activity you may not need to apply for tenure, you may be authorized under the Permissions policy or Private Moorage policy.

To determine if your use is permissible under the Land Act please refer to either the Land Use Policy - Permissions or Land Use Policy - Private Moorage located here.

Purpose	Tenure	Period
<b>Private Moorage</b> Residential Private Moorage used for safe access to the proponents upland water access only property	Specific Permission	More than thirty years

## ACCESS TO CROWN LAND

Please describe how you plan to access your proposed crown land from the closest public road:

Via water and through the upland property

## PRIVATE MOORAGE

Private Moorage is the allocation of aquatic Crown land (inland and coastal) for private moorage facilities such as a dock or float. Moorage facilities for group or strata title/ condominium developments of over three berths are administered under the provisions of the Residential program where they have no related commercial facilities (e.g. gas bars) and are intended for private use of tenants. Group moorage with commercial activities are administered under the Marina program.

**Specific Purpose:** Residential Private Moorage used for safe access to the proponents upland water access only property

**Period:** More than thirty years

**Tenure:** Specific Permission

## MOORING BUOY

Is this only for a mooring buoy for private moorage? No

## TOTAL APPLICATION AREA

Please give us some information on the size of the area you are applying for.

**Please specify the area:** .278 hectares

## PROJECT DETAILS

Please provide us with further details on your dock.

**Is the water freshwater or marine?** Marine

**Are you proposing 4 or more slips?** No

**Are you applying on behalf of a Strata corporation?** No

**Are you the waterfront upland owner?** Yes

**Are you planning to sell gas at the proposed marina?** No

## IMPORTANT CONSIDERATIONS

Selecting yes to any of the following questions may indicate that you will require further or additional authorizations under the Land Act or other legislation.

**Is your proposed activity within the Kootenay Region?** No

**Is your proposed activity within the Okanagan, Kalamalka and Wood Lakes, Skaha Lake, Vaseux Lake, or Christina Lake areas?** No

**Is your proposed activity within the Shuswap, Mara, Mable, or Little Shuswap Lake areas?** No

## ADDITIONAL QUESTIONS

In many cases you might require other authorizations or permits in order to complete your project. In order to make that determination and point you in the right direction please answer the questions below. In addition, your application may be referred to other agencies for comments.

**Is the Applicant or any Co-Applicant or their Spouse(s) an employee of the Provincial Government of British Columbia?** No

**Are you planning to cut timber on the Crown Land you are applying for?** No

Are you planning to use an open fire to burn timber or other materials? No

Do you want to transport heavy equipment or materials on an existing forest road? No

Are you planning to work in or around water? Yes

1. If you will be working in or around fresh water, you will require a Water Sustainability Act Change Approval or Notification from the Province. 2. The federal Department of Fisheries and Oceans might need to review your project. 3. Review the Transport Canada website if the Navigation Protection Act applies.

Does your operation fall within a park area? No

## LOCATION INFORMATION

## LAND DETAILS

## DRAWINGS

Please provide information on the location and shape of your Crown land application area. You can use one or more of the tools provided.

☒ I will upload a PDF, JPG or other digital file(s)

## MAP FILES

Your PDF, JPG or other digital file must show your application area in relation to nearby communities, highways, railways or other land marks.

Description	Filename	Purpose
Site Plan	Shortt . Crown Land Tenure ...	Private Moorage

## ATTACHED DOCUMENTS

Document Type	Description	Filename
General Location Map	Plans A-D	Shortt . Crown Land Tenure ...
Management Plan	MP	Management Plan - Shortt Pr...
Other	Land Title	title-495743 (1).pdf
Other	LoA	Shortt . Signed . Letter of...
Other	Plans A-D	Shortt . Crown Land Tenure ...
Side Profile	Plans A-D	Shortt . Crown Land Tenure ...
Site Photographs	Photo1	UNADJUSTEDNONRAW_thumb_2f.jpg

Site Photographs	Photo2	UNADJUSTEDNONRAW_thumb_1b.jpg
Site Photographs	Photo3	UNADJUSTEDNONRAW_thumb_1e.jpg
Site Plan	Plans A-D	Shortt . Crown Land Tenure ...

#### PRIVACY DECLARATION

☒ Check here to indicate that you have read and agree to the privacy declaration stated above.

#### REFERRAL INFORMATION

Some applications may also be passed on to other agencies, ministries or other affected parties for referral or consultation purposes. A referral or notification is necessary when the approval of your application might affect someone else's rights or resources or those of the citizens of BC. An example of someone who could receive your application for referral purposes is a habitat officer who looks after the fish and wildlife in the area of your application. This does not apply to all applications and is done only when required.

Please enter contact information below for the person who would best answer questions about your application that may arise from anyone who received a referral or notification.

**Company / Organization:** All Tides Consulting Inc.  
**Contact Name:** Adam Thomsen  
**Contact Address:** 5431 Carnaby Place  
 Sechelt, BC  
 V0N 3A7  
**Contact Phone:** 604-885-8465  
**Contact Email:** alltidesconsulting@gmail.com

☒ I hereby consent to the disclosure of the information contained in this application to other agencies, government ministries or other affected parties for referral or First Nation consultation purposes.

#### SIGNATURES

#### CO-APPLICANTS

You will have to obtain approval from all co-applicants before you can proceed with your application. Please select one option for each.

Name	Status of Signature Request
Carmen Maria Schaedeli	Declaration Form uploaded
Eli Mark Puterman	Declaration Form uploaded

#### IMPORTANT NOTICES

- Once you click 'Next' the application will be locked down and you will NOT be able to edit it any more.

#### DECLARATION

☒ By submitting this application form, I, declare that the information contained on this form is complete and accurate.

#### OTHER INFORMATION

Is there any other information you would like us to know?

Please contact Adam Thomsen regarding all matters to do with this application. Thank you.

#### APPLICATION AND ASSOCIATED FEES

Item	Amount	Taxes	Total	Outstanding Balance
Crown Land Tenure Application Fee	\$250.00	GST @ 5%: \$12.50	\$262.50	\$0.00

OFFICE

Office to submit application to: Surrey

PROJECT INFORMATION

Is this application for an activity or project which requires more than one natural resource authorization from the Province of BC? No

APPLICANT SIGNATURE

Applicant Signature

Date

OFFICE USE ONLY		
Office Surrey	File Number 2412264	Project Number
	Disposition ID	Client Number



# Crown Land Tenure Application for Private Moorage Management Plan

Proponent – David Shortt

May 2019

## **1.0 Background**

### **Project Details**

**Description of existing structures such as type (dock, wharf, etc.), construction (pilings, floats, etc.), and materials (include any preservatives);**

There are no existing structures located at the site.

**Size and dimensions of planned improvements including floating docks, wharves, boathouses, retaining walls, pilings or areas to be filled or dredged as well as construction material used;**

The proposed moorage structure fronts the water access only District Lot REM3551, PID: 015-871-002 on Nelson Island, BC. A 46' x 4.5' aluminum approach bears at one end on a 5' x 3' x 2' concrete abutment (situated above the natural boundary), and two driven steel pipe piles at the other. The two steel piles also support one end of a 50' x 4.5' counterbalanced aluminum gangway which rests on a floating private moorage dock. The gangway extends to a 12' x 36' timber framed float. The float is anchored seaward using typical mooring chain and concrete anchor blocks and is anchored towards shore using typical anchor chains and anchor pins. The float is for private moorage use only, there will be no income generated by the moorage facility. If additional specific information about the structure components is required, please contact Mr. Shortt's Agent Adam Thomsen with All Tides Consulting & Design Inc. A point form list of the private moorage structure components is included below.

#### **Proposed Private Moorage Structure Components:**

- One 5' x 3' x 2' concrete abutment
- One 46' x 4.5' aluminum approach
- Two steel pipe piles
- One 50' x 4.5' counterbalanced aluminum gangway
- One 12' x 36' timber framed float
- Four anchor chains
- Two anchor pins
- Two concrete anchor blocks

**Include dimensions and distances from property lines**

The concrete abutment is located approximately 11m from the property line and natural boundary intersection (the tenure application areas Point of Commencement).

**If other docks are located within 25 meters of the site plan, please include these docks on the site sketch;**

There are no docks located within 25m of the proposed structure.

**Indicate how public access is maintained along the beach;**

The gangway structure is approximately 2.0m above the high water line maintaining public access along the shoreline.

**Type of use - number of boats, seasons, etc., and**

The owners of the upland water access only property and their guests use the moorage system exclusively. There will be no services to the float. The private moorage will not be used for commercial purposes and no income will be generated by the facility. The float typically provides moorage for the owner's single boat. The private moorage and the residence is used by the owner part time, generally more so in the spring and summer months.

**Proposed use – what is proposed including any phased development details – should sync with****“Purpose” chosen:**

The existing private moorage system is for the use of the upland water access only property owner. The private moorage will allow moorage space for the owner's private boat year round (more frequently in the spring and the summer). The upland owner will not charge money for moorage or any other amenity provided by the float system.

**Why here and now:**

Mr. Shortt and his family need a private moorage to be able to safely access deep water fronting his water access only island property. He accesses the island property via private boat bringing guests and supplies to his Nelson Island residence.

**Details of any preliminary investigative work and any other approvals obtained:**

N/A

**Current zoning:**

Upland Lot - Zoned “RU-2” – Residential Resource

Aquatic Crown Land – Not Zoned

**For commercial activity – the location of competition, potential market statement:**

N/A

## **2.0 Location**

**General description of:**

The proposed moorage structure fronts the water access only District Lot REM3551, PID: 015-871-002 on Nelson Island, BC.

**Traffic including volume of traffic and phase or season:**

The tenure area will see little vessel traffic. The moorage will only be use by the proponent's private boat and occasional guests. The moorage will see a slightly larger volume of traffic in the summer season.

**Seasonal expectations of use:**

Year round use is necessary.

**Land use on parcel, adjacent parcels and surrounding area:**

Upland Lot - Zoned "RU-2" –Residential Resource (private moorages permitted)

Aquatic Crown Land – Not Zoned

Adjacent parcels also zoned "RU-2"

**Confirmation of Safety plan including first aid:**

Any contractor conducting works at the site will have standard company health and safety plans. The proponent's boat is equipped with all required Transport Canada safety equipment.

## **3.0 Infrastructure**

**Access plans – how will you or your clients be accessing the parcel:**

The tenure will be accessed from the water and from the upland waterfront property.

**Existing and proposed roads and their use by season, and any proposed connections to public or FSR roads:**

N/A

**Utility (power, electrical, telecommunications) requirements and sources:**

No utility requirements are necessary at this time.

**Water supply; (use and quantity if known) and,**

N/A

**Waste disposal (note if septic system required), sewage, sanitation facilities and refuse disposal.**

N/A

#### **4.0 First Nations**

Describe any contact you may have had, including the name of the First Nation(s) and individuals contacted. Provide copies of or a description of any information you may have acquired from or provided to the First Nation(s) (potential benefits, partnership opportunities, special interests, concerns, etc.) and any information regarding archaeological resources and areas of cultural significance you are aware of in the vicinity of the proposed project.

We have not had any contact with First Nations. We are not aware of any areas of cultural significance close to the proposed moorage site.

#### **5.0 Environmental**

Describe any significant impacts and proposed mitigation with respect to:

**Land Impacts:**

N/A

**Cutting of vegetation:**

N/A

**Soil disturbance:**

No soil disturbance is expected.

**Riparian encroachment:**

There are no fresh water streams located near the proposed structure location.

**Management of pesticides, herbicides:**

N/A

**Visual impacts:**

Visual impacts are kept to a minimum due to the low profile design of the moorage structure and there are no structures built on the float itself. The property is located in a remote location and will have little to no visual impact on the public.

**Known archaeological sites:**

We are not aware of any areas of cultural significance close to the proposed moorage site.

**Types of construction methods and materials used:**

- We anticipate minimal land impact.
- All system components will be transported in by barge with no impact to the foreshore or sea floor.
- No machinery will work in the intertidal zone.
- The bearing piles will be installed during tides which allow the barge and crane to place them. None of the installation equipment used will come in contact with the sea floor.
- The float will have a minimum clearance from the sea floor of more than 1.5m at low water (0' chart datum).
- Two holes will be drilled into bedrock at the low water line to accommodate the 1" anchor pins.
- The anchor blocks will be set on the sea floor (not dragged) minimizing environmental impact.
- All applicable Best Management Practices, Operational Statements, and Timing Windows will be followed during all build and installation phases.
- Construction materials to be used for the project are noted in previous sections.
- Continuing routine maintenance necessary will be conducted during applicable Timing Windows and all Operational Statements and Best Management Practices (BMP's) will be followed.

**Atmospheric Impacts****Sound:**

- There are no audio impacts at the moorage site now.
- Besides the proponent's personal boat there will be no audio impacts at the moorage site.
- Structure installation will be conducted in an efficient and timely manner minimizing sound impacts. Pile driving works will be short in duration.



**Odor:**

- There are no odor impacts at the moorage site now.
- Besides the proponent's personal boat exhaust there will be no odor impacts at the moorage site.
- Minimal odor impacts will occur during structure installation.
- Any routine maintenance will be conducted in an efficient and timely manner minimizing odor impacts.

**Gas:**

Minimal fuel emissions will occur during structure installation and from the proponent's private boat once the installation is complete. Water quality will remain the same.

**Fuel emissions:**

Minimal fuel emissions will occur during structure installation and from the proponent's private boat once the installation is complete. Water quality will remain the same.

**Explain current conditions, source, type and range of emission:**

Minimal fuel emissions will occur during structure installation and from the proponent's private boat once the installation is complete. Water quality will remain the same.

**Water or Land covered by water Impacts****Drainage effect:**

N/A

**Sedimentation:**

Minimal water turbidity will occur. Water quality will remain the same.

**Water diversion:**

N/A

**Water quality:**

Minimal water turbidity will occur. Water quality will remain the same.

**Public access:**

The gangway structure is approximately 2.0m above the high water line maintaining public access on the foreshore.

**Flood potential:**

N/A

## **Fish and Wildlife Habitat**

### **Provide current status of fish or wildlife habitat:**

- Typical BC west coast foreshore bedrock, boulder and cobble were observed.
- No eelgrass, kelp fields or salt marsh vegetation have been observed from the surface of the water at low tide.
- Barnacles, fucus, green algae red algae, and brown algae were observed at the site.

### **Disturbance to wildlife habitat:**

- No drainage effects will occur.
- Water quality will remain the same.
- All machinery and tools present on site during installation will be inspected for fluid leaks and be deemed in good working order prior to any arrival to minimize the chance of a spill.
- All applicable Timing Windows, Operational Statements and Best Management Practices (BMP's) will be followed during routine maintenance.
- All mandatory mitigation measures noted in the BMP's will be taken to ensure the least amount of negative effects on fish and wildlife habitat.
- The addition of system components will be introduced habitat for wildlife and marine organisms to accumulate on.

### **Disturbance to fish habitat or environment:**

- No drainage effects will occur.
- Water quality will remain the same.
- All machinery and tools present on site during installation will be inspected for fluid leaks and be deemed in good working order prior to any arrival to minimize the chance of a spill.
- All applicable Timing Windows, Operational Statements and Best Management Practices (BMP's) will be followed during routine maintenance.
- All mandatory mitigation measures noted in the BMP's will be taken to ensure the least amount of negative effects on fish and wildlife habitat.
- The addition of system components will be introduced habitat for wildlife and marine organisms to accumulate on.

### **Threatened or endangered species in the area:**

We are not aware of any threatened or endangered species in the area.

### **Seasonal considerations:**

All applicable Timing Windows, Operational Statements and Best Management Practices (BMP's) will be followed with all maintenance works conducted.

## **6.0 Socio- Community**

### **Land Use**

#### **Land management plans:**

N/A

#### **Public recreation areas:**

There are no public recreation areas located on land adjacent to the proposed moorage location. The structure does not impact water recreation such as swimming or kayaking.

### **Socio-Community Conditions**

#### **Provide a description of the demand on fire protection or emergency services:**

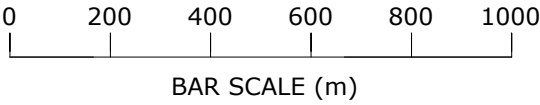
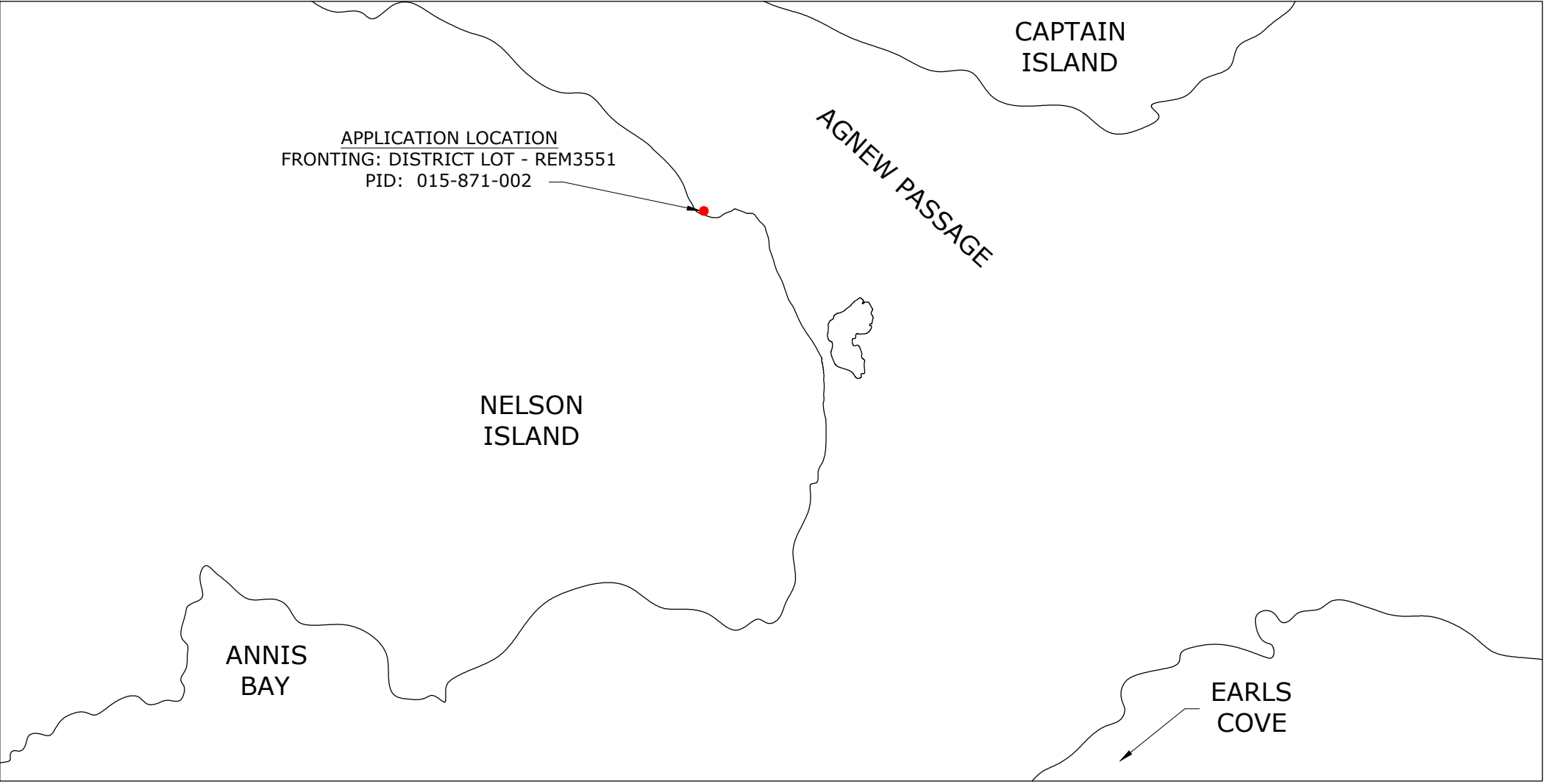
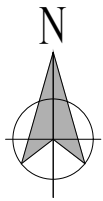
The private moorage increases the demand on emergency services by a negligible amount.

Signature: \_\_\_\_\_



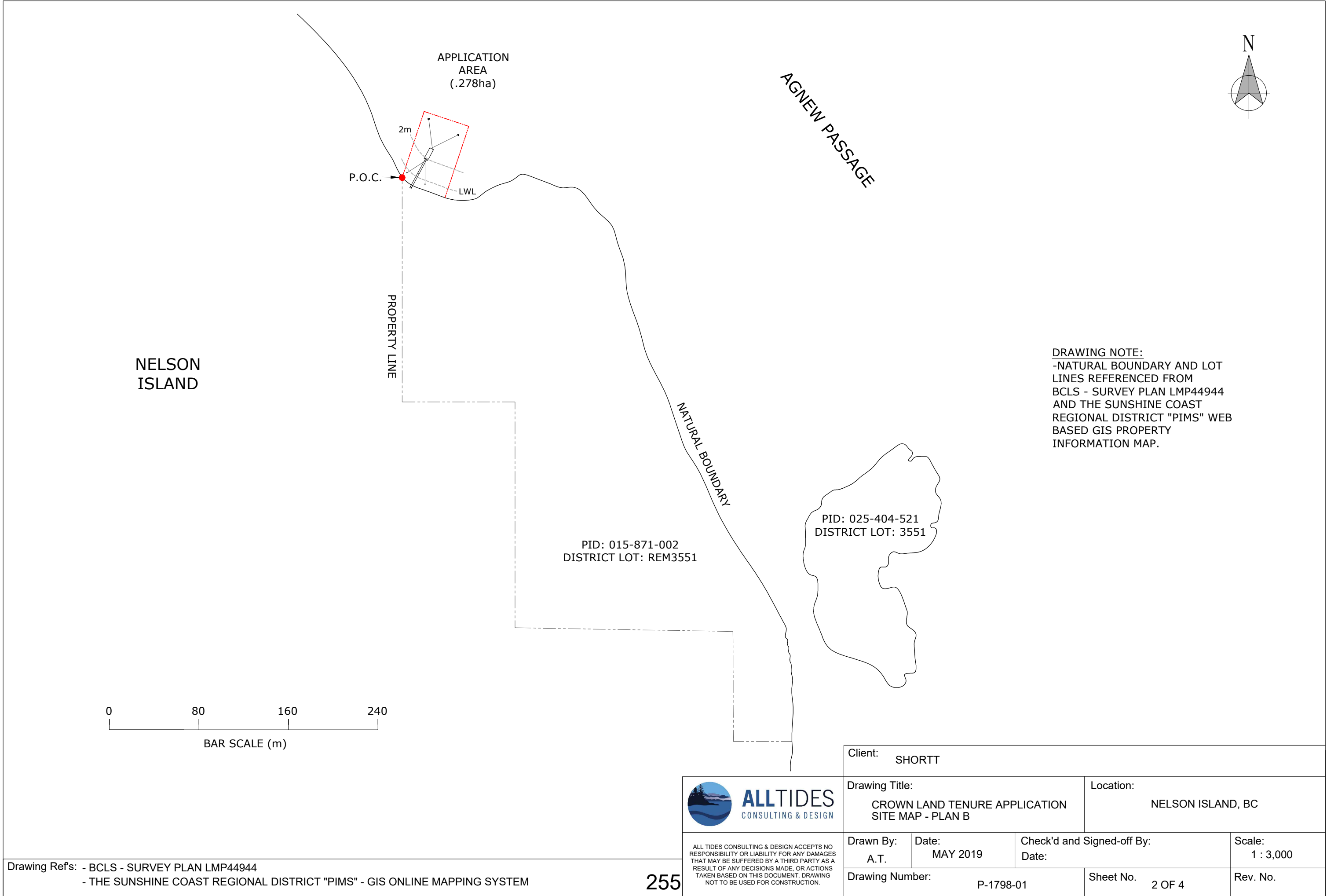
David Shortt

Date: May 31, 2019



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Client: SHORTT			
Drawing Title: CROWN LAND TENURE APPLICATION LOCATION MAP - PLAN A			Location: NELSON ISLAND, BC
Drawn By: A.T.	Date: MAY 2019	Check'd and Signed-off By: Date:	Scale: 1 : 15,000
Drawing Number: P-1798-01		Sheet No. 1 OF 4	Rev. No.



DRAWING NOTE:  
-NATURAL BOUNDARY AND LOT  
LINES REFERENCED FROM  
BCLS - SURVEY PLAN LMP44944  
AND THE SUNSHINE COAST  
REGIONAL DISTRICT "PIMS" WEB  
BASED GIS PROPERTY  
INFORMATION MAP.

PID: 025-404-521  
DISTRICT LOT: 3551

PID: 015-871-002  
DISTRICT LOT: REM3551

0 80 160 240  
BAR SCALE (m)

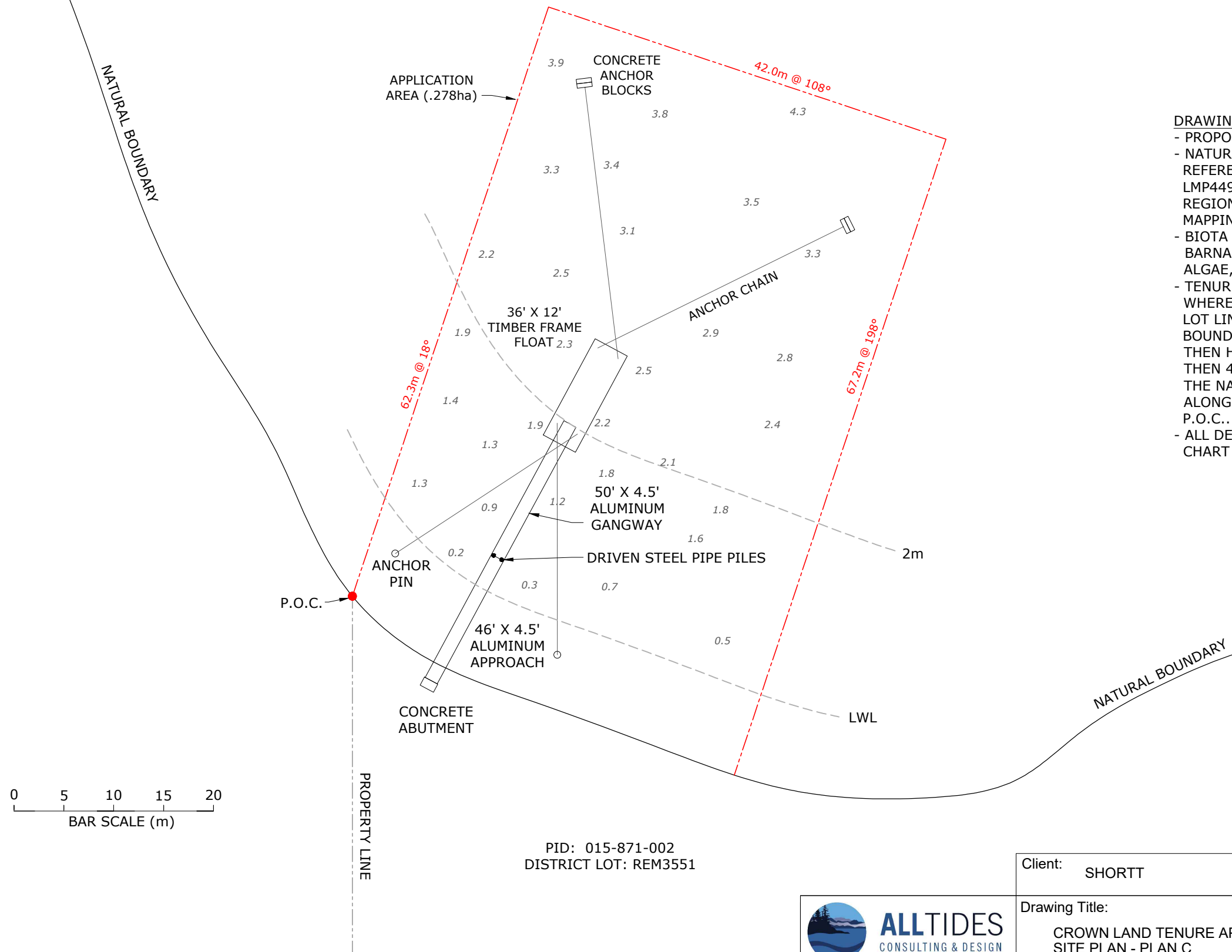
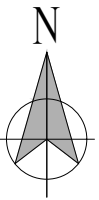
Client: SHORTT			
Drawing Title: CROWN LAND TENURE APPLICATION SITE MAP - PLAN B		Location: NELSON ISLAND, BC	
Drawn By: A.T.	Date: MAY 2019	Check'd and Signed-off By: Date:	Scale: 1 : 3,000
Drawing Number: P-1798-01		Sheet No. 2 OF 4	Rev. No.



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NOT TO BE USED FOR CONSTRUCTION.



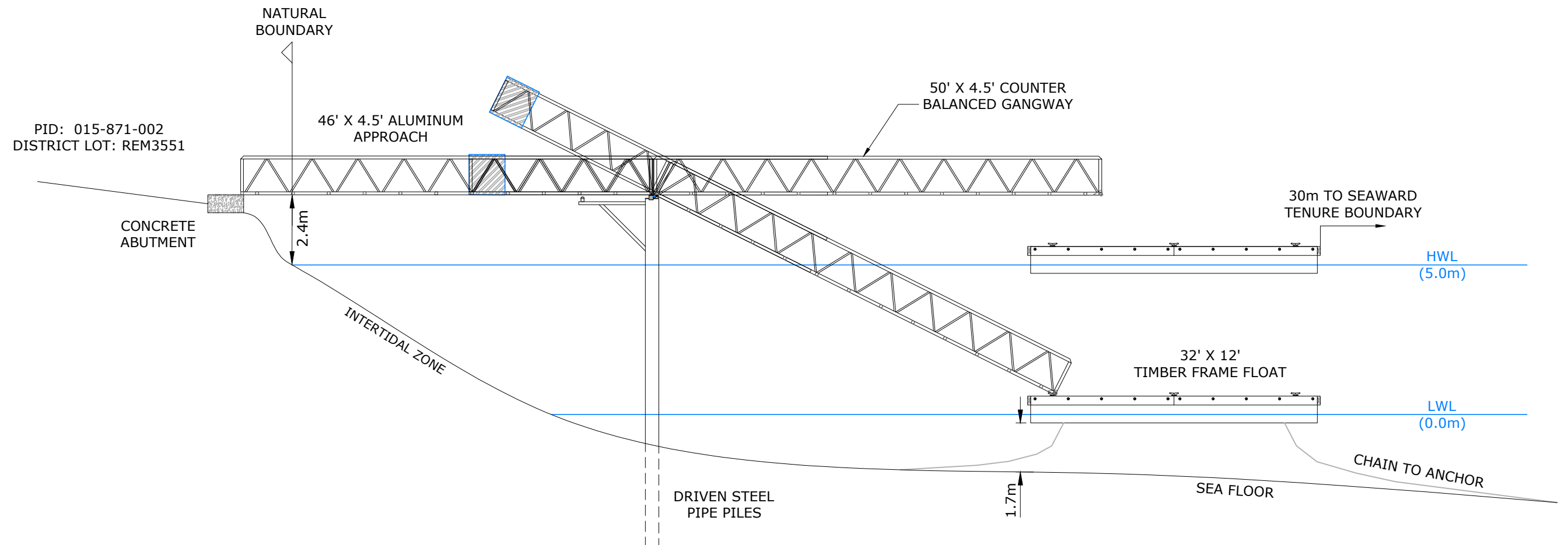


- DRAWING NOTES:**
- PROPOSED TENURE AREA = .278ha
  - NATURAL BOUNDARY AND LOT LINES REFERENCED FROM BCLS - SURVEY PLAN LMP44944 AND - THE SUNSHINE COAST REGIONAL DISTRICT "PIMS" - GIS ONLINE MAPPING SYSTEM.
  - BIOTA OBSERVED ON SITE INCLUDED: BARNACLES, FUCUS, GREEN ALGAE, RED ALGAE, AND BROWN ALGAE.
  - TENURE APPLICATION AREA P.O.C. IS WHERE THE PROPERTIES WESTERNMOST LOT LINE INTERSECTS WITH THE NATURAL BOUNDARY. THE TENURE APPLICATION AREA THEN HEADS 62.3m@18° FROM THE P.O.C, THEN 42.0m@108°, THEN 67.2m@198° TO THE NATURAL BOUNDARY, THEN BACK ALONG THE NATURAL BOUNDARY TO THE P.O.C..
  - ALL DEPTHS ARE IN METERS REDUCED TO CHART DATUM.



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Client: SHORTT			
Drawing Title: CROWN LAND TENURE APPLICATION SITE PLAN - PLAN C		Location: NELSON ISLAND, BC	
Drawn By: A.T.	Date: MAY 2019	Check'd and Signed-off By: Date:	Scale: 1 : 450
Drawing Number: P-1798-01		Sheet No. 3 OF 4	Rev. No.



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Client: SHORTT			
Drawing Title: CROWN LAND TENURE APPLICATION ELEVATION - PLAN D		Location: NELSON ISLAND, BC	
Drawn By: A.T.	Date: MAY 2019	Check'd and Signed-off By: Date:	Scale: 1 : 150
Drawing Number: P-1798-01		Sheet No. 4 OF 4	Rev. No.















## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

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**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Julie Clark, Planner

**SUBJECT:** Provincial Referral CRN00092 for a Private Moorage 2412002 (Kelemen) – Electoral Area B

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### RECOMMENDATIONS

1. THAT the report titled Provincial Referral CRN00092 for a Private Moorage 2412002 (Kelemen) – Electoral Area B be received;
2. AND THAT the following comments be forwarded to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development:

SCRD does not support the current private moorage application fronting Lot 45, District Lot 1488, Plan LMP 32269 New Westminster District, Provincial Referral Number 2412002.

AND THAT any updated or future application is recommended to ensure that:

- a. The Provincial policy of a maximum of one moorage facility per property is maintained;
  - b. The applicant discuss proposals with neighbours who share the cove;
  - c. The application align with the Provincial and *shíshálh* Nation's Best Management Practices for building and maintaining marine moorage facilities and in particular the most stringent of any overlapping policy to protect the foreshore ecosystems, including;
    - Species At Risk and species of regional significance in or near the tenure area should be identified by dive assessment and protected;
    - This property and others nearby consider shared moorage facilities;
  - d. The *shíshálh* Nation is consulted and that all activities undertaken comply with the *Heritage Protection Act*;
  3. AND THAT comments from the Halfmoon Bay Advisory Planning Commission be provided to the Ministry.
  4. AND FURTHER THAT the recommendations be forwarded to the Regular Board meeting of December 12, 2019.
-

## BACKGROUND

SCRD has received a Provincial referral from the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) for specific permission for a private residential moorage fronting Lot A, District Lot 1582, BLK 2 NWD Plan VAP15810 PID 007-614-829 (referred to as the upland parcel), located in Sargent Bay immediately adjacent to the eastern boundary Sargent Bay Provincial Park. The referral package can be found in Attachment A. A location map and a plan of the moorage (Figures 1 & 2) and an application summary (Table 1) are provided below.

The purpose of this report is to provide an analysis of the proposal and recommend a response to FLNRORD.



Figure 1 – Location Map upland parcel PID 007-614-829, 7777 Kenyon Road

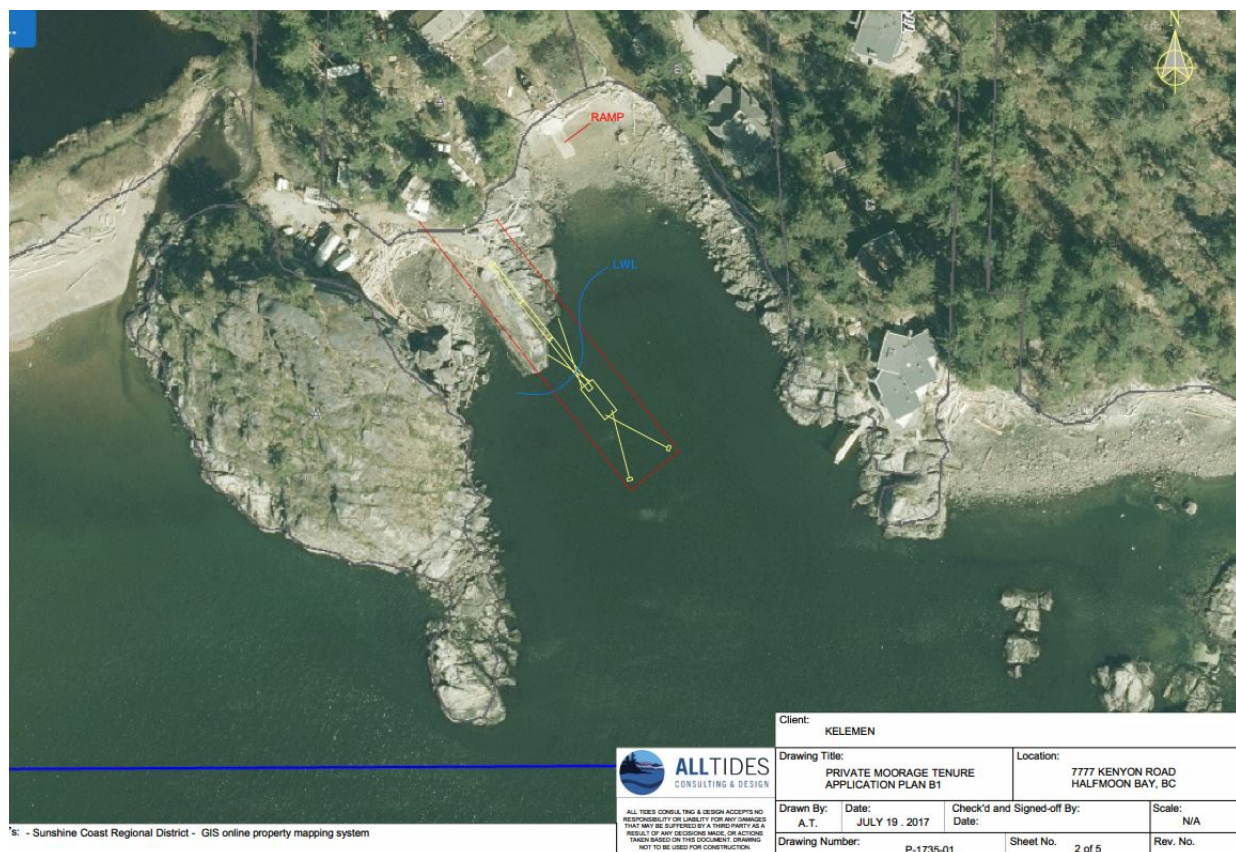


Figure 2 – Moorage facility

Owner / Applicant:	Lawrence Kelemen
Purpose:	Private residential moorage
Tenure Type:	Specific Permission
Tenure Length:	More than 30 years
Size:	0.152 ha (1520 m <sup>2</sup> )
Location:	Sargent Bay
Legal Description:	fronting Lot A, District Lot 1582, BLK 2 NWD Plan VAP15810 PID 007-614-829 (upland parcel)
Electoral Area:	B – Halfmoon Bay
OCP Land Use:	Not designated
Land Use Zone:	RU1 (Rural Residential) for upland parcel, W1 (Water 1) over the water
Comment deadline:	November 30, 2019

Table 1 - Application Summary

## DISCUSSION

The tenure application area is proposed to be 1520m<sup>2</sup> to accommodate a 148 foot (48.11 metres) gangway and a 14x40 foot (52m<sup>2</sup>) concrete float in a small cove of Sargent Bay. The intent is to moor private vessels for a single property.

Staff review of the subject property identified a concrete boat ramp that currently exists on the foreshore at the northern reach of the cove. This property appears to be in contravention of Provincial foreshore regulations, without tenure for the existing boat ramp. It is unclear if the Province is aware of the existing ramp and the applicant does not reference the ramp in the application other than to label it on an aerial image included in the referral package.

At the discretion of the Province, BC's [Land Use Operational Policy for Private Moorage](#) indicates that a maximum of one Private Moorage Facility per parcel is permitted. A boat ramp is considered a Private Moorage Facility as per the definition:

*“a dock, a permanent boat way (i.e. boat ramp), or a stand-alone boat lift that is permanently affixed to aquatic Crown land. It is for the personal and private residential use by one or a number of individuals or a family unit for boat moorage.”*

Further, Provincial best practices suggest that shared Private moorages are preferred to reduce the potential of high density of dock infrastructure.

Staff recommend that this Private Moorage Facility application not be issued by the Province at this time. Should the applicants wish to make an application in the future, staff recommend that:

- the Provincial policy of a maximum of one moorage facility per property is upheld;
- the applicant discuss the proposal with neighbours who share the cove;
- the applicant align their application with Provincial Policies and the [Best Management Practices for Marine Docks](#) including that:
  - a shared moorage application is considered
  - a dive assessment be undertaken to determine species of significance

These reasons for objection are consistent with criteria considered for other moorage applications referred to SCRD.

### *SCRD Official Community Plan and Zoning Analysis*

The subject area is within the boundaries of Halfmoon Bay Official Community Plan of the SCRD.

The upland parcel (4.18 acres) fronting the moorage is zoned RU1 (Rural One) which permits residential use on the property. A private dock is consistent with the residential use of the upland property.

The surface of the water is zoned W1 (Water One), which permits a single moorage facility.

### *Options*

The Province requests SCRD to decide on one of the following options in response to the referral:

1. Interests unaffected
2. No objection to approval of project
3. No objection to approval of project subject to conditions
4. Recommend refusal of project due to reasons

Staff recommend Option 4, refusal of this project, with reasons identified in this report.

### *Consultation*

The Province referred this application to First Nations, SCRD and other agencies it identifies as appropriate. The applicant is responsible for advertising the application in a local paper to enable comments from the public.

The proposal is referred to the Halfmoon Bay Advisory Planning Commission for review in November. Comments will be forwarded to the Province.

### *Timeline for Next Steps*

The Province extended the deadline to comment on this application to November 30, 2019 in order to obtain a Board Resolution. Staff advised the Province of the December 12, 2019 meeting date. The Resolution will be forwarded to FLNRORD and final decision will be made by the Province.

## **STRATEGIC PLAN AND RELATED POLICIES**

The following SCRD Strategic Plan objectives and success indicators relate to the subject of this report:

- Advocacy: foreshore and marine environments are a common interest, regulated by the Provincial and Federal governments. SCRD provides referral comments to assist applicants and government agencies in ensuring common interests are accessed appropriately and cared for with the long term in mind.

## **CONCLUSION**

The SCRD was provided an opportunity to comment on a Provincial referral to permit a private residential moorage in Sargent Bay for the property at 7777 Kenyon Road. The proposal was analyzed against applicable Provincial and SCRD policies, bylaws and regulations, as well as Best Management Practices for (marine) Moorage Facilities. An existing boat ramp is on the property which makes the applicant ineligible for further Private Moorage Facility approval. Staff recommend responding to the Province with option 4, refusal of the project for the reasons identified in this report.



*Attachments*

Attachment A – Referral Package

Reviewed by:			
Manager	X – D. Pady	Finance	
GM	X – I. Hall	Legislative	
A/CAO	X – T. Perreault	Other	



# Crown Land Tenure Application

Tracking Number: 100231351

File 2412002

## Applicant Information

If approved, will the authorization be issued to an Individual or Company/Organization? Company/Organization

What is your relationship to the company/organization? Agent

## APPLICANT COMPANY/ORGANIZATION CONTACT INFORMATION

Applicant is an Individual or an Organization to whom this authorization Permit/Tenure/Licence will be issued, if approved.

**Name:** 0973438 B.C. LTD.

**Doing Business As:**

**Phone:** 780-532-7671

**Fax:**

**Email:** ktec@netnet.ca

**BC Incorporation Number:**

**Extra Provincial Inc. No:**

**Society Number:**

**GST Registration Number:**

**Contact Name:** Lawrence Kelemen

**Mailing Address:** PO BOX 1478  
Grand Prairie AB T8V 4Z2

## AGENT INFORMATION

Please enter the contact information of the Individual/Organization who is acting on behalf of the applicant.

**Name:** Adam Mark Thomsen

**Doing Business As:** All Tides Consulting

**Phone:** 604-885-8465

**Fax:**

**Email:** alltidesconsulting@gmail.com

**BC Incorporation Number:**

**Extra Provincial Inc. No:**

**Society Number:**

**GST Registration Number:**

**Contact Name:** Adam Thomsen

**Mailing Address:** 5431 Carnaby Place  
Sechelt BC V0N3A7

**Letter(s) Attached:** Yes (Letter of Agency.pdf)

## CORRESPONDENCE E-MAIL ADDRESS

If you would like to receive correspondence at a different email address than shown above, please provide the correspondence email address here. If left blank, all correspondence will be sent to the above given email address.

**Email:** alltidesconsulting@gmail.com

**Contact Name:** Adam Thomsen

## ELIGIBILITY

Question	Answer	Warning
----------	--------	---------

Do all applicants and co-applicants meet the eligibility criteria for the appropriate category as listed below?	Yes	
---	-----	--

Applicants and/or co-applicants who are Individuals must:

1. be 19 years of age or older and
2. must be Canadian citizens or permanent residents of Canada. (Except if you are applying for a Private Moorage)

Applicants and/or co-applicants who are Organizations must either:

1. be incorporated or registered in British Columbia (Corporations also include registered partnerships, cooperatives, and non-profit societies which are formed under the relevant Provincial statutes) or
2. First Nations who can apply through Band corporations or Indian Band and Tribal Councils (Band or Tribal Councils require a Band Council Resolution).

## TECHNICAL INFORMATION

Please provide us with the following general information about you and your application:

### EXISTING TENURE DETAILS

**Do you hold another Crown Land Tenure?**

Yes

**Please specify your file number:**

2404865

If you have several file numbers, please make a note of at least one of them above. Example numbers: 1234567, 153245, others

### ALL SEASONS RESORTS

The All Seasons Resorts Program serves to support the development of Alpine Ski and non-ski resorts on Crown land. For more detailed information on this program please see the operational policy and if you have further questions please contact FrontCounter BC.

**Are you applying within an alpine ski resort?** No

### WHAT IS YOUR INTENDED USE OF CROWN LAND?

Use the "Add Purpose" button to select a proposed land use from the drop down menu.

If you wish to use Crown land for a short term, low impact activity you may not need to apply for tenure, you may be authorized under the Permissions policy or Private Moorage policy.

To determine if your use is permissible under the Land Act please refer to either the Land Use Policy - Permissions or Land Use Policy - Private Moorage located here.

Purpose	Tenure	Period
<b>Private Moorage</b> Private Moorage for use of upland owner and guests	Specific Permission	More than thirty years

### ACCESS TO CROWN LAND

**Please describe how you plan to access your proposed crown land from the closest public road:**

Through upland private lot

### PRIVATE MOORAGE

Private Moorage is the allocation of aquatic Crown land (inland and coastal) for private moorage facilities such as a dock or float. Moorage facilities for group or strata title/ condominium developments of over three berths are administered under the provisions of the Residential program where they have no related commercial facilities (e.g. gas bars) and are intended for private use of tenants. Group moorage with commercial activities are administered under the Marina program.

**Specific Purpose:** Private Moorage for use of upland owner and guests  
**Period:** More than thirty years  
**Tenure:** Specific Permission

### MOORING BUOY

**Is this only for a mooring buoy for private moorage?**

No

### TOTAL APPLICATION AREA

Please give us some information on the size of the area you are applying for.

Please specify the area: .15 hectares

#### PROJECT DETAILS

Please provide us with further details on your dock.

Is the water freshwater or marine?	Marine
Are you proposing 4 or more slips?	No
Are you applying on behalf of a Strata corporation?	No
Are you the waterfront upland owner?	Yes
Are you planning to sell gas at the proposed marina?	No

#### SECTION 11 WATER AUTHORIZATION

You may also require a Section 11 Water Sustainability Act authorization.

Is this application for an existing structure?	No
--	----

#### IMPORTANT CONSIDERATIONS

Selecting yes to any of the following questions may indicate that you will require further or additional authorizations under the Land Act or other legislation.

Is your proposed activity within the Kootenay Region?	No
Is your proposed activity within the Okanagan, Kalamalka and Wood Lakes, Skaha Lake, Vaseux Lake, or Christina Lake areas?	No
Is your proposed activity within the Shuswap, Mara, Mable, or Little Shuswap Lake areas?	No

#### ADDITIONAL QUESTIONS

In many cases you might require other authorizations or permits in order to complete your project. In order to make that determination and point you in the right direction please answer the questions below. In addition, your application may be referred to other agencies for comments.

Is the Applicant or any Co-Applicant or their Spouse(s) an employee of the Provincial Government of British Columbia?	No
Are you planning to cut timber on the Crown Land you are applying for?	No
Are you planning to use an open fire to burn timber or other materials?	No
Do you want to transport heavy equipment or materials on an existing forest road?	No
Are you planning to work in or around water?	Yes
1. If you will be working in or around fresh water, you will require a Water Sustainability Act Change Approval or Notification from the Province. 2. The federal Department of Fisheries and Oceans might need to review your project. 3. Review the Transport Canada website if the Navigation Protection Act applies.	
Does your operation fall within a park area?	No

#### LOCATION INFORMATION

#### LAND DETAILS

Please provide information on the location and shape of your Crown land application area. You can use one or more of the tools provided.

☒ I will upload a PDF, JPG or other digital file(s)

#### MAP FILES

Your PDF, JPG or other digital file must show your application area in relation to nearby communities, highways, railways or other land marks.

Description	Filename	Purpose
Crown Land Tenure Application . Plans A to D. included are metes and bounds for FLNRO to develop shape file from	Kelemen . Crown Land Tenure...	Private Moorage

#### ATTACHED DOCUMENTS

Document Type	Description	Filename
General Location Map	Crown Land Tenure Application . Plans A to D	Kelemen . Crown Land Tenure...
Management Plan	Management Plan	Kelemen . Management Plan ....
Other	Land Title. Lawrence Kelemen is the Owner of the company which the land was purchased under and for which this application is being submitted under.	title-254127.pdf
Other	Letter of Agency	Letter of Agency.pdf
Other	Written confirmation of bylaw compliance for private moorage application	Gmail - RE_ Written confirm...
Side Profile	Crown Land Tenure Application . Plans A to D	Kelemen . Crown Land Tenure...
Site Photographs	photo1	1.JPG
Site Photographs	photo2	2.JPG
Site Photographs	photo3	3.JPG
Site Plan	Crown Land Tenure Application . Plans A to D	Kelemen . Crown Land Tenure...

#### PRIVACY DECLARATION

☒ Check here to indicate that you have read and agree to the privacy declaration stated above.

#### REFERRAL INFORMATION

Some applications may also be passed on to other agencies, ministries or other affected parties for referral or consultation purposes. A referral or notification is necessary when the approval of your application might affect someone else's rights or resources or those of the citizens of BC. An example of someone who could receive your application for referral purposes is a habitat officer who looks after the fish and wildlife in the area of your application. This does not apply to all applications and is done only when required.



Please enter contact information below for the person who would best answer questions about your application that may arise from anyone who received a referral or notification.

**Company / Organization:**

**Contact Name:** Adam Thomsen  
**Contact Address:** 5431 Carnaby Pl.  
Sechelt BC  
V0N3A7  
**Contact Phone:** 604-885-8465  
**Contact Email:** alltidesconsulting@gmail.com

☒ I hereby consent to the disclosure of the information contained in this application to other agencies, government ministries or other affected parties for referral or First Nation consultation purposes.

**IMPORTANT NOTICES**

- Once you click 'Next' the application will be locked down and you will NOT be able to edit it any more.

**DECLARATION**

☒ By submitting this application form, I, declare that the information contained on this form is complete and accurate.

**OTHER INFORMATION**

**Is there any other information you would like us to know?** Lawrence Kelemen is the Owner of 0973438 B.C. LTD

**APPLICATION AND ASSOCIATED FEES**

Item	Amount	Taxes	Total	Outstanding Balance
Crown Land Tenure Application Fee	\$250.00	GST @ 5%: \$12.50	\$262.50	\$0.00

**OFFICE**

**Office to submit application to:** Surrey

**PROJECT INFORMATION**

**Is this application for an activity or project which requires more than one natural resource authorization from the Province of BC?** No

**APPLICANT SIGNATURE**

Applicant Signature

Date

**OFFICE USE ONLY**

Office Surrey	File Number 2412002	Project Number 266203
	Disposition ID	Client Number

**Management Plan**  
**Private Moorage Tenure Application**  
**Lawrence Kelemen – August 14, 2019**  
(Revision 1)

*There are two different section “b’s” in the Frontcounter bc private moorage applications management plan requirement, I have included information for both as to not miss any required information*

*The following “Section b” is listed as a requirement in the ‘private moorage application requirements list – marine’*

**Section B – Project Details**

**Description of existing structures such as type (dock, wharf, etc.), construction (pilings, floats, etc.), and materials (include any preservatives);**

There are no existing structures currently at this location.

**Size and dimensions of planned (and/or existing) improvements including floating docks, wharves, boathouses, retaining walls, pilings or areas to be filled or dredged as well as construction material used;**

- 6' x 2' x 2' concrete abutment
- Two 4' x 44' aluminum approaches
- Two pairs of 12" steel pipe bearing piles bolted to a concrete footing and bedrock
- 4' x 60' aluminum counterbalanced gangway
- 14' x 36' concrete float
- Four lengths of typical mooring chain
- Two galvanized anchor pins
- Two concrete anchor blocks
- Two concrete lock blocks\*

\*There is an existing concrete slab on the foreshore fronting the property that will be decommissioned for any type of use by permanently installing concrete lock blocks near the top of the slab at the natural boundary. A supporting letter by an environmental consulting company has been provided indicating that the concrete barrier installation will have far less impact on the location than attempting to remove the concrete.

**Include dimensions and distances from property lines**

- The private moorage structure is located over 27m away from the nearest property line.

**If other docks are located within 25 meters of the site plan, please include these docks on the site sketch;**

-There are no other docks within 25m from the float.

**Indicate how public access is maintained along the beach;**

The small cove is very private and sees very little public traffic. However, during all tides there is more than enough clearance between the structure and the natural boundary as well as under the private moorage approach for the public to walk.

**Type of use - number of boats, seasons, etc., and**

This moorage system is to be used exclusively by the owner of the upland property and his guests. The float will not be used for commercial purposes and no income will be generated by the facility. The float will typically provide moorage for the owner's single boat. The float will be in place year round.

*The following "section b" is listed as a requirement in the provided specific information template required '[http://www.for.gov.bc.ca/land\\_Tenures/documents/management\\_plan.pdf](http://www.for.gov.bc.ca/land_Tenures/documents/management_plan.pdf)'*

## **Section B – Proposed Use Description**

### **I. Background**

**Proposed use – what is proposed including any phased development details – should sync with "Purpose" chosen:**

-Installation of a private moorage system for use by upland lot owner.  
-An accessible float will allow moorage space for the owner's private boat year round.  
-The upland owner will not charge money for moorage or any other amenity provided by the float system.

**Why here and now:**

Mr. Kelemen wants to be able to safely access his boat and to safely access deep water fronting his property year round.

**Details of any preliminary investigative work and any other approvals obtained:**

Written confirmation has been given that the Sunshine Coast Regional District that the project complies with local zoning bylaws. (Included with application submission)

**Current zoning:**

Upland - RU1 / Water – W1

**For commercial activity – the location of competition, potential market statement:**

Not Applicable.

**II. Location**

**General description of:**

The moorage will front Lot A, District Lot 1582, BLK 2, NWD, Plan – VAP15810, PID: 007-614-772 in Halfmoon Bay, BC.

**Access plans – how will you or your clients be accessing the parcel:**

The owners will access the parcel from their upland property.

**Traffic including volume of traffic and phase or season:**

The tenure area will see little vessel traffic. The moorage will only be use by the proponent's private boat and occasional guests. The moorage will see a slightly larger volume of traffic in the summer season.

**Seasonal expectations of use:**

The moorage will stay in year round. The tenure location will see a slightly larger volume of traffic in the summer season.

**Land use on parcel, adjacent parcels and surrounding area**

The upland lot parcel is used for residential purposes. Adjacent parcels are used for residential purposes.

**Confirmation of Safety plan including first aid**

- Proponents Home contains first aid equipment and emergency contact numbers.
- Proponents boat is equipped with required Transport Canada safety equipment.
- Moorage installation contractor to have Health and safety plans.



### **III. Infrastructure**

#### **New facilities or infrastructure proposed and any ancillary uses:**

##### **Description of structures to be installed**

Mr. Kelemen proposes to install a 14' x 36' concrete float for private moorage use. The float will front Lot A, District Lot 1582, BLK 2, NWD, Plan – VAP15810, PID: 007-614-772 in Halfmoon Bay, BC. Two 4' x 44' aluminum approaches with metal grate decking will bear on a concrete abutment and two pairs of 12" steel pipe piles either with a concrete footing or bolted to the bedrock. These approaches will extend to a 4' x 60' counterbalanced aluminum gangway with metal grate decking. The gangway will land on the float which will be anchored using typical moorage chain, two concrete anchor blocks set seaward, and two anchoring pins set below the low water line.

##### **Size and Dimensions of planned improvements**

- 6' x 2' x 2' concrete abutment
- Two 4' x 44' aluminum approaches
- Two pairs of 12" steel pipe bearing piles bolted to a concrete footing and bedrock
- 4' x 60' aluminum counterbalanced gangway
- 14' x 36' concrete float
- Four lengths of typical mooring chain
- Two galvanized anchor pins
- Two concrete anchor blocks
- Two concrete lock blocks

#### **Existing and proposed roads and their use by season, and any proposed connections to public or FSR roads:**

N/A

#### **Utility (power, electrical, telecommunications) requirements and sources:**

N/A

#### **Water supply; (use and quantity if known) and,**

N/A

#### **Waste disposal (note if septic system required), sewage, sanitation facilities and refuse disposal.**

Waste is disposed of in a manner reflects all applicable regulations.

### **IV. First Nations**

**Describe any contact you may have had, including the name of the First Nation(s) and individuals**

contacted. Provide copies of or a description of any information you may have acquired from or provided to the First Nation(s) (potential benefits, partnership opportunities, special interests, concerns, etc.) and any information regarding archaeological resources and areas of cultural significance you are aware of in the vicinity of the proposed project.

We have not been in contact with Local the First Nations. We are not aware of any areas of cultural significance in the immediate proposed tenure location area.

#### **The Sechelt Nation's Best Management Practices for Marine Docks:**

*1. Whenever possible proponents are encouraged to develop dock facilities that can facilitate numerous upland owners. In pursuing multi-owner/use facilities the footprint on the sub/inter tidal habitats is minimized. These types of facilities also help to alleviate potential cumulative impacts from high density individual dock infrastructures within the Sechelt Nation territory.*

- Mr. Kelemen will be offering the use of his dock to his neighbor to the west. His neighbor would be considered a guest of Mr. Kelemen's at all times.

*2. Access to sub/intertidal resources cannot be impeded or restricted from any dock/float structure within the Sechelt Nation territory. This is to ensure access for the harvest of marine sources for food, and for social and ceremonial purposes.*

-There is ample access to sub/intertidal zones which ensures public access and access for the harvest of marine sources for food, and for social and ceremonial purposes.

*3. The Sechelt Nation requires assurance that no critical habitats such as eelgrass meadows will be impacted within the immediate vicinity of the proposed dock. Docks/floats must not be installed over eelgrass, kelp fields or salt marsh vegetation.*

-No eelgrass, kelp fields or salt marsh vegetation have been observed from the surface of the water at low tide.

*4. Eelgrass meadow protection is a high priority for the Sechelt Nation and if the meadow exists near the proposed structure the Sechelt Nation expects the proponent to identify and delineate the meadow and provide a plan for the protection of the meadow. This includes the immediate area surrounding the new pilings and anchors.*

-No eelgrass, kelp fields or salt marsh vegetation have been observed from the surface of the water at low tide.

*5. The bottom of all floats must be a minimum of 1.0m above the sea bed during the lowest water level or tide. Dock/float height above lowest water level will need to be increased if deep draft vessels are to be moored at the dock/float. The dock/float structure and the vessels moored at the structure are not to come to rest on the intertidal sea bed during the lowest water period of the year.*

-The bottom of the proposed float and all vessels will have a clearance greater than 1.0m from the seafloor at all times.

*6. Access ramps or walkways should be a minimum of 1.0m above the highest high water mark of the tide and a maximum width of 1.5m.*

- Access ramps or walkways are to be greater than 1.0m above the highest high water mark of the tide and will have a maximum width of 1.5m.

*7. Docks/floats are to be constructed to allow light penetration under the structure. North/South dock alignments are encouraged whenever possible to allow light penetration.*

-The proposed approach and gangway will have light penetrating metal grate decking. The proposed float will need to be a heavy duty style concrete dock due to the exposure from the south.

-The float is to be installed so that it is orientated with a north south alignment to allow for the most light penetration to the sea floor.

*8. Light penetration is important and can be facilitated by spacing the deck surface of the dock and minimizing the width of the structure.*

-The proposed approach and gangway will have light penetrating metal grate decking. The proposed float will need to be a heavy duty style concrete dock due to the exposure from the south.

-The float is to be installed so that it is orientated with a north south alignment to allow for the most light penetration to the sea floor.

*9. Grating incorporated into ramps, walkways, or floats will increase light and reduce the shading of the bottom. When grating is impractical, deck planking measuring 15-cm (6in) and spaced at least 2.5-cm (1 in) should be used to allow light penetration.*

-The proposed approach and gangway will have light penetrating metal grate decking. The proposed float will need to be a heavy duty style concrete dock due to the exposure from the south.

-The float is to be installed so that it is orientated with a north south alignment to allow for the most light penetration to the sea floor.

*10. Concrete, steel, treated, or recycled timber piles are acceptable although the Sechelt Nation prefers steel piles. Detailed information on treated wood options can be obtained on-line from the Fisheries and Oceans Canada website.*

- All piles to be installed will be steel pipe piles.

*11. Construction must never include the use of native beach materials.*

-No native beach materials will be used during this project.

*12. Access to the beach for construction purposes is to be from the adjacent upland property whenever possible. Use of heavy equipment required to work on the beach or access is required along the beach requires advice of a Professional Biologist and DFO to ensure that fish habitat, including riparian*

*intertidal salt marsh, or in-water vegetation, is not adversely affected during construction. Access or construction along beach front also requires notification sent to the Sechelt Nation and the Rights and Title Department in order to ensure cultural sites are not impacted or disturbed.*

-A barge and crane will be used for the installation. No heavy equipment will be used on shore.

*13. Filling, dredging, or blasting below the High Water Mark is not supported by the Sechelt Nation. Unauthorized filling, dredging, or blasting noted by the Sechelt Nation will be reported to the Fisheries Enforcement Officers immediately.*

-No filling, dredging, or blasting is planned.

*14. Works along the upland/water interface must be conducted when the site is not wetted by the tide. All work is to be conducted in a manner that does not result in the deposit of toxic or deleterious substances (sediment, un-cured concrete, fuel, lubricants, paints, stains) into waters frequented by fish. This includes refueling of machinery and washing of buckets and hand tools. These activities may result in the Harmful Alteration, Disruption or Destruction (HADD) of fish habitat and will be reported to Fisheries Enforcement.*

-Works along the upland/water interface will be conducted when the site is not wetted by the tide.

-Installation, repairs and maintenance will be conducted within the DFO timing windows.

-Any tools or equipment to be used on site during installation and maintenance will be inspected for fluid leaks and be deemed in good working order prior to arrival at site.

-Fuel and lubricant containers will be stowed in spill buckets and pans.

-Fuel, lubricants, and treated wood sawdust will be contained in spill pans and tarps when over water works cannot be avoided.

*15. The Sechelt Nation supports the DFO works window for marine foreshore. Construction activities should take place between June 1 and February 15 of any calendar year.*

- Installation and maintenance will be conducted within applicable DFO timing windows.

*16. Terrestrial riparian vegetation and intertidal salt marsh must not be harmfully affected by access or construction. The Sechelt Nation encourages proponents to seek the advice of a Professional Biologist if vegetation will be affected in any way by your proposed works.*

-Terrestrial riparian vegetation and intertidal salt marsh will not be harmfully affected by installation maintenance or access.

*17. The upland design of the dock including anchor points should not disturb the riparian area except at the immediate footprint. An effort should be made to maximize riparian cover adjacent to the dock helping reduce erosion and exposure to the foreshore.*

- The upland design of the dock will not disturb the riparian area except at the immediate footprint.

## **Section C – Additional Information:**



## **V. Environmental**

**Describe any significant impacts and proposed mitigation with respect to:**

### **a. Land Impacts**

#### **Cutting of vegetation:**

No vegetation will be cut.

#### **Soil disturbance:**

No soil disturbance will occur.

#### **Riparian encroachment:**

There will be no riparian encroachment.

#### **Management of pesticides, herbicides:**

N/A

#### **Visual impacts:**

Visual impacts are kept to a minimum due to the low profile design of the moorage facility.

#### **Known archaeological sites:**

We are not aware of any archaeological sites in the area.

#### **Types of construction methods and materials used:**

- We anticipate minimal land impact.
- All system components will be transported in by barge with no impact to the foreshore or sea floor.
- No machinery will work in the intertidal zone.
- The bearing piles and the concrete footing will be installed during tide cycles where the water will not reach the drying concrete and therefore no deleterious materials will enter the water.
- the float will have a minimum clearance from the sea floor of 1.5m at low water (0' chart datum).
- Two holes will be drilled in to bedrock at the low water line to accommodate the 1" anchor pins.
- All applicable Best Management Practices, Operational Statements, and Timing Windows will be followed during all build and installation phases.
- Construction materials to be used for the project are noted in previous sections.

### **b. Atmospheric Impacts**

**Sound:**

- There are no audio impacts at the proposed moorage site now.
- Besides the proponents personal boat there will be no audio impacts at the moorage site after installation.
- Minimal sound impacts will occur during moorage installation (estimated – 5 working days).
- Work will be conducted in an efficient and timely manner minimizing sound impacts.

**Odor:**

- There are no odor impacts at the proposed moorage site now.
- Besides the proponents personal boat exhaust there will be no odor impacts at the moorage site after installation.
- Minimal odor impacts will occur throughout the installation process.
- Work will be conducted in an efficient and timely manner minimizing odor impacts.

**Gas:**

- minimal fuel emissions and potential welding gases are the only gases that will be produced during installation and from the proponent's private boat after installation.

**Fuel emissions:**

- minimal fuel emissions are the only gases that will be produced during installation and from the proponent's private boat after installation.

**Explain current conditions, source, type and range of emission:**

- minimal fuel emissions are the only gases that will be produced during installation and from the proponent's private boat after installation.

**c. Water or Land covered by water Impacts****Drainage effect:**

N/A

**Sedimentation:**

There will always be enough clearance between the bottom of the proponent's boat and the sea floor to keep from causing any water turbidity.

**Water diversion:**

N/A

**Water quality:**

There will always be enough clearance between the bottom of the proponent's boat and the sea floor to not cause any water turbidity.

**Public access:**

The small cove is very private and sees very little public traffic. However, during all tides there is more than enough clearance between the structure and the natural boundary as well as under the private moorage approach for the public to walk.

**Flood potential:**

**N/A**

**d. Fish and Wildlife Habitat**

**Provide current status of fish or wildlife habitat:**

- Typical BC west coast foreshore with bedrock, cobble, and sand substrate.
- No eelgrass, kelp fields or salt marsh vegetation have been observed from the surface of the water at low tide.
- Brown algae, mussels, barnacles, and focus biota observed at the site.

**Disturbance to wildlife habitat:**

- No drainage effect will occur.
- Water quality will remain the same.
- All machinery and tools present on site during installation will be inspected for fluid leaks and be deemed in good working order prior to arrival to minimize the chance of a spill.
- All applicable Timing Windows, Operational Statements and Best Management Practices (BMP's) will be followed during all build and installation phases.
- All mandatory mitigation measures noted in the BMP's will be taken to ensure the least amount of negative effects on fish and wildlife habitat.
- The addition of system components will introduce habitat for wildlife and marine organisms to accumulate on.

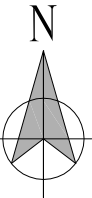
**Disturbance to fish habitat or marine environment:**

- No drainage effect will occur.
- Water quality will remain the same.
- All machinery and tools present on site during installation will be inspected for fluid leaks and be deemed in good working order prior to arrival to minimize the chance of a spill.
- All applicable Timing Windows, Operational Statements and Best Management Practices (BMP's) will be followed during all build and installation phases.
- All mandatory mitigation measures noted in the BMP's will be taken to ensure the least amount of negative effects on fish and wildlife habitat.
- The addition of system components will introduce habitat for wildlife and marine organisms to accumulate on.

**Threatened or endangered species in the area:**

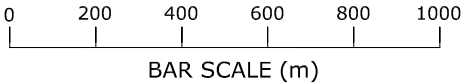
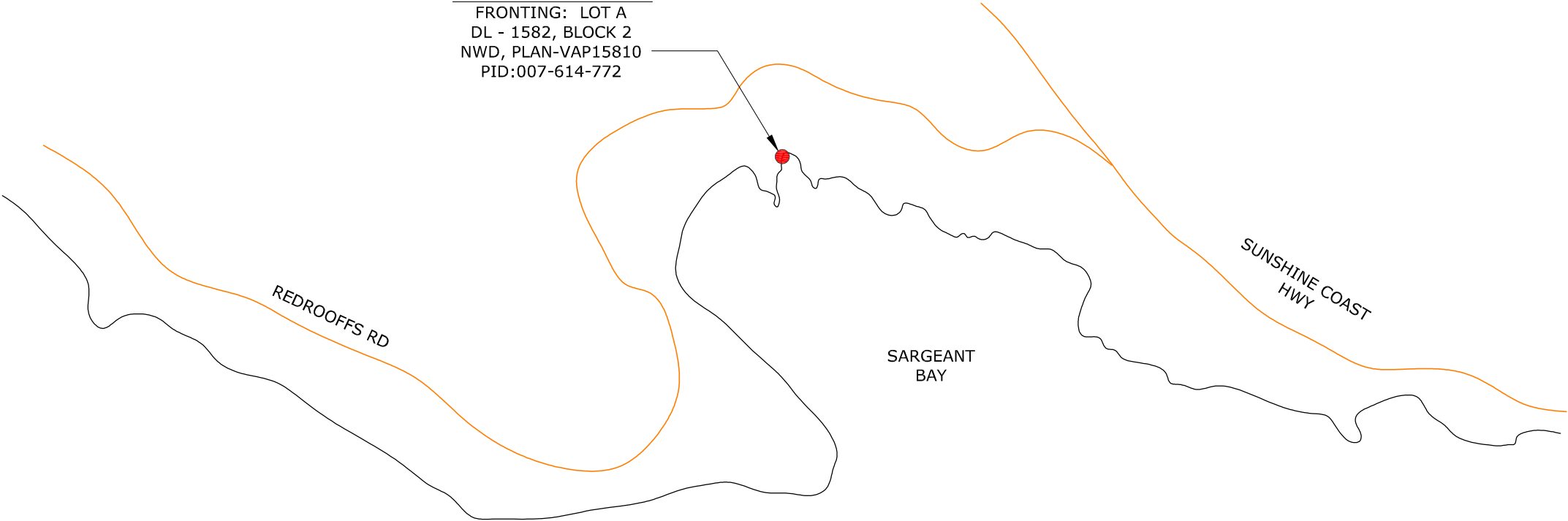
We are not aware of any threatened or endangered species in the area.

**Seasonal considerations:**



HALFMOON BAY, B.C.

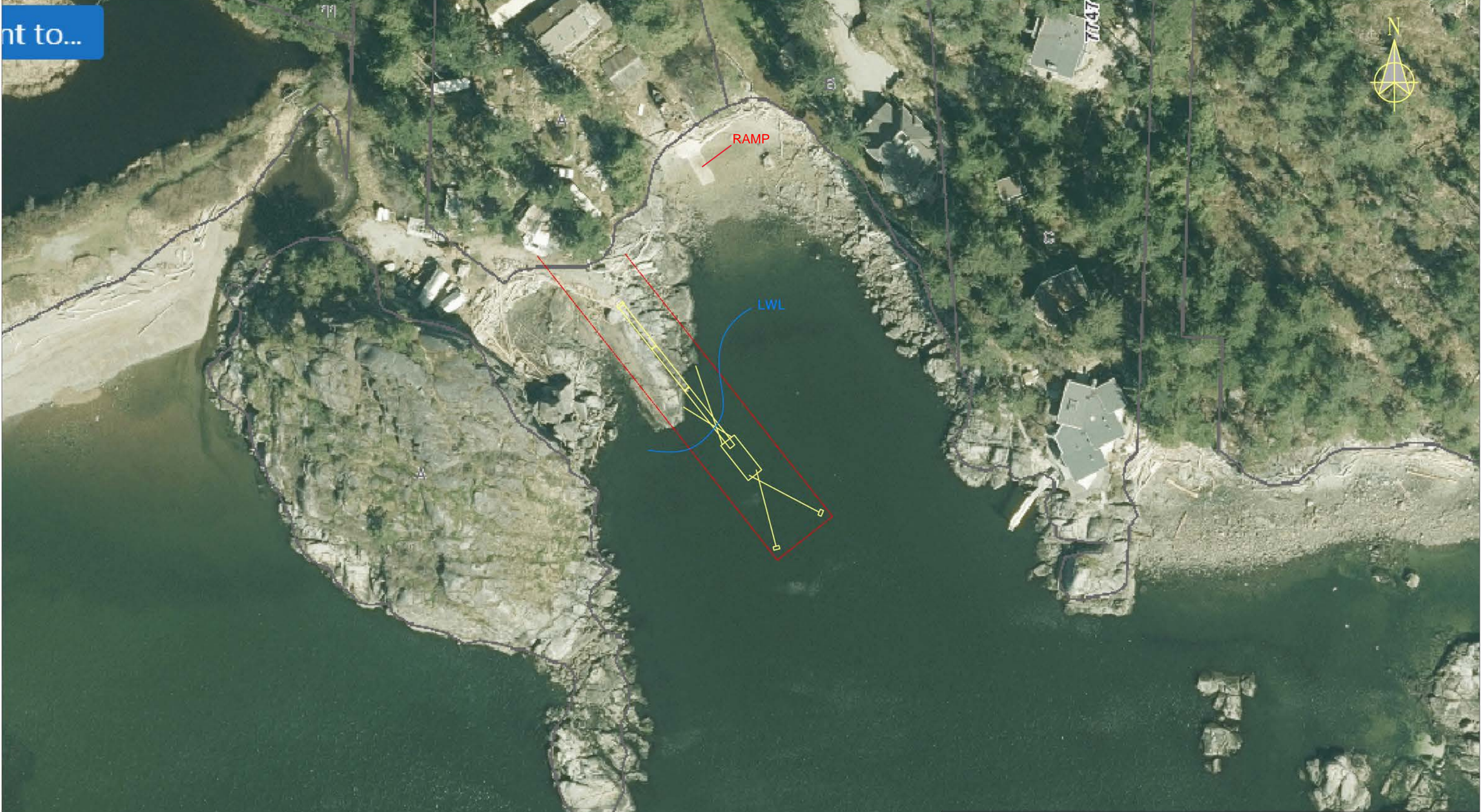
APPLICATION LOCATION  
FRONTING: LOT A  
DL - 1582, BLOCK 2  
NWD, PLAN-VAP15810  
PID:007-614-772



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Client: KELEMEN			
Drawing Title: PRIVATE MOORAGE TENURE APPLICATION PLAN A		Location: 7777 KENYON ROAD HALFMOON BAY, BC	
Drawn By: A.T.	Date: JULY 19 . 2017	Check'd and Signed-off By: Date:	Scale: 1 : 18,000
Drawing Number: P-1735-01		Sheet No. 1 of 5	Rev. No.

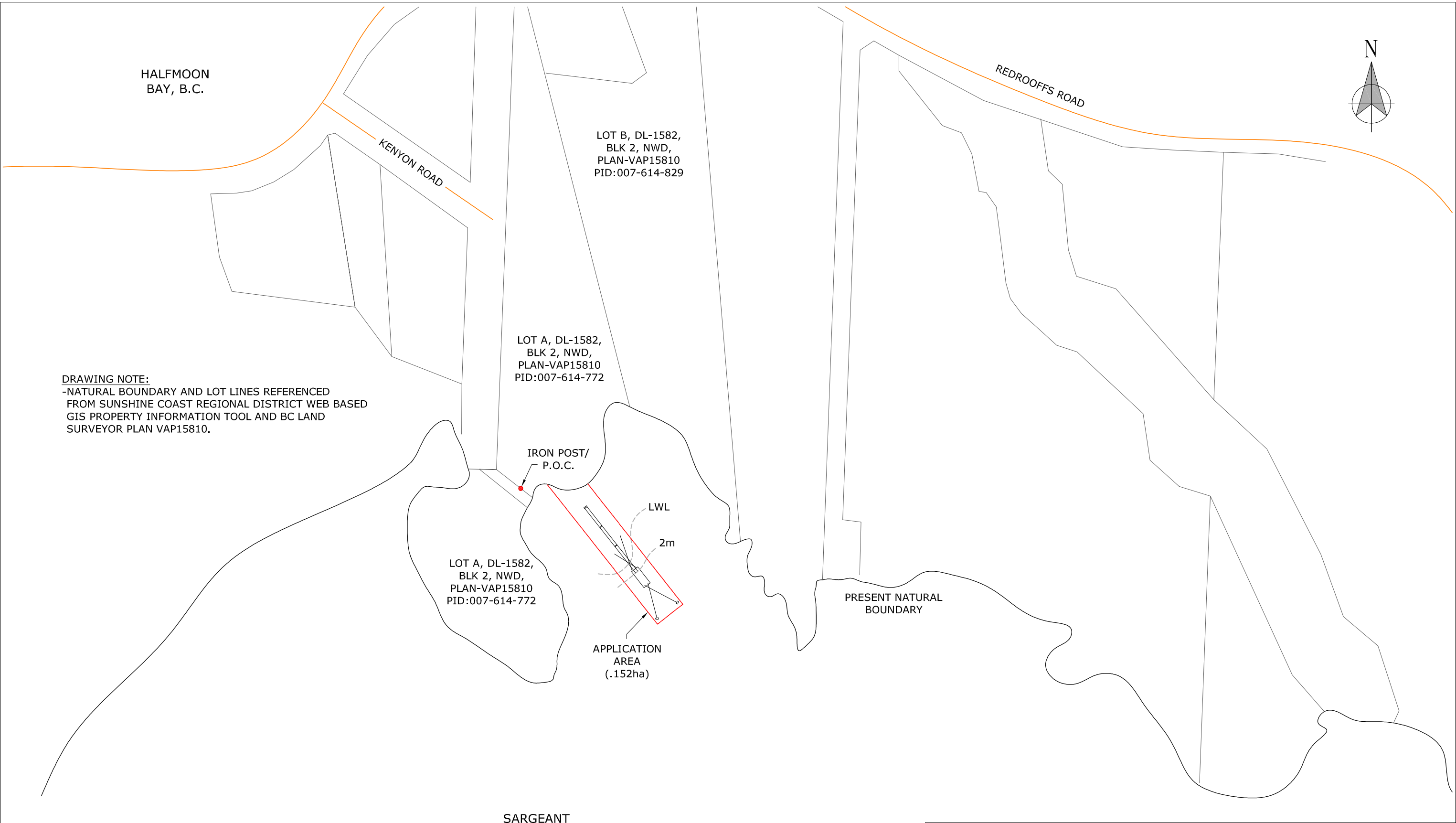




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Client: KELEMEN			
Drawing Title: PRIVATE MOORAGE TENURE APPLICATION PLAN B1			Location: 7777 KENYON ROAD HALFMOON BAY, BC
Drawn By: A.T.	Date: JULY 19 . 2017	Check'd and Signed-off By: Date:	Scale: N/A
Drawing Number: P-1735-01		Sheet No. 2 of 5	Rev. No.

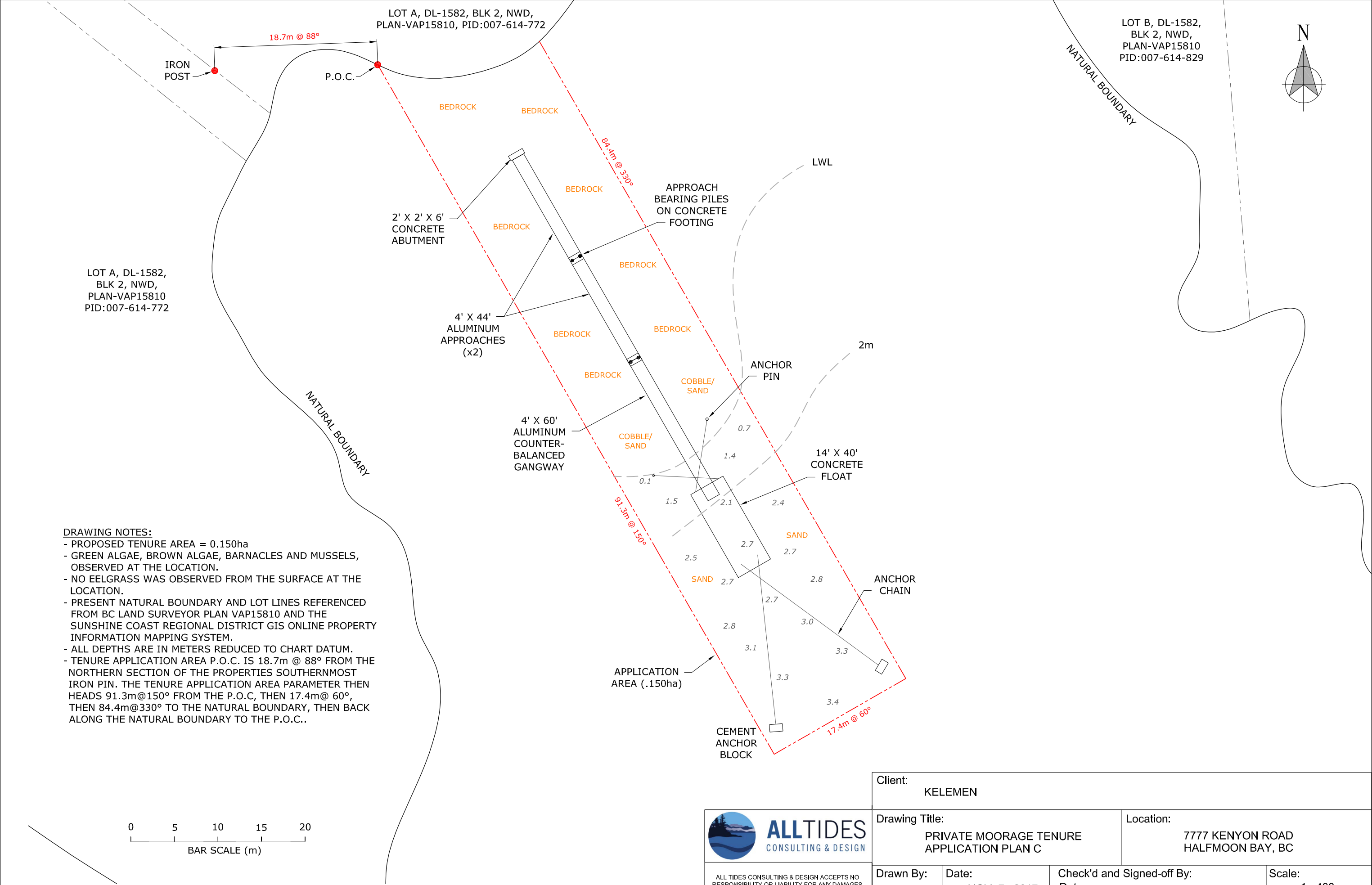




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Client: KELEMEN			
Drawing Title: PRIVATE MOORAGE TENURE APPLICATION PLAN B2		Location: 7777 KENYON ROAD HALFMOON BAY, BC	
Drawn By: A.T.	Date: JULY 19 . 2017	Check'd and Signed-off By: Date:	Scale: 1 : 2000
Drawing Number: P-1735-01		Sheet No. 3 of 5	Rev. No.



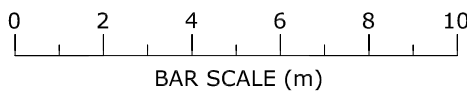
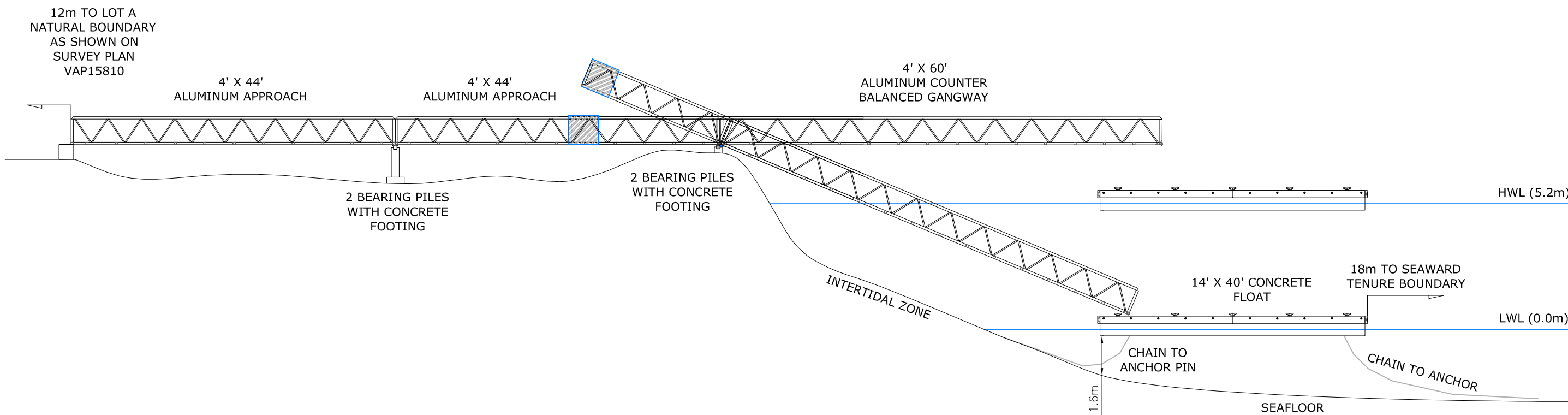
**DRAWING NOTES:**

- PROPOSED TENURE AREA = 0.150ha
- GREEN ALGAE, BROWN ALGAE, BARNACLES AND MUSSELS, OBSERVED AT THE LOCATION.
- NO EELGRASS WAS OBSERVED FROM THE SURFACE AT THE LOCATION.
- PRESENT NATURAL BOUNDARY AND LOT LINES REFERENCED FROM BC LAND SURVEYOR PLAN VAP15810 AND THE SUNSHINE COAST REGIONAL DISTRICT GIS ONLINE PROPERTY INFORMATION MAPPING SYSTEM.
- ALL DEPTHS ARE IN METERS REDUCED TO CHART DATUM.
- TENURE APPLICATION AREA P.O.C. IS 18.7m @ 88° FROM THE NORTHERN SECTION OF THE PROPERTIES SOUTHERNMOST IRON PIN. THE TENURE APPLICATION AREA PARAMETER THEN HEADS 91.3m@150° FROM THE P.O.C, THEN 17.4m@ 60°, THEN 84.4m@330° TO THE NATURAL BOUNDARY, THEN BACK ALONG THE NATURAL BOUNDARY TO THE P.O.C..



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Client: KELEMEN			
Drawing Title: PRIVATE MOORAGE TENURE APPLICATION PLAN C		Location: 7777 KENYON ROAD HALFMOON BAY, BC	
Drawn By: A.T.	Date: NOV. 7 . 2017	Check'd and Signed-off By: Date:	Scale: 1 : 400
Drawing Number: P-1735-01		Sheet No. 4 of 5	Rev. No.



Drawing Refs: - B.C.L.S. Plan VAP15810  
- Sunshine Coast Regional District - GIS online property mapping system



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TAKEN BASED ON THIS DOCUMENT. DRAWING  
NOT TO BE USED FOR CONSTRUCTION.

Client: KELEMEN			
Drawing Title: PRIVATE MOORAGE TENURE APPLICATION PLAN D		Location: 7777 KENYON ROAD HALFMOON BAY, BC	
Drawn By: A.T.	Date: NOV. 7 . 2017	Check'd and Signed-off By: Date:	Scale: 1 : 175
Drawing Number: P-1735-01		Sheet No. 5 of 5	Rev. No.











## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

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**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Kevin Clarkson, Parks Superintendent

**SUBJECT:** AGREEMENT RENEWALS – PENDER HARBOUR LIVING HERITAGE SOCIETY SUBLEASE FOR SARAH WRAY HALL

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### RECOMMENDATIONS

**THAT the report titled Agreement Renewals – Pender Harbour Living Heritage Society Sublease for Sarah Wray Hall be received;**

**AND THAT the designated authorities be authorized to execute the attached sub-lease agreement for a further 2 years with the Pender Harbour Living Heritage Society.**

---

### BACKGROUND

The Board of Education of School District No. 46 (SD46) owns the lands legally described as *PID: 010-812-784 Lot A District Lot 2951 Group 1 New Westminster District Reference plan 2384* and the building, located thereon and identified as Sarah Wray Community Hall.

SD46 has granted the SCRD a lease of the lands and building on terms that allow subletting by the SCRD in specified circumstances. On July 10, 2014, the SCRD Board resolved to enter into a five (5) year term for sublease of Sarah Wray Community Hall with the Pender Harbour Living Heritage Society (PHLHS); an agreement that mutually benefits the parties, improves the building and offers community use. The PHLHS is a registered non-profit charitable society. They were first chartered in 2001 and received charitable status in 2006. The stated PHLHS goal is to preserve, promote and share Pender Harbour's unique heritage through community projects and events. As a partner member of the Sunshine Coast Museum and Archives Society, they work with other heritage groups to preserve and share Sunshine Coast history.

The Sarah Wray Hall Sublease agreement between the SCRD and the PHLHS expires December 31, 2019, and as such is slated for review and renewal, if approved and deemed appropriate.

### DISCUSSION

The current sublease agreement (Attachment A) includes the following key conditions, which would also be reflected in a renewed sublease agreement:

1. Sublease would be valid for a fixed term (proposed as 2 years);
2. SCRD may terminate the sublease based on at least eleven months' notice to the Society;
3. SCRD and the Society agree to appoint individuals for regular ongoing communications regarding use, operation and maintenance of the subleased premises;

4. The Society will pay to the SCRD a sum of \$15.00 for the term, payable on the commencement date;
5. The Society will pay within 14 days of written request, all taxes associated with the subleased premises;
6. The Society will pay all costs related to garbage collection, electricity, landscape lighting, heat, power, water, sanitary and storm sewers, telephone, utilities of whatever nature (including works and services in connection therewith) used or supplied to or for the benefit of the sublease premises;
7. The Society may build additional structures on the sublease property such as a storage shed 225 square feet or less, outdoor amphitheatre and/or community garden provided they have written approval from SD46 and obtain all necessary building permits and follow necessary setbacks;
8. The Society shall comply with all SD46, SCRD, and Provincial policies regarding the consumption of alcohol in the subleased area;
9. The Society shall preserve and maintain the architectural and historical character of the Building and shall obtain approval of the SD46 and SCRD prior to implementing any building renovation;
10. The Society will promptly and sufficiently make repairs and renovations required, and must be made by the terms of the sublease;
11. The Society covenants to maintain the grounds associated with the subleased premises so that it is neat and not a detriment to the subleased premises;
12. The Society shall obtain written consent of the SD46 and SCRD for any signage to be installed;
13. Standard Insurance and Indemnity clauses are included in the sublease.

#### *Organization and Intergovernmental Implications*

A renewal of the sublease agreement for Sarah Wray Hall with the Society enables local stewardship of valued community assets and infrastructure. As stated in the attached sublease, this arrangement is intended “to mutually benefit the parties and to improve the building and offer community use”. A renewed sublease agreement will allow for the consistent delivery of community services like heritage promotion, community gatherings, tourism initiatives and local events, as well as regular maintenance and general upkeep of both the hall and the property, ensuring its operations are maintained to a high standard by organized and effective community stewardship.

#### *Financial Implications*

As indicated in the provisions of the sublease agreement between the SCRD and the Pender Harbour Living Heritage Society, the Society is required to pay to the SCRD a sum of \$15.00 for the agreement term. The Society is also required to pay within 14 days of written request, all

taxes associated with the subleased premises. As well, the Society is required to pay all costs related to garbage collection, electricity, landscape lighting, heat, power, water, sanitary and storm sewers, telephone, utilities of whatever nature (including works and services in connection therewith) used or supplied to or for the benefit of the sublease premises.

Staff have new questions relating to how this lease/sublease fits with incoming asset retirement obligation accounting standards. These accounting changes may create a case to reconsider SCRD's role in the arrangement. In order to ensure service to the community continues while staff work to address these questions with SD46 and the Society, a 2-year sublease is recommended. Staff will report to a future Committee on findings.

Associated planning, administration and operational expenses are anticipated to be minimal over the suggested renewed term of the sublease, which can all be accounted for through existing operational budgets for function 650 (Parks). These minimal expenses are incurred from staff time conducting correspondence with the PHLHS, assistance with the development and implementation of initiatives for the building and property, and helping to coordinate approvals and minor works that benefit the intended use of Sarah Wray Hall.

*Timeline for next steps or estimated completion date*

If approved, SCRD Parks will work to prepare, issue and complete a renewed 2-year sublease agreement prior to the current sublease expiry date of Dec. 31, 2019.

*Communications Strategy*

SCRD Parks plans to schedule a review of the new sublease agreement with both SD46 and the Pender Harbour Heritage Living Society prior to approaching the community group for final signatures. This process will provide all associated parties the opportunity to review, comment and suggest any revisions before the final agreement is slated for expiry.

## **STRATEGIC PLAN AND RELATED POLICIES**

The renewal of the Sarah Wray Hall lease reflects the SCRD 2019-2023 Strategic Plan priorities of Community **Engagement and Communications** and **Regional Collaboration and Partnership**.

## **CONCLUSION**

The Society has a strong commitment and support from their members shown through the hundreds of volunteer hours invested into the historical restoration of the Sarah Wray Hall. The Society is excited to use the Hall for the benefit of the community and for all residents of the Sunshine Coast. As such, staff recommend Board approval of the existing sublease agreement for Sarah Wray Hall, between the SCRD and the Pender Harbour Living Heritage Society for a further 2-year term.

Attachment A – Current Sublease

Reviewed by:			
Manager	X - K. Robinson	Finance	
GM	X – I. Hall	Legislative	
A/CAO	X – T. Perreault	Risk Management	



THIS SUBLEASE AGREEMENT made in duplicate this 23 day of December, 2014

**BETWEEN:**

**PENDER HARBOUR LIVING HERITAGE SOCIETY**  
Box 65  
Madeira Park, BC  
V0N 2H0

(the "Society")

**AND:**

**SUNSHINE COAST REGIONAL DISTRICT**  
1975 Field Road  
Sechelt, BC  
V0N 3A1

(the "Regional District")

**WHEREAS:**

- A. The Board of Education of School District No. 46 (Sunshine Coast) (the "School Board") owns the lands legally described as PID: 010-812-784 Lot A District Lot 2951 Group 1 New Westminster District Reference plan 2384 (the "Lands") and the building located thereon (the "Building") located at 4334 Irvine's Landing Road, Garden Bay, BC;
- B. The School Board has granted the Regional District a lease (the "Lease") of the Lands and the Building on terms that allow subletting by the Regional District in specified circumstances;
- C. The Regional District and the Society entered into a Memorandum of Understanding dated April 5, 2012 (the "Memorandum") to mutually benefit the parties and to improve the building and offer community use;
- D. The Regional District and Society (collectively, the "Parties" and individually, a "Party") wish to replace the Memorandum with a Sublease; and
- E. The Regional District has agreed to Sublease to the Society the Subleased Premises (hereinafter defined) for the Term (hereinafter defined) all upon the terms and conditions and subject to the provisos herein contained;

Now therefore, that in consideration of rents, covenants and agreements hereinafter reserved and contained on the part of the Society to be paid, observed and performed, the Regional District has demised and Subleased and by these presents does demise and Sublease unto the Society and the Society does hereby take and rent the Subleased Premises upon and subject to the conditions hereinafter expressed.



TO HAVE AND TO HOLD the Subleased Premises for and during the Term.

YIELDING AND PAYING TO THE Regional District during the Term rent as hereinafter provided.

This Indenture (the "**Sublease**") is made upon and subject to the following covenants and conditions which each of the Parties respectively covenants and agrees to keep, observe and perform to the extent that the same are binding or expressed to be binding upon it.

## 1. DEFINITIONS

### 1.1 Definitions

The terms defined in this section 1.1, for all purposes of this Sublease unless otherwise specifically provided herein, have the following meanings:

- (a) "**Authority**" means the Sunshine Coast Regional District in its capacity as the regulatory authority having jurisdiction over development of the Lands, including the Subleased Premises;
- (b) "**Building**" means the schoolhouse located on the Subleased Premises;
- (c) "**Commencement Date**" means January 1, 2015;
- (d) "**Community Use**" means the use of the Building by residents of the Sunshine Coast.
- (e) "**Hazardous Substance**" means any substance which is hazardous to persons or property and includes, without limiting the generality of the foregoing:
  - (i) radioactive materials;
  - (ii) explosives;
  - (iii) any substance that, if added to any water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water to the extent that it is materially detrimental to its use by man or by any animal, fish or plant;
  - (iv) any solid, liquid, gas or odour or combination of any of them that, if emitted into the air, would create or contribute to the creation of a condition of the air that:
    - a. materially endangers the health, safety or welfare of persons or the health of animal life;
    - b. materially interferes with normal enjoyment of life or property, or
    - c. materially causes damage to plant life or to property;

- (v) toxic substances; and
- (vi) substances declared to be hazardous or toxic or special waste under any law or regulation now or hereafter enacted or promulgated by any governmental authority having jurisdiction over the Regional District, the Society or the Subleased Premises;
- (f) **"School Board"** means School District 46 and the lease holder to the Regional District
- (f) **"Subleased Premises"** means the Building and that portion of the Lands shown outlined in bold lines on the plan, a photo reduced copy of which plan is attached hereto as Schedule "A";
- (g) **"Operating"** means in the case of the Community Use, the staffing, programming and managing of the Community Use designated for the Building;
- (h) **"Term"** means the five (5) year period commencing on the Commencement Date.

**1.2** All the provisions of this Sublease shall be deemed and construed to be conditions as well as covenants as though the words specifically expressing or importing covenants or conditions were used in each separate provision hereof.

**1.3** The words "herein", "hereby", "hereunder" and words of similar import refer to this Sublease as a whole and not to any particular article, section or subsection hereof.

## **2. DEMISE AND TERM**

### **2.1 Demise**

The Regional District hereby grants and demises to the Society a Sublease of the Subleased Premises for the use and possession of the Subleased Premises for the Term, as herein defined.

### **2.2 Term**

Subject to Clause 2.3, the Term of this Sublease shall be five (5) years, commencing on the Commencement Date. Upon mutual agreement of the parties, this Sublease may be renewed for additional terms.

### **2.3 Renewal**

The Regional District grants the Society the right to request a renewal of this Sublease Agreement, within 90 days from the date on which the term expires, on the same terms and conditions herein save and except:



The rent shall be stipulated by the Regional District in its sole discretion at the time of renewal; and

The term of the lease upon renewal will be five (5) years;

#### **2.4 Right to Terminate**

Either party may terminate this Sublease based on at least three months' notice to the Society.

#### **2.5 Ongoing Communications**

The Regional District and the Society agree to appoint individuals for the purpose of regular ongoing communications regarding the use, operation and maintenance of the Subleased Premises.

### **3. RENT, TAXES AND OTHER CHARGES**

#### **3.1 Rent**

The Society shall pay to the Regional District Rent for the Term in the sum of \$15.00 payable on the Commencement Date of this Sublease.

#### **3.2 Taxes**

The Society will, within 14 days of a written request from the Regional District, pay to the Regional District the amount of all real property taxes, rates, charges, duties and assessments if any, that may be levied, imposed, rated, charged or assessed against the Subleased Premises including, without limitation, all local improvement rates and charges, frontage taxes, water, school, hospital and other taxes and assessments, general and special, ordinary and extraordinary and foreseen or unforeseen, which now are or shall or may be levied, rated, charged, or assessed by any federal, provincial, municipal, school or other statutory authority for municipal, school or other purposes against the Subleased Premises.

#### **3.3 Services and Utilities**

The Society will pay, as and when due, to the government authority or person to which same are owing or are by law to be paid or to the Regional District pursuant hereto, all rates, charges and assessments as well as any costs or penalties in lieu thereof or in addition thereto imposed, levied, assessed or charged during the Term, or any renewal thereof, upon or relating to garbage collection, electricity, landscape lighting surrounding the Building, heat, power, water, sanitary and storm sewers, telephone, utilities of whatever nature or kind (including works and services in connection therewith) used in or supplied to or for the benefit of the Subleased Premises whether or not such amounts are payable at law by the Society or by the Regional District and whether or not same are allocated separately in respect of the Subleased Premises. The Society will



indemnify and save harmless the Regional District from and against any liability the Regional District may incur to pay all or any such amounts.

#### **4. USE OF SUBLEASED PREMISES**

##### **4.1 Use of Subleased Premises**

The Society shall use the Subleased Premises only for Community Use. The Society may rent the leased premises for community use in accordance with Regional District rental and allocation policies and insurance requirements for renters in effect at the time.

##### **4.2 Serving of Alcohol**

According to Schedule B, the Society shall comply with policies of all regulatory bodies, including School Board and Regional District regarding the consumption of alcohol in the subleased area. Before any alcohol consumption is permitted, all required permits must be obtained. Persons under 19 years of age are allowed to attend licensed special events but they must not drink or serve liquor, or sell liquor or drink tickets.

##### **4.2 Society's Acknowledgement**

The Society acknowledges that at no time during the Term, or any renewal thereof, will the Society carry on or permit or suffer to be carried on in the Subleased Premises anything which is noxious or offensive or which would constitute a nuisance or which would annoy or disturb or cause nuisance or damage to neighbours, subject to such reasonable limits on this obligation as are appropriate and anticipated by the permitted uses. Without limiting the generality of the foregoing, the Society will not cause any waste or damage to the Subleased Premises.

##### **4.3 Use of Hall for Regional District Programs**

The Society acknowledges that the Regional District may have access to the Subleased Premises for community programs and functions of the Regional District at no cost to the Regional District. The Regional District will follow all established booking procedures for use of the Subleased Premises and provide effective communication with the Society for any programs and functions that are booked within the Subleased Premises.

#### **5. REPAIR, MAINTENANCE AND ALTERATIONS**

##### **5.1 Repair and Maintenance**

The Society shall preserve and maintain the architectural and historical character of the Building and shall obtain approval of the School Board and Regional District prior to implementing building renovations. The Society shall keep the Subleased Premises and such improvements, works, machinery, fixtures and equipment of whatever kind located thereupon, therein or thereunder in a good and substantial state of repair and condition as a reasonably and prudent owner of premises of like age and character would do, and free from structural and other defects of whatsoever nature and will promptly make all repairs and replacements to the Subleased Premises and to the said improvements,



works machinery, fixtures and equipment located thereupon, therein, and thereunder that are required by law or that are required to keep the same in a good and substantial state of repair and condition as aforesaid, having regard to the age, character and use thereof at the time that such repair or replacement is required to be made, and in particular, the Society shall preserve and maintain the architectural and historical character of the Building.

## **5.2 Repairs According to Notice**

Without restricting the generality of section 5.1 above, the Society will promptly and sufficiently make repairs required to be made by the terms of this Sublease pursuant to a notice from the Regional District and if the Society shall not within thirty (30) days after the service of such notice proceed diligently with the execution of such repairs then the Society will permit the Regional District to enter upon the Subleased Premises to undertake such repairs and the cost thereof shall forthwith be payable by the Society to the Regional District on demand. The Society and the Regional District acknowledge and agree that the Regional District will not exercise its rights under this section 5.2, provided that the Society is not in default under this Sublease.

## **5.2 Grounds Maintenance**

The Society covenants to keep maintained in a reasonable manner the grounds associated with the Subleased Premises so that it is neat and not a detriment to the Subleased Premises.

## **5.4 Inspection**

Upon reasonable written notice to the Society it shall be lawful for the Regional District or the School Board or any of their respective employees or agents during normal business hours during the Term (or at any time during an emergency) to enter upon the Subleased Premises for the purpose of inspecting the same for any other purpose permitted under this Sublease, including ensuring the Society's compliance with all terms of the Sublease, provided however that such inspections do not cause unreasonable disruption to the business of the occupants of the Subleased Premises.

## **5.5 Signage**

The Society shall not install any sign on the Subleased Premises without the prior written consent of the Regional District. Such consent will not be unreasonably withheld by the Regional District.



## **5.6 Additional Structures**

The Society shall obtain written permission from the Regional District, for any additional structures or alterations proposed on the Subleased Premises, obtaining all necessary building permits and abiding by necessary setbacks for structures. The Society will be responsible for all costs related to any additional structures on the Subleased Premises and the additional structures will become the property of the School Board.

## **6. COMPLIANCE WITH LAWS (GENERAL AND ENVIRONMENTAL)**

### **6.1 Compliance With Laws**

- (a) The Society covenants to competently and faithfully observe and comply with all laws, by-laws and lawful orders which touch and concern the Subleased Premises or any part thereof or the Society's activities within the Subleased Premises or any part thereof, except only to the extent that this Sublease expressly provides that the School Board or Regional District is responsible therefor under the terms of this Sublease.
- (b) Without derogating from the generality of the foregoing, the Society covenants that throughout the Term the Society will comply with and abide by:
  - (i) all municipal, regional, provincial and federal legislative enactments, by-laws, regulations, orders and any municipal guidelines which relate to the Subleased Premises; and
  - (ii) the requirements of all applicable municipal, regional, provincial and federal legislative enactments, by-laws, regulations and orders which are now or hereafter in force and in effect and any applicable environmental guidelines, and any amendments thereto, which deal with environmental protection and safety and/or Hazardous Substances,

except only to the extent that the School Board or Regional District is responsible therefor under the terms of this Sublease.



## **6.2 Environmental Release and Indemnification**

- (a) Without derogating from the generality of any other indemnity provisions in this Sublease, the Society hereby releases the Regional District and the School Board from and shall indemnify, defend and hold the Regional District and the School Board harmless in respect of any and all costs, expenses, damages, losses or liabilities that may be incurred or suffered by the Regional District or the School Board by reason of or resulting from or in connection with or arising in any manner whatsoever out of the Society's activities on the Subleased Premises that cause:
  - (i) the Subleased Premises being found to contain at any time Hazardous Substances not existing on the Subleased Premises as of the date of this Sublease, provided that such Hazardous Substances have been introduced to the Subleased Premises by the Society or any person for whom the Society is responsible at law; or
  - (ii) the need to take any remedial action and the taking of such action as a result of Hazardous Substances on the Subleased Premises not existing on the Subleased Premises as of the date of this Sublease, provided that such Hazardous Substances have been introduced to the Subleased Premises by the Society or any person for whom the Society is responsible at law.
- (b) The Society shall indemnify, defend and save harmless the ~~School Board and~~ Regional District in respect of all claims for bodily injury (including death), property damage or other loss or damage including damage to property outside the Subleased Premises, arising out of or in any way connected with the manufacture, storage, transportation, handling or discharge of Hazardous Substances on or from the Subleased Premises by the Society or any person for whom the Society is responsible at law during the Term or pursuant to the Society's obligations in this Sublease.

## **6.3 Removal of Hazardous Substances**

The Society will not bring upon the Subleased Premises or any part thereof, or cause or suffer the bringing upon the Subleased Premises or any part thereof, any Hazardous Substances (except to the extent that doing so may be required in connection with the operation of the Subleased Premises for a Community Use and then only if the Society uses and stores such Hazardous Substances in accordance with all applicable laws) and if at any time, notwithstanding the foregoing covenant of the Society, the Society shall have brought or caused or suffered the bringing of any Hazardous Substances upon the Subleased Premises or a part thereof (except as otherwise permitted above and not including any Hazardous Substances which may have migrated into, onto or under the Subleased Premises), the Society shall, at its own expense:



- (i) immediately give the Regional District and the School Board notice to that effect and thereafter give the Regional District and the School Board from time to time written notice of the extent and nature of the Society's compliance with the following provisions of this section;
- (ii) promptly remove such Hazardous Substances from the Subleased Premises in a manner which conforms with all applicable municipal, regional, provincial and federal legislative enactments, by-laws, regulations and orders governing the movement of the same; and
- (iii) if requested by the Regional District, obtain at the Society's cost and expense from an independent consultant designated or approved by the Regional District verification of the complete and proper removal of such Hazardous Substances from the Subleased Premises or, if such is not the case, reporting as to the extent and nature of any failure to comply with the foregoing provisions of this section.

Notwithstanding this section 6.3, the Society covenants and agrees that it will, upon the expiry or earlier termination of this Sublease and at its sole cost and expense, promptly remove any Hazardous Substance permitted to be on the Subleased Premises pursuant to this section 6.3 in a manner which conforms with all applicable municipal, regional, provincial and federal legislative enactments, by-laws, regulations and orders governing movement of the same.

#### **6.4 Breach of Laws Relating to Hazardous Substances**

- (a) Without limiting the generality of the preceding section, the Society shall immediately give written notice to the Regional District of the occurrence of any event on the Subleased Premises constituting an offence under or a breach of any applicable municipal, regional, provincial and federal legislative enactments, by-laws, regulations and orders from time to time in force relating to Hazardous Substances, and, if such event has been caused by the Society or any person for whom the Society is responsible at law, the Society, at its own cost and expense, shall comply with all applicable municipal, regional, provincial and federal legislative enactments, by-laws, regulations or orders from time to time in force relating to the, the Regional District, the Society, the activities carried out on the Subleased Premises relating to Hazardous Substances and the protection of the environment and shall:
  - (i) thereafter give the Regional District from time to time written notice of the extent and nature of the Society's compliance with the following provisions of this section;
  - (ii) promptly remove the Hazardous Substances from the Subleased Premises in a manner which conforms with all applicable municipal, regional, provincial and federal legislative enactments, by-laws, regulations and orders governing the movement of the same; and



- (iii) if requested by the Regional District or the School Board, obtain at the Society's cost and expense from an independent consultant designated or approved by the Regional District a certificate verifying the complete and proper removal thereof from the Subleased Premises or, if such is not the case, reporting as to the extent and nature of any failure to comply with the foregoing provisions of this section.
- (b) The Society shall, at its own expense, remedy any damage to the Subleased Premises caused by such event within the Subleased Premises or by the performance of the Society's obligations under this section as a result of such occurrence.
- (c) If any governmental authority having jurisdiction shall require the cleanup of any Hazardous Substances held, released, spilled, abandoned or placed upon the Subleased Premises or released into the environmental from the Subleased Premises during the Term by the Society or any person for whom the Society is responsible at law, then the Society shall, at its own expense, prepare all necessary studies, plans and proposals and submit the same for approval, provide all bonds and other security required by governmental authorities having jurisdiction and carry out the work and shall keep the Regional District and the School Board fully informed and provide to the Regional District and the School Board full information with respect to proposed plans and comply with the requirements of the Regional District and the School Board with respect to such plans. The Society agrees that if either or both of the Regional District and the School Board determines, in its sole discretion, that it or its property or its reputation is placed in any jeopardy by the requirement for any such work, then the School Board or the Regional District may itself undertake such work or any part thereof at the cost and expense of the Society.

#### **6.5 Enquiries Pertaining to Hazardous Substances**

The Society hereby authorizes the Regional District to make enquiries from time to time of any government or governmental agency with respect to the Society's compliance with any and all laws and regulations pertaining to the Society, the Society's activities on the Subleased Premises and the Subleased Premises including without limitation all applicable municipal, regional, provincial and federal legislative enactments, by-laws, regulations and orders pertaining to Hazardous Substances and the protection of the environment; and the Society covenants and agrees that the Society will from time to time provide to the Regional District such written authorization as either the Regional District may require in order to facilitate the obtaining of such information.



## **6.6 Ownership Remains With Society**

If the Society shall bring or create upon the Subleased Premises any Hazardous Substances or suffer the bringing or creation upon the Subleased Premises of any Hazardous Substances or if the conduct of the Society's operations shall cause there to be any Hazardous Substances upon the Subleased Premises then, notwithstanding any rule of law or equity to the contrary, such Hazardous Substance shall be and remain the sole and exclusive property of the Society and shall not become property of the Regional District or the School Board, notwithstanding the degree of affixation of the Hazardous Substance or the goods containing the Hazardous Substance to the Subleased Premises and notwithstanding the expiry or earlier termination of this Sublease.

## **6.7 Covenants Survive Termination**

The obligations of the Parties in this section 6 shall survive the expiry or earlier termination of this Sublease save only that, to the extent that the performance of the Society's obligations requires access to or entry upon the Subleased Premises or any part thereof following the expiry or earlier termination of this Sublease, the Society shall have such entry and access only at such times and upon such terms and conditions as the Regional District, acting reasonably, may from time to time specify; the Regional District may, at the Society's cost and expense, itself or by its agents, servants, employees, contractors and subcontractors, undertake the performance of any necessary work in order to complete such obligations of the Society; but having commenced such work, the Regional District, shall have no obligation to the Society to complete such work.

## **7. INDEMNITY**

### **7.1 Indemnification by Society**

- (a) Except as otherwise provide in this Sublease, the Society covenants and agrees to indemnify and save harmless the Regional District and the School Board and their respective officials, officers, employees, elected officials, agents and contractors from and against all damages, losses, actions, causes of actions, claims, demands, builders liens, liabilities and expense (excluding indirect or consequential damages, such as loss of profits and loss of use and damage arising out of delays) which may arise or accrue to any person, firm or corporation against any of them or which any of them may pay, incur, sustain or be put to arising out of or in any way connected with the Society's use and occupation of the Subleased Premises, the Parking Area, or any portion thereof, or that would not or could not be made or incurred but for this Sublease.
- (b) Without diminishing the intent of the above, the Society agrees to release, absolve, save harmless and keep indemnified the School Board and the Regional District, and its officers, employees, officials, agents, servants and representatives from and against any and all suits, claims, actions, causes of



action, compensation, losses or damages of any nature or kind whatsoever, including all actual legal costs incurred or suffered, which the Regional District may incur, suffer or be put to arising out of or in connection with this Agreement, except that this obligation to Indemnify will not apply to Claims to the extent, if any, to which the Claims may arise from the grossly negligent acts or wilful misconduct of the Regional District.

## **7.2 Indemnification by Regional District**

Except as otherwise provide in this Sublease, the Regional District covenants and agrees to indemnify and save harmless the Society, its officers, employees, agents and contractors from and against all damages, losses, actions, causes of actions, claims, demands, liabilities and expenses (excluding indirect or consequential damages, such as loss of profits and loss of use and damage arising out of delays) which may arise or accrue to any person, firm or corporation against the Society or its officers, employees, agents and contractors which the Society, its officers, employees, agents and contractors may pay, incur, sustain or be put to arising out of or in any way connected with the Regional District's breach of any of its obligations under this Sublease.

## **7.3 Indemnification Survives Termination of Sublease**

The obligations to indemnify under the provisions of this Sublease shall apply and continue notwithstanding the termination of this Sublease, anything in this Sublease to the contrary notwithstanding.

No parting with possession will relieve the Society from observance and performance of the Society's obligations contained in the Sublease.

## **8. INSURANCE**

### **9.1 Regional District and Society's Insurance**

The Regional District will, from and after the Commencement Date, unless similar insurance has been arranged in a form satisfactory to the Regional District in accordance with the terms of this Sublease:

- (a) insure and keep insured, in an amount not less than its full replacement value, the Building and all other improvements erected on the Subleased Premises as well as the equipment, fixtures, motors and machinery therein against such risks as are customarily insured against in British Columbia by a prudent owner under what is commonly known as an "all risk policy";
- (b) maintain in respect of the Building and all other improvements erected on the Subleased Premises boiler and pressure vessel insurance in respect of all boiler and such other pressure vessels located on the Subleased Premises (if any) in amounts to be designated by the Regional District with only such deductibles and exclusions as the Regional District may reasonably require;



- (c) the Regional District and the Society shall maintain general public liability insurance against liability claims arising out of the use, occupation and operation of the Subleased Premises including, but not limited to, claims for personal injury, death and property damage occurring in, on, or about the Subleased Premises for an amount of \$5,000,000 or such higher amount as reasonably determined by the Regional District from time to time; and
- (d) the Society is encouraged to insure the contents of the Building as it sees fit and within standard practices.

## **9.2 Regional District approval**

All contracts of insurance required to be maintained hereunder shall be in a form and for a period satisfactory to the Regional District, acting reasonably, shall be written with companies approved by the Regional District, acting reasonably, and shall contain a provision requiring at least thirty (30) days written notice to be given to the Regional District by the insurer of any cancellation or expiry thereof or change affecting the Regional District's coverage thereunder. The Society shall procure renewals of all such insurance policies at least thirty (30) days before the expiration thereof and shall provide the Regional District with evidence satisfactory to the Regional District, acting reasonably, that the premiums on all such policies have been paid and that such policies are in full force and effect.

## **9.3 Required Terms**

All contracts of insurance required to be maintained hereunder shall show the Regional District, the School Board and the Society, as insureds or loss payees, as their interests may appear and shall provide that the insurer shall not have a right of subrogation against the Regional District, the School Board or the Society on account of any loss or damage covered by such insurance or on account of payments made to discharge claims against or liabilities of the Regional District, the School Board or the Society covered by such insurance and shall contain a severability of interest and cross-liability clause. Any proceeds thereunder are to be paid to the Society and applied to the repairing, restoring or rebuilding of the Building or the Subleased Premises.

## **9.4 Release**

Except as otherwise provided in this Sublease, the Society hereby releases the Regional District and the School Board from any and all liability for loss or damage caused by any of the perils against which the Society shall have insured, or pursuant to the terms of this Sublease, is obligated to insure and the Society hereby covenants to indemnify and save harmless the Regional District and the School Board from and against all manner of actions, causes of action, suits, damages, loss, costs claims and demands of any nature whatsoever relating to such loss or damage, except in respect of any loss or damage caused by the Regional District or the School Board or those for whom the Regional District or the School Board is responsible at law.



#### **9.5 Compliance**

The Society shall not violate or permit to be violated any of the conditions or provisions of any policy of insurance required to be placed or maintained by the Society hereunder and the Society shall so perform and satisfy the requirements of the companies writing such policies.

#### **9.6 Regional District May Effect Insurance**

If at any time the Society shall fail to take out, pay for, or maintain any of the insurance policies provided for in this Sublease or otherwise be in breach of its obligations under this Article, then the Regional District may, but shall not be obligated so to do, and without notice to or demand upon the Society and without waiving or releasing the Society from any obligation of the Society in this Sublease contained, effect any such insurance coverage and pay all premiums thereon, in such manner and to such extent as the Regional District may deem desirable, and in exercising such rights, may pay necessary and incidental costs and expenses. The Society agrees that all sums so disbursed by the Regional District shall be payable by the Society to the Regional District on demand.

#### **9.7 Damage or Destruction**

The partial destruction or damage or complete destruction by fire or other casualty of the Subleased Premises shall not terminate this Sublease or entitle the Society to surrender possession of the Subleased Premises or to demand any abatement or reduction of the Rent or other charges payable under this Sublease, any law or statute now or in the future to the contrary notwithstanding, unless or to the extent that such destruction or damage has been caused by the Regional District or the School Board or those for whom the Regional District or the School Board is responsible at law.

#### **9.8 No Increase to Premiums**

Neither the Regional District nor the Society will do, or permit to be done anything which will cause any insurance premiums, including the other's insurance, with respect to the Subleased Premises or any part thereof to be increased, or which may cause any policy of insurance with respect to the Subleased Premises to be cancelled.

#### **9.9 Payment of Insurance Proceeds**

In the event of damage to or destruction of the Subleased Premises either in whole or in part from fire or other cause, the insurance proceeds will be paid to the Regional District. Such insurance proceeds in collaboration with the School Board shall be applied to the cost of repairing, restoring or rebuilding or relocating the Subleased Premises (hereinafter for the purposes of this Article referred to as the "Work").



## **10. DEFAULT BY SOCIETY**

### **10.1 Re-entry on Certain Defaults by Society**

Subject to any provision herein, the Regional District and the Society agree that if and whenever:

- (i) Basic Rent or any part thereof is not paid by the Society to the Regional District within thirty (30) days after receipt by the Society of written notice from the Regional District that such basic rent is overdue; or
- (ii) the Society shall default in payment of any other sums required to be paid by the Society to the Regional District by any provision of this Sublease, and such default shall continue for one hundred and eighty (180) days following written notice by the Regional District requiring the Society to pay the same; or
- (iii) the Society shall default in performing or observing any of its other covenants or obligations under this Sublease, or any contingency shall occur which by the terms of this Sublease constitutes a breach hereof or confers upon the Regional District the right to re-enter or forfeit or terminate this Sublease, and the Regional District shall have given to the Society written notice of such default or the happening of such contingency, and at the expiration of forty-five (45) days after the giving of such notice the default or contingency shall continue to exist, or in the case of a default or contingency which cannot with due diligence be cured within a period of forty-five (45) days aforesaid, the Society does not commence the rectification of such default or contingency within the said forty-five (45) day notice and thereafter promptly and diligently and continuously proceed with such rectification; or
- (iv) this Sublease shall expire or be forfeited or be terminated by any other provision in it contained;

then and in every such case, it shall be lawful for the Regional District subject to section 11 Dispute Resolution to terminate this Sublease by leaving upon the Subleased Premises notice in writing of such termination. If the Regional District terminates this Sublease pursuant to this section, the Society will be liable to the Regional District for the rents to be paid and the covenants to be performed by the Society up to the date of such termination.

### **10.2 Remedies of Regional District are Cumulative**

The remedies of the Regional District specified in this Sublease are cumulative and are in addition to any remedies of the Regional District at law or equity. No remedy shall be deemed to be exclusive, and the Regional District may from time to time have recourse to one or more or all of the available remedies specified herein or at law or equity. In addition to any other remedies provided in this Sublease, the Regional District shall be



entitled to restrain by injunction any violation or attempted or threatened violation by the Society of any of the covenants or agreements hereof.

### **10.3 Waiver by Regional District**

The failure of the Regional District to insist upon the strict performance of any covenant or agreement of this Sublease shall not waive such covenant or agreement, and the waiver by the Regional District of any breach of any covenant or agreement of this Sublease shall not waive such covenant or agreement in respect of any other breach. The receipt and acceptance by the Regional District of Rent or other monies due hereunder with knowledge of any breach of any covenant or agreement by the Society shall not waive such breach. No waiver by the Regional District shall be effective unless made in writing.

## **11. DISPUTE RESOLUTION**

### **11.1 Parties Representatives**

Each Party will, during the Term and any renewal or extension thereof, appoint a person as its representative for the purpose of coordinating all matters and obligations of the Parties as required by this Sublease. Each Party will advise the other Party in writing of the name, telephone number and fax number of its representative and each Party may change its representative from time to time by notice in writing to the other.

### **11.2 Mediation**

Where there is an unresolved dispute arising out of this Sublease, then, within seven days of written notice from one Party to the other, or such time as agreed to by both Parties, the representatives of the Parties will participate in good faith in order to resolve and settle the dispute. In the event that such representatives are unable to resolve the dispute within 14 days of the first written notice, or such other time period agreed to by both Parties, each Party will appoint a senior representative that has not been previously involved in the manner in dispute, to attempt to resolve the dispute. Each senior representative will meet and agree upon the selection of a qualified independent mediation practitioner versed in the resolution of commercial disputes in order to assist them within the 45 day time frame set out below. Each Party will bear their own costs of the formal mediation process.

### **11.3 Arbitration**

If the matter is not settled through the process in section 11.2 within 45 days of the notice of the dispute being given unless the Parties mutually agree to extend the 45 day period, the matter will be referred to a single arbitrator pursuant to the *Commercial Arbitration Act* of British Columbia. The single arbitrator will be selected by agreement of the Parties or failing agreement of the Parties a person shall be selected as follows:

- (a) within 14 days of written notice from one Party to the other of the intention to arbitrate, each Party shall appoint an arms-length representative, ("Appointment



Agents") who will, pursuant to this Agreement be given the authority to meet and agree upon the selection and appointment of a single arbitrator;

- (b) If within the 14 days either Party fails or refuses to appoint its Appointment Agent, or if the Appointment Agents fail to appoint a single arbitrator within 10 days thereafter then a single arbitrator will be appointed pursuant to the provisions of the *Commercial Arbitration Act* of British Columbia.

A single arbitrator will be an experienced professional versed in the matters in dispute. Each Party will bear its own costs of the arbitration, including all costs of its Appointment Agent, regardless of the arbitrator's decision.

## **12. SURRENDER OF SUBLEASED PREMISES**

### **12.1 Surrender**

At the end of the Term either by forfeiture, default or lapse of time, the Society shall surrender to the Regional District possession of the Subleased Premises and all fixtures and improvements therein (subject to this Article 14), all of which will become the property of the School Board without any claim by or compensation to the Society, all in the condition in which they were required to be kept by the Society under the provisions of this Sublease, except as herein otherwise expressly provided, free and clear of all claims of the Society or of any person claiming by or through or under the Society and all of the rights of the Society under this Sublease will terminate save as herein expressly set out.

### **12.2 Removal of Trade and Tenant's Fixtures**

Upon termination all fixtures installed by the Society shall become the property of the School Board.

## **13. REGIONAL DISTRICT COVENANTS**

### **13.1 Covenant for Quiet Enjoyment**

If the Society pays the Rent hereby reserved and the other charges, and performs the covenants herein before on the Society's part contained, the Society shall and may (subject to section 2.3 above) peaceably enjoy and possess the Subleased Premises for the Term without any interruption or disturbance whatsoever from the Regional District or any other person, firm or corporation lawfully claiming from or under the Regional District.



### **13.2 Compliance with Laws**

- (a) The Regional District covenants to competently and faithfully observe and comply with all laws and lawful orders which touch and concern the Lands including the Subleased Premises or any part thereof, except to the extent that the Society is responsible therefor under the terms of this Sublease.
- (b) Without derogating from the generality of the foregoing, the Regional District covenants that throughout the Term, or any renewal thereof, the Regional District will comply with and abide by all municipal, regional, provincial and federal legislative enactments, by-laws, regulations, orders and any municipal guideline which relate to the Lands including the Subleased Premises, except to the extent that the Society is responsible therefor under the terms of this Sublease, so that the Society is at all times entitled to the benefit of all of its rights as set out in this Sublease.

## **14. OVERHOLDING**

### **14.1 Overholding**

If the Society remains in possession of the Subleased Premises after the expiration of the Term and without the execution and delivery of an extension or renewal of this Sublease, then the Regional District may re-enter and take possession of the Subleased Premises and remove the Society and the Regional District may use such force as may be necessary without being liable in respect thereof or for any loss or damage occasioned thereby. The Society covenants and agrees with the Regional District that if the Society shall hold over and the Regional District shall accept rent after the expiration of the Term or any renewal term the new tenancy thereby created shall be a tenancy from month to month.



## **15. NOTICE**

### **15.1 Notice**

All notices, demands and requests which may be or are required to be given pursuant to this Sublease shall be in writing and shall be sufficiently given if served personally or mailed prepaid and registered, in the case of the Society, addressed to the attention of the President at the address first shown above for the Society, and in the case of the Regional District, addressed to the attention of the Chief Administrative Officer at the address first show above for the Regional District. The Regional District may from time to time change its address for notice by written notice given in accordance with this section. The date of receipt of any notice, demand or request shall be deemed to be the date of delivery if the notice, demand or request is served personally, or if mailed as aforesaid then on the second business day next following the date of mailing PROVIDED HOWEVER that if mailed, should there be between the time of mailing and the actual receipt of the notice a mail strike, slow down of postal service or other labour dispute which affects the delivery of such notice, then such notice shall be deemed to be received when actually delivered.

## **16. MISCELLANEOUS**

### **17. 1 Time of essence**

Time shall be of the essence of this Sublease, save as herein otherwise specified.

### **17. 2 Amendment and Modification**

This Sublease may not be modified or amended except by an instrument in writing of equal formality herewith executed by the Parties or their respective successors or permitted assigns.

### **17. 3 Headings**

The captions and headings throughout this Sublease are for the convenience and reference only and the words and phrases contained therein shall in no way be held or deemed to define, limit, describe, explain, modify, amplify or add to the interpretation, construction or meaning of any provision of or the scope or intent of this Sublease nor in any way affect this Sublease.

### **17. 4 No derogation**

Nothing contained or implied herein shall derogate from the obligations of the Society under any other agreement with the Regional District or, if the Regional District so elects, prejudice or affect the Regional District's rights, powers, duties or obligation in the exercise of its functions pursuant to any Act of the legislature of the Province of British Columbia, as amended from time to time and the rights, powers and duties and obligations of the Regional District under all public and private statutes, bylaws, orders and regulation, all of which may be, if the Regional District so elects, as fully and



effectively exercised in relation to the Lands as if this Sublease had not been executed and delivered by the Parties.

#### **17.5 Enurement**

It is further agreed and declared by the Parties that these presents shall be binding upon the Parties and their respective successors and permitted assigns, and shall enure to the benefit of the Parties and the School Board and their respective successors and permitted assigns.

#### **17.6 Force Majeure**

Neither Party will be liable for delay in performing or failure to perform obligations under this Sublease if the delay or failure is directly or indirectly caused by or is a result of any circumstance beyond its reasonable control. Such delay or failure will not constitute a breach of this Sublease and the time for performance will be extended by a period equivalent to that during which performance is so prevented. No lack of money, financing, or credit will excuse performance. Without limiting the first sentence of this section, the following will be circumstances outside a Party's reasonable commercial control:

- (a) acts of God, explosion, flood, lightning, tempest, weather conditions, fire, or accident;
- (b) war, hostilities, invasion, or act of foreign enemies;
- (c) rebellion revolution, insurrection, military or usurped power, or civil war;
- (d) riot, civil commotion, or disorder;
- (e) acts, restrictions, regulations, by-laws, prohibitions, refusals to grant or delay in granting any licences, permits, or permissions, or measures of any kind, on the part of any governmental authority including the Regional District (other than the refusal of the Regional District to issue a permit or permission as a result of the failure of the Society to comply with all legal requirements for the issuance of that permit or the granting of that permission);
- (f) import or export regulations or embargoes;
- (g) strikes, lock-outs, or other industrial actions or trade disputes of whatever nature (whether involving employees of a Party to this agreement or a third party) or the unavailability of trades required to pursue development in a timely manner;
- (h) defaults of suppliers or sub-contractors for any reason whatsoever; or
- (i) incompleteness or inaccuracy of any information which it is the responsibility of the other Party to provide.

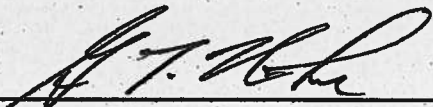


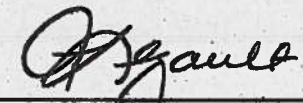
IN WITNESS WHEREOF the Parties hereby acknowledge that this Sublease has been duly executed and delivered by the Parties.

Signed this day Dec 23, 2014

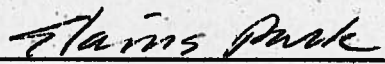
IN WITNESS WHEREOF the Corporate Seal of )  
the Sunshine Coast Regional District was )  
hereunto affixed in the presence of: )

C/S

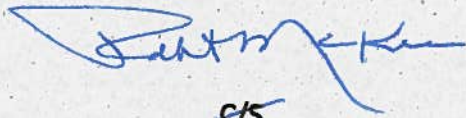
  
\_\_\_\_\_  
CHAIR )

  
\_\_\_\_\_  
CORPORATE OFFICER )

IN WITNESS WHEREOF the Corporate Seal of )  
the Society was hereunto affixed in the )  
presence of: )

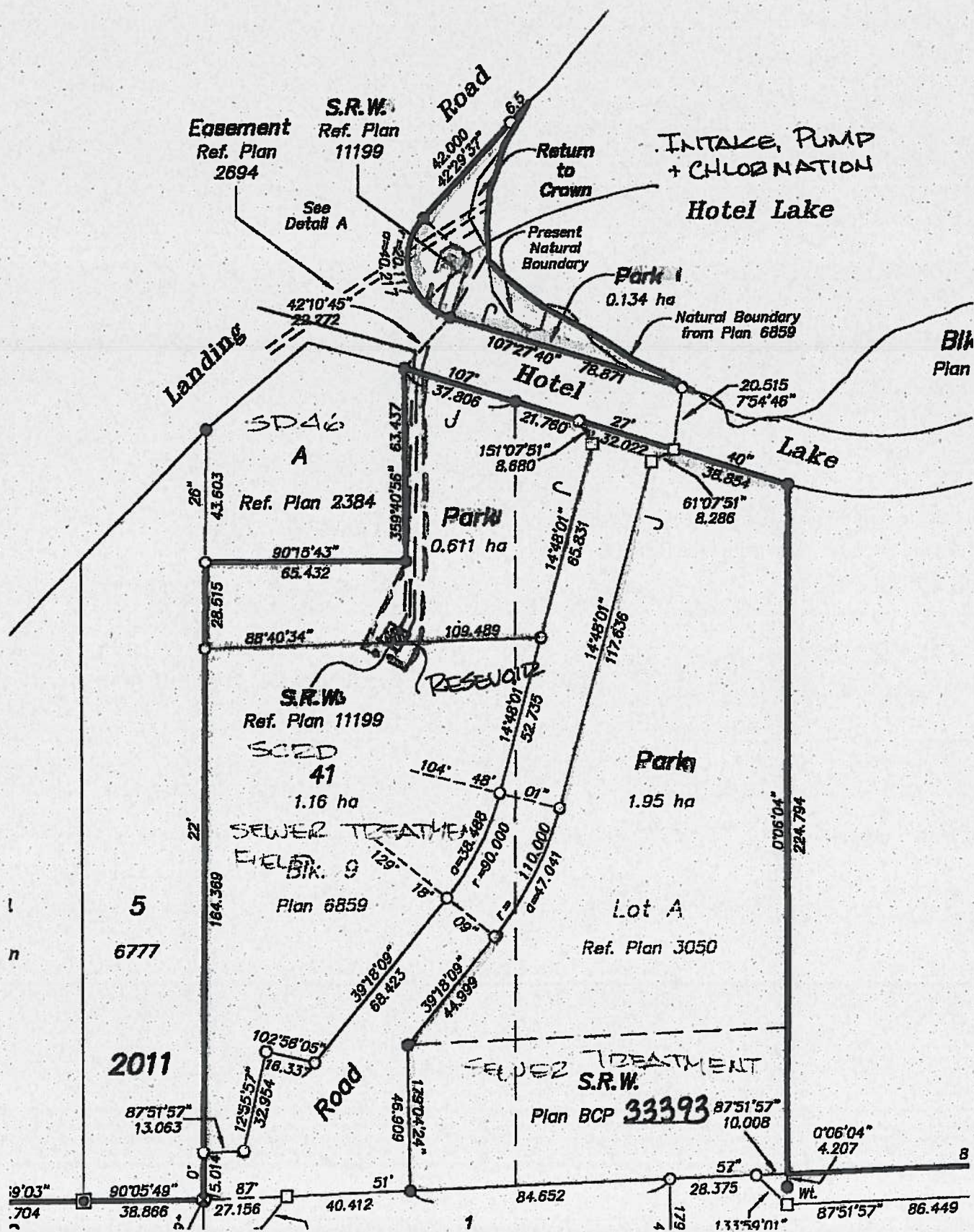
  
\_\_\_\_\_  
Authorized Signatory )  
Name ELAINE PARK )  
Title PRESIDENT )

\_\_\_\_\_  
Authorized Signatory  
Name  
Title

Witnessed by  
  
C/S  
Robert H. McKee



## 314





## SCHEDULE B

School District No. 46  
(Sunshine Coast)  
A COMMUNITY ENGAGED IN LIFELONG LEARNING  
AND EDUCATIONAL EXCELLENCE



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### OFFICE OF THE SECRETARY-TREASURER

October 8, 2014

Carolyn Mortensen  
Sunshine Coast Regional District  
1975 Field Road  
Sechelt, BC V0N 3A1

Dear Carolyn,

**RE: Exemption from SD46 Regulation Regarding Serving Alcohol in the Presence of  
Minors at Sarah Wray Hall**

This letter serves as confirmation of exemption for the Sunshine Coast Regional District and any tenants using Sarah Wray Hall from the school district's regulation that prevents minors from being present in the facility if alcohol is to be served.

The school district acknowledges that in the case of a private function at Sarah Wray Hall, where appropriate licensing has been granted under the direction of the user group, minors may be present and liquor may be consumed in their presence in accordance with the requirements of the Liquor Control and Licensing Branch.

Sincerely,

Nicholas Weswick  
Secretary-Treasurer

P.c. Bruce Bauman, Recreation Services Manager

END OF DOCUMENT

## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Sam Adams, Parks Planning Coordinator

**SUBJECT:** AGAMEMNON CHANNEL (DANIEL POINT PARK) FORESHORE LICENSE No. 240719 RENEWAL

### RECOMMENDATIONS

**THAT** the report titled Agamemnon Channel (Daniel Point Park) Foreshore License No. 240719 Renewal be received;

**AND THAT** SCRD respond to the Ministry of Forests, Lands and Natural Resource Operations and Rural Development requesting a 10-year renewal of License of Occupation No. 240719 for the Daniel Point Park Foreshore for the purposes of recreation;

**AND FURTHER THAT** SCRD Delegated Authorities be authorized to sign the license of occupation renewal documents.

### BACKGROUND

SCRD recently received a request from the Province to renew a foreshore licences in front of Daniel Point Park in Electoral Area A (See figure 1. Location map). SCRD acquired the Crown Land foreshore licence No. 240719 for park purposes in 1987. The license was subsequently renewed by the SCRD in 1998 and 2008. This 6.4 hectare site, located off of Orca Road in Electoral Area A, covers lands below the high tide mark in front of the SCRD Daniel Point Park.

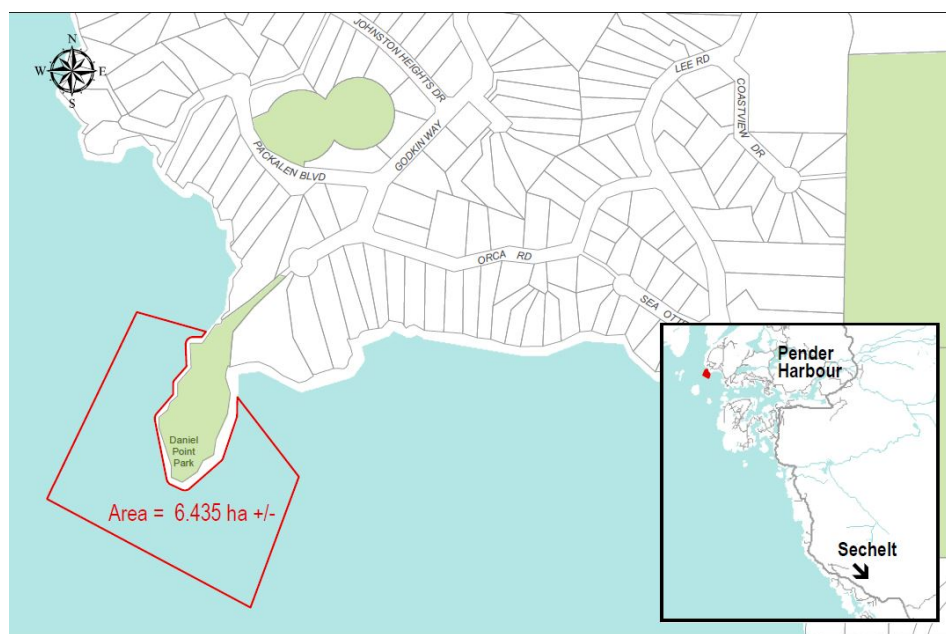


Figure 1 – Daniel Point Licence area



*Views of site showing licensed waters and SCRD Daniel Point Park lands*



## DISCUSSION

Daniel Point Park, a peninsula of land which extends out into the surrounding sea, is surrounded on three sides by rocky shore and the Salish Sea in Agamemnon Channel. Licence area 240719 covering the surrounding waters has been held by the SCRD since 1987. The purpose of the license is to create a seaward buffer to the upland park to prevent encroachment and possible negative impacts on the upland from adjacent marine activities.

The benefit of the license is it allows for the area to be used for public recreational purposes, such as swimming, wildlife viewing and boating. If the Provincial government was to receive an application for purposes which were not compatible with that usage then those incompatible uses would be disallowed.

Recent communications with the Province confirmed that holding such a license does not increase the holder's responsibility with regards to marine debris should that become an issue within the license area.



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*Financial Implications*

Limited staff time is required for the administration of the lease. Additional staff resources may be required if there was an unforeseen incident such as a spill emergency or large storm event which required SCRD assistance or input.

The fee to renew the license is \$200.

*Timeline for next steps or estimated completion date*

Staff will apply to renew the foreshore license following Board direction.

*Communications Strategy*

None required / no change to service.

**STRATEGIC PLAN AND RELATED POLICIES**

The Pender Harbour/Egmont Official Community Plan and Parks Master Plan state the importance of watercourse areas and of maintaining water or beach accesses for community use.

**CONCLUSION**

Crown Licence No. 240719 is up for renewal. SCRD has held the license for over 30 years. The importance of watercourse areas and of maintaining water or beach accesses for community use is acknowledged the Area A OCP. SCRD Staff recommend that an application be submitted to renew the licence.

Reviewed by:			
Manager	X - K. Robinson	Finance	
GM	X – I. Hall	Legislative	
A/CAO	X – T. Perreault	Other	X - K. Clarkson

## **SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT**

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**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Ian Hall, General Manager, Planning and Community Development

**SUBJECT:** RFP 19 399 Youth Centre Services Contract Award Report

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### **RECOMMENDATION(S)**

**THAT the report titled RFP 19 399 Youth Centre Services Contract Award Report be received;**

**AND THAT a contract be awarded to The YMCA of Greater Vancouver for the total value of \$142,274 (before GST);**

**AND THAT the [670] Regional Recreation Programs operating budget be increased by \$4,014 in 2020, \$1,381 in 2021 and \$1,422 in 2022, funded from taxation;**

**AND THAT the 2020-2024 Financial Plan be updated accordingly;**

**AND FURTHER THAT the recommendations be forwarded to the Regular Board Meeting of December 12, 2019.**

---

### **BACKGROUND**

For many years, SCRD has provided Youth Centre Services at the Gibsons and Area Community Centre through a contracted service provider.

Youth program funding for the Gibsons Youth Centre, Sechelt Youth Centre and Pender Harbour, Roberts Creek and Halfmoon Bay Community Schools is provided through the [670] Regional Recreation Programs service. All areas participate in this service with the exception of Area F Islands.

The Youth Centre is open to all Coast youth 12 to 18 years of age from Monday to Friday at 3:00-7:00 pm. It is free for participants and is operated on a drop-in basis. Past programming has included a variety of creative art programs, such as food preparation and nutrition education, games and activities, and the creation of music using their in-house soundproof studio and audio equipment.

Recent statistics show average daily attendance is 12 youth.

The current contract for Youth Centre services expires December 31, 2019.

Request for Proposal (RFP) 19 399 Youth Centre Services Contract was published on June 28, 2019 and closed on July 26, 2019. No addendums were issued.

The scope of work includes the development, execution and maintenance of the youth centre program at Gibsons & Area Community Centre. The programming should be holistic in nature and include components of physical literacy, nutrition, creativity and local resources for youth. The Youth Centre should be inclusive and accessible to all youth.

The proposed services will continue the existing, successful programming provided at GACC.

## **DISCUSSION**

### *RFP Process and Results*

Following standard advertising practices and active solicitation of proposals from the youth services sector, one proposal was received. The evaluation committee reviewed and scored the proposal against the criteria set out in the RFP. Staff recommends that a contract be awarded to The YMCA of Greater Vancouver who met the specifications as outlined for the project.

<u><b>Name</b></u>	<u><b>Total Value of 3-Year Contract</b></u>
The YMCA of Greater Vancouver	\$ 142,274 ( before GST)

### *Financial Implications*

Staff recommend that a contract be awarded to The YMCA of Greater Vancouver who met the specifications as outlined, best value overall for the above-mentioned project. A 3-year contract for Youth Centre Services be awarded to The YMCA of Greater Vancouver for the total value of \$142,274 (before GST).

The previous 2-year contract value (also held by YMCA) was \$84,032 excluding GST.

The new contract value represents a 12% year-over-year increase (2019 to 2020), with 3% increases in years 2 and 3 of the contract.

An operating budget increase of \$4,014 is required in 2020, with increases of \$1,381 and \$1,422 in 2021 and 2022 to proceed with the contract. Staff recommend that the [670] Regional Recreation Programs budget be increased accordingly, funded from taxation, with corresponding amendments made to the 2020-2024 Financial Plan.

### *Next steps*

Following Board decision, the contract award will be made.

## **STRATEGIC PLAN AND RELATED POLICIES**

**Regional Collaboration and Partnership:** To lead, encourage and support our partners and stakeholders in working together to understand and address the opportunities and challenges facing our region.

## **CONCLUSION**

The SCRD received one proposals for RFP 19 399 Youth Centre Services Contract. Staff recommend award of the contract to The YMCA of Greater Vancouver for a combined total 3-year contract value of up to \$142,274 excluding GST.

A base budget increase in 2020, 2021 and 2022 is required to proceed with the contract.

Reviewed by:			
Manager	X – D. Cole	Finance	X – B. Wing
GM	X – I. Hall	Legislative	
A/CAO	X – T. Perreault	Risk/Purchasing	X – V. Cropp



## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

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**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Ian Hall, General Manager, Planning and Community Development

**SUBJECT:** REQUEST FOR PROPOSAL (RFP) 1934501 HALKETT BAY DOCK UPGRADE REPAIRS

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### RECOMMENDATIONS

**THAT the report titled Request for Proposal (RFP) 1934501 Halkett Bay Dock Upgrade Repairs be received;**

**AND THAT the Halkett Bay Dock Upgrade Repair contract be awarded to Pacific Industrial Marine Ltd. in an amount of up to \$360,666 (excluding GST);**

**AND THAT the combined Ports Capital Renewal Plan project budget for Halkett Bay and West Bay be increased by \$65,406 from \$386,260 to \$447,666, funded from capital reserves;**

**AND THAT the 2019-2023 Financial Plan be amended accordingly;**

**AND THAT the delegated authorities be authorized to execute the contract;**

**AND FURTHER THAT this recommendation be forwarded to the Regular Board meeting of December 12, 2019.**

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### BACKGROUND

In 2017, staff identified priority capital needs for Sunshine Coast Regional District (SCRD) Ports. Through the 2018 annual budget, a combined budget of \$130,000 was approved to design and implement capital repair projects at Halkett Bay and West Bay. The first phases of West Bay and Halkett Bay were completed in 2018.

Phase 1 of the Halkett Bay project improved the dolphins and aspects of the float/gangway. Phase 2 will replace structural components of the approach (wharf head) and add structural bracing.

The scope of the work consists of:

- Replacement of 4 bearing piles and 5 fender piles;
- Replacement of railings;
- Painting of railings;
- Installation of bracing to meet structural loading requirements;
- Replacement of approximately 50% of approach deck boards;
- Demolition and replacement of a basic dock shelter (service shed) to address condition and in order to replace decking. If the shed is removed, a replacement will need to be provided to maintain service. An option to supply a replacement shed was included in the RFP, but detailed pricing was not requested as staff have further work to do on design.

A staff report and subsequent Board resolution in September 2019, prior to project tender, amended the budget for the Halkett Bay component of a combined Halkett Bay-West Bay Phase 2 project to \$322,260. \$60,000 is budgeted for the West Bay component for a total project budget of \$386,260.

This report discusses options for finance and award of the Phase 2 Halkett bay project, post tender.

As described in RFP 1934501 and proposal onsite construction is planned to begin in February 2020, with substantial completion scheduled for end of March 2020.

## **DISCUSSION**

### *RFP Process and Results*

RFP 1934501 Halkett Bay Dock Upgrade Repairs, was published on October 16, 2019 and closed on November 14, 2019. A mandatory site meeting was held on October 23, 2019. Two addendums were issued. Two proposals were received. The evaluation team received input from SCRD's contracted engineer. Submissions were reviewed and scored on criteria set out in the RFP, including: price, capability, methodology and qualifications. Both submittals were over the September 2019 construction cost estimate. The lower of the two qualified bids was made by Pacific Industrial Marine and is \$347,222.

The difference in pricing between the recent estimate and the bid price can be attributed to:

- Rising construction and labour costs
- Additional costs associated with lead in the paint on the shed and handrail system
- Construction complexity associated with work around the crane

Item	Cost Estimate September 2019	Cost Estimate December 2019	Budget Gap
Halkett Bay (approach)			
Design/engineering/environmental	\$ 22,000	\$25,000*	
Estimated construction cost	246,550	347,222	
Construction contingency (20%)	53,710	69,444*	
Subtotal	\$322,260	\$441,666	(119,406)

\*Contingency only on construction value; design/engineering/environmental costs updated.

### *Options and Analysis*

#### Option 1: Reduce Project Scope, Amend the Project Budget and Proceed with Award

The project budget gap of up to \$119,406 could be partially met by reducing the scope of work.

The following items could be removed from the project and addressed in the future:

- Handrail painting
- Replacement of the Shed (and associated decking replacement)

The estimated cost savings incurred from the removal of these items is \$45,000. These items could be replaced in the future. Significant risk of asset failure is not anticipated from the removal of these items.

Item	Cost Estimate September 2019	Amended Scope Cost Estimate	Budget Gap
Halkett Bay (approach)			
Design/engineering/environmental	\$ 22,000	\$25,000*	
Estimated construction cost	246,550	302,222	
Construction contingency (20%)	53,710	60,444*	
Subtotal	\$322,260	\$387,666	(65,406)

\*Contingency only on construction value; design/engineering/environmental costs updated.

The project gap would then be reduced to \$65,406, which could be funded from capital reserves. While ports projects often require full use of contingency due to unknown conditions (timber decays from the inside out), the project funding gap is less than the contingency.

The estimated uncommitted year end capital reserve balance is \$188,839.

Approval of this option would result in an uncommitted year end capital reserve balance of \$123,433 which is below the minimum capital reserve contingency balance of \$200,000 for emergency repairs.

Staff recommend this option.

#### Option 2: Reduce the Project Scope and Proceed with Award of Work

Alternatively, staff could be directed to reduce the scope of the project to suit the project budget. In addition to the items noted in Option 1, staff would look at either:

1. Reducing the extent of decking replaced and/or not proceeding with structural work relating to the crane support area, which would result in closure of the crane; OR
2. Delaying installation of the cross bracing, leaving the approach closed to motor vehicles.

This option would reduce the level of service provided at the dock. Closure of the crane or failure to address load rating/structural concerns would negatively impact Camp Fircom and island residents who are, for example, moving in building materials or supply orders.

#### Option 3: Maintain Project Scope and Project Budget, Apply a New Project Funding Plan and Proceed with Award of Work.

The project budget gap of up to \$119,406 can be met by capital reserves.

Approval of this option would result in an uncommitted year end capital reserve balance of \$69,433, which is below the minimum capital reserve contingency balance of \$200,000 for emergency repairs.

#### *Financial Implications*

Ports projects (and construction projects in general) continue to be bidded by the market at values higher than qualified estimates indicate.

All three options contribute to greater pressure on the Ports service – either in terms of maintaining outstanding asset renewal requirements or reducing capital reserves (or both), as noted above. Further consideration of these pressures can be made in asset management planning for Ports.

*Organizational/Intergovernmental Implications*

As indicated in minutes from the recent Joint Meeting with Islands Trust, elected officials have indicated concern about the cost/sustainability of SCRD's ports, and a desire for more information, perhaps as a lead-in to looking at new planning approaches.

*Communications Strategy*

Should the project proceed:

- Notice will be sent to SCRD Ports Monitors, emergency services, community networks and water taxi service providers.
- Signage will be posted at the site informing the public of the work.
- The SCRD Ports Division web page and corporate Facebook account will have dates of work and project updates posted.

**STRATEGIC PLAN AND RELATED POLICIES**

Work undertaken through this contract is aligned with SCRD's asset management goals.

**CONCLUSION**

In 2017, staff identified priority capital needs for Sunshine Coast Regional District (SCRD) Ports. Through the 2018 annual budget, a combined project budget to design and implement capital repair projects at Halkett Bay and West Bay were approved. Phase 2 of Halkett Bay is the fourth project to be designed and released for competitive bids.

The SCRD received 2 compliant bids on RFP 1934501 Halkett Bay Dock Upgrade Repair Project. Both were over the estimated construction budget.

Staff recommend reducing the scope of work and award of the contract to Pacific Industrial Marine Ltd. for up to \$360,666 (inclusive of contingency but excluding GST).

In order for work to proceed, the Halkett Bay component of the project budget needs to be increased to \$387,666, with a total combined project value (with West Bay) of \$447,666. Capital reserves are available to fund the project gap. A financial plan amendment is required.

Substantial completion is planned for Spring 2020.

Reviewed by:			
Manager		Finance	X - B. Wing
GM	X – I. Hall	Legislative	
A/CAO	X - T. Perreault	Purchasing	



## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

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**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Shane Walkey, Manager, Utility Services

**SUBJECT:** VEHICLE REPLACEMENTS: RFQ 1937007 AWARD RECOMMENDATION

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### RECOMMENDATION(S)

**THAT the report titled Vehicle Replacements: RFQ 1937007 Award Recommendation be received;**

**AND THAT RFQ 1937007 for the supply and delivery of one 6,900 GVW Pick-Up Truck Extended/Super Cab 4 Wheel Drive, White and two 10,000 GVW 4 Wheel Drive, Super Cab SRW Cab and Chassis with Service Body be awarded to Mertin Chevrolet Cadillac Buick GMC Ltd for a value of \$150,424. (plus GST);**

**AND FURTHER THAT the delegated authorities be authorized to execute the purchase.**

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### BACKGROUND

The Board adopted the following resolutions at the February 21, 2019 Regular Board meeting:

038/19 (part) **Recommendation No. 18** *North Pender Harbour Water Service [365] – 2019 R1 Budget Proposals*

AND THAT the following budget proposals be approved and incorporated into the 2019 Round 2 Budget:

- Budget Proposal 3 – Utility Services Vehicle Replacement, \$90,000 funded through MFA 5-Year Equipment Financing Loan;

038/19 (part) **Recommendation No. 23** *Regional Water Service [370] – 2019 R1 Budget Proposal*

AND THAT the following budget proposals be approved and incorporated into the 2019 Round 2 Budget:

- Budget Proposal 8 – Utility Service Vehicle Replacements, \$170,000 funded through MFA 5-Year Equipment Financing Loan;

038/19 (part) **Recommendation No. 25** *Wastewater Treatment Services [381-395] – 2019 R1 Budget Proposals*

AND THAT the following budget proposals be approved and incorporated into the 2019 Round 2 Budget:

- Budget Proposal 4 - Wastewater Services Vehicle Replacement, \$45,000 for purchase through MFA 5–Year Equipment Financing Loan and \$7,000

increase to base budget from User Fees for Operation, Maintenance and Borrowing Costs for ½ year of 2019;

The Board adopted the following resolution at the July 25, 2019 Regular Board meeting:

206/19 **Recommendation No. 9** *Regional Water Vehicle Replacements*

AND THAT staff be authorized to purchase three (3) vehicles with the existing \$170,000 in 2019 capital funding and negotiate the purchase of two of these vehicles with car dealerships;

A Request for Quotation (RFQ) was issued on October 30, 2019 for the supply and deliver of one 6,900 GVW Pick-Up Truck Extended/Super Cab 4 Wheel Drive, and two 10,000 GVW 4 Wheel Drive, Super Cab SRW Cab and Chassis with Service Body. The RFQ closed on November 18, 2019.

The purpose of this report is to summarize the results of the RFQ process and make a purchase recommendation for the supply of the vehicles identified above.

## DISCUSSION

Purchasing received six (6) submissions as part of the RFQ offer process. Led by Purchasing, the evaluation team consisted of three team members. The evaluation committee reviewed and scored the proposal against the criteria set out in document. Staff have recommended that a contract be awarded to Mertin Chevrolet Cadillac Buick GMC Ltd. as they met the specifications and are the highest scoring proponent and best overall value for the purchase.

### *Financial Implications*

The funding for the purchases of these vehicles are incorporated into the North Pender Harbour Water Service Area, Regional Water Service Area and the Wastewater Services Area's 2019 Budget and will be directly funded by a MFA 5-Year Equipment Financing Program loan.

The approved budget values for the North Pender and Wastewater Vehicle purchases are sufficient to fund the vehicle types required and quotations received. The Regional Water Service Area's 2019 budget of \$170,000 to fund the purchase to two (2) new vehicles was amended, as a result of the July 25, 2019 Corporate and Administrative Services Committee meeting (see 'Background' above), to approve the purchase of three (3) vehicles. See under the following resolution:

Table 1: Service Area 2019 Vehicle Purchase Budgets vs RFQ 1937007 Pricing

Service Area	2019 Vehicle Purchase Budget	*RFQ 1937007 Pricing	Balance Remaining
North Pender [365]	\$90,000	\$58,590	\$31,410
Regional Water [370]	\$170,000	\$58,590	\$111,410
Wastewater [381-395]	\$45,000	\$33,244	\$11,756

\*RFQ 1937007 pricing inclusive of PST (does not include GST)

The remaining balances for the North Pender and Wastewater 2019 Vehicle purchase budgets will be used (in part) to fund the additional costs associated with making the new vehicles ‘fleet-ready’ which will include radios, specialized tool holders/compartments, and decals.

The balance of funds remaining for 2019 Regional Water Vehicle purchases identified in Table 1 will be used by Staff to purchase an additional two (2) used vehicles (currently in progress) as well as any additional spending required to get these vehicles ‘fleet ready’ once purchased.

*Timeline for next steps or estimated completion date*

Mertin Chevrolet Cadillac Buick GMC Ltd has committed to a 120-180 day delivery timeline for the vehicles from the SCRD’s acceptance of their tender and issuance date of the purchase order.

**STRATEGIC PLAN AND RELATED POLICIES**

This recommendation is consistent with Section 4.10 Capital Maintenance and Replacement of the Financial Sustainability Policy by addressing the need to replace assets when required to avoid costly repairs and interruption in service.

**CONCLUSION**

The North Pender Harbour, Regional Water Service and Wastewater Service Areas identified the purchase of three new vehicles as part of the 2019 Budget process. An RFQ was published on October 30, 2019 and closed on November 18, 2019.

Six submissions were received and Staff recommend that a purchase contract be awarded to Mertin Chevrolet Cadillac Buick GMC Ltd. in the amount of \$150,424 (before GST), as they met the specifications and are the highest scoring and best price overall for the purchase.

Two additional used vehicles will be purchased utilizing existing budgeted funding for Regional Water at a later date.

Reviewed by:			
Manager		CFO	X-T.Perreault
GM	X – R. Rosenboom	Legislative	
A/CAO	X - T. Perreault	Other	X - V. Cropp

## SUNSHINE COAST REGIONAL DISTRICT STAFF REPORT

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**TO:** Planning and Community Development Committee – December 12, 2019

**AUTHOR:** Tracey Hincks, Executive Assistant

**SUBJECT:** 2020 BC COUNCIL OF FOREST INDUSTRIES (COFI) CONVENTION

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### RECOMMENDATION(S)

**THAT** the report titled 2020 BC Council of Forest Industries (COFI) Convention be received;

**AND THAT** the following Director(s) \_\_\_\_\_ be approved to attend the 2020 BC Council of Forest Industries (COFI) Convention;

**AND FURTHER THAT** approved Director(s) who attend the 2020 BC Council of Forest Industries (COFI) Convention be paid stipend and expenses.

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### BACKGROUND

There has been interest expressed in attending the 2020 BC Council of Forest Industries (COFI) Convention. The event takes place in Prince George from Wednesday, April 1 to Friday, April 3 (invitation is attached). Every year the BC Council of Forest Industries holds an annual convention which is the largest gathering of the forest sector in Western Canada. One complimentary registration and one-night hotel stay is extended to the Regional District Chair or their designate. Additional delegates are welcome at the full convention cost of \$525/person. Round trip flights are approximately \$335.

### DISCUSSION

As per Remuneration Bylaw No. 636 expenses and stipend are paid for conferences such as Union of British Columbia Municipalities (UBCM) or Association of Vancouver Island and Coastal Communities (AVICC), the UBCM Annual Electoral Area Directors Forum or Local Government Leadership Academy Conference.

Attendance at any other conference or forum where expenses are incurred or compensation is received, requires Board support in the form of a motion.

### STRATEGIC PLAN AND RELATED POLICIES

This report is aligned with the strategic priority to enhance Advocacy by advancing a collective voice to represent the interests of the region.

### CONCLUSION

Where conference and forum attendance is approved by the SCR D Board, the Directors are eligible for paid expenses and stipend.



Reviewed by:			
Manager		Finance	
GM	X – I. Hall	Legislative	
A/CAO	X– T. Perreault	Other	

## Tracey Hincks

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**From:** Gillrie, Diana <Gillrie@cofi.org>  
**Sent:** Monday, December 2, 2019 12:18 PM  
**To:** Tracey Hincks  
**Subject:** FW: 2020 COFI Convention - Complimentary Registration - RSVP Required  
**Attachments:** Registration Form - Community Leaders 2020.pdf

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**From:** Gillrie, Diana  
**Sent:** Wednesday, November 20, 2019 7:43 AM  
**Subject:** 2020 COFI Convention - Complimentary Registration - RSVP Required

**TO:**  
Mayors  
Regional District Chairs  
Presidents and Executive Directors of NCLGA, AKBLG, SILGA, UBCM, AVICC and LMLGA

**Re:** COFI ANNUAL CONVENTION - April 1-3, 2020 in Prince George, BC

I am pleased to invite you to attend the 2020 Convention of the BC Council of Forest Industries (COFI) to be held from April 1 - 3, 2020 at the Prince George Conference and Civic Centre in Prince George, B.C.

COFI's annual convention is the largest gathering of the forest sector in Western Canada and our speakers and delegates are key influencers from the forest industry, government, communities, and First Nations.

The community leaders program is a key part of our Convention program, and as in past years, we are pleased to offer you:

- One complimentary registration package to attend the convention, all meals and receptions included
- One night's accommodation at the Courtyard Marriott Prince George (any additional nights will be at your own expense)

If you are unable to attend, your community's CAO or a designated councillor/director are welcome to attend and utilize the complimentary registration.

We also encourage other councillors and staff to attend and are pleased to extend the COFI member rate to them (\$400 if they register before March 1). You can contact Diana Gillrie to get the member promotional code to register any additional local government representatives online.

To confirm your participation at the COFI Convention as your community's local government representative, please complete the enclosed registration form and return it to Diana Gillrie at [gillrie@cofi.org](mailto:gillrie@cofi.org) by January 11,

2020. Kindly do not register online, as Diana will arrange for your participation as part of the community leaders program.

Once you we have received your completed registration form a link will be sent to you to book your room. Adjustments will be made to receive the complimentary night after you have booked your room. Please book your room ASAP as rooms are limited.

I look forward to welcoming you to our convention. If you have any questions about registration, please contact Diana Gillrie at 778.760.1166 or via email at [gillrie@cofi.org](mailto:gillrie@cofi.org).

Warm regards,



Susan Yurkovich  
President & CEO  
Council of Forest Industries

**Diana Gillrie**

Administrative Assistant  
200 – 1855 Kirschner Road  
Kelowna, BC V1Y 4N7  
Phone 778.760.1166  
Mobile 250.859.9578  
Email [gillrie@cofi.org](mailto:gillrie@cofi.org)



FORESTRY FOR THE PLANET.  
FOREST PRODUCTS FOR THE WORLD.

## COMMUNITY LEADERS COMPLIMENTARY REGISTRATION FORM

One complimentary registration is extended to Mayors, Regional District Chairs, Presidents and the Executive Directors of NCLGA, AKBLG, SILGA, UBCM, AVICC and LMLGA or their designate. Should the individual above not be able to attend, a designate or the CAO can attend in their place.

To receive your complimentary registration, please indicate your plans below and return this form to us.

Should your organization wish to send additional individuals (staff, councillors/directors, etc) to the Convention, they may register at the COFI Member Rate, (colored in green below); please contact Diana Gillrie at 778.760.1166 or [gillrie@cofi.org](mailto:gillrie@cofi.org) to receive the promotional code to access this reduced rate.

Registration packages will be available at the COFI Registration Desk in the pre-function area of the Prince George Civic Centre from 12:00 pm to 6:00 pm on Wednesday, April 1<sup>st</sup>, 7:00 am to 5:00 pm on Thursday, April 2<sup>nd</sup>, and 7:00 am to 12:00 pm on Friday, April 3<sup>rd</sup>.

For more information about COFI or the 2020 Convention, please visit [www.cofi.org](http://www.cofi.org).

<b>Organization Name:</b>						
<b>Contact Name:</b>	<b>Ice Breaker Reception Wednesday Night Prince George Civic Centre (Exhibit Hall)</b>	<b>FULL CONVENTION</b> \$500 Early bird rate of \$400 until March 1		<b>THURSDAY ONLY</b> \$400		<b>FRIDAY ONLY</b> \$300
<b>Phone:</b>						
<b>1. Name &amp; Title:</b>	<input type="checkbox"/> Complimentary	<input type="checkbox"/> Complimentary	OR	<input type="checkbox"/> Complimentary	OR	<input type="checkbox"/> Complimentary
<b>Email:</b>						
Please print your name exactly as you wish it to appear on your name tag Email addresses are required for current and future Annual Convention correspondence						

<b>Accommodation booking Instructions....</b>	<p>COFI will pay for one night's accommodation at the Prince George Courtyard Marriott. Any additional nights will be at your own expense. <u><a href="#">A link to book your room will be sent to you once we have received your completed registration form.</a></u></p> <p>Adjustments will be made to receive the complimentary night after you have booked your room.</p> <p>Please book your room ASAP as rooms are limited.</p>
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**Send your completed form by January 11 via email to: [gillrie@cofi.org](mailto:gillrie@cofi.org)**



**SUNSHINE COAST REGIONAL DISTRICT  
ISLANDS TRUST AND SCRD JOINT MEETING**

**November 19, 2019**

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MINUTES FROM THE ISLANDS TRUST AND SCRD JOINT MEETING HELD IN THE BOARDROOM OF THE SUNSHINE COAST REGIONAL DISTRICT OFFICE, LOCATED AT 1975 FIELD ROAD, SECHELT, B.C.

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**PRESENT:**

**SCRD**

Chair	Lori Pratt (Chair)
Director, Electoral Area A	Leonard Lee
Director, Electoral Area D	Andreas Tize
Director, Electoral Area E	Donna McMahon
Director, Electoral Area F	Mark Hiltz
Alternate Director, Area F	Camilla Berry
Director, Town of Gibsons	Bill Beamish
Alt. Director, Town of Gibsons	David Croal
Director, District of Sechelt	Darnelda Siegers
Director, District of Sechelt	Alton Toth
Interim CAO	Mark Brown
GM, Planning & Comm. Dev.	Ian Hall
Manager, Protective Services/Bylaw	Matt Treit (part)

**Islands Trust**

Chair, Islands Trustee	Sue Ellen Fast
Islands Trustee (Gambier Island)	Dan Rogers
Islands Trustee (Keats Island)	Kate-Louise Stamford
CAO	Russ Hotsenpiller
Regional Planning Manager	Heather Kauer

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**CALL TO ORDER**

1:15 p.m.

*It was determined that the role of meeting Chair will alternate.*

**INTRODUCTIONS**

Introductions were made of those present at the meeting.

**AGENDA**

The agenda was accepted as presented. The topic of emergency planning grants and funding was added to the agenda.

Trustee Stamford provided a summary of the history of SCRD & Islands Trust joint meetings.

Trustee Rogers and CAO Hotsenpiller provided an overview of the Islands Trust geographical jurisdiction, governance structure and service delivery.

Trustee Stamford provided information regarding the Islands Trust Conservancy.

**Joint SCRD – Gambier Islands Trust Committee Meeting Minutes of April 21, 2017**

The Joint SCRD – Gambier Islands Trust Committee meeting minutes of April 21, 2017 were reviewed and accepted.

**SCRD/Gambier Island Local Trust Committee Protocol Agreement**

The Regional District / Local Trust Committee Protocol Agreement was reviewed.

**Recommendation No. 1**      *SCRD/Gambier Island Local Trust Committee Protocol Agreement*

It was recommended that staff review the SCRD/Gambier Island Local Trust Committee Protocol Agreement to see if updates are needed.

**Islands Clean Up Update**

The General Manager, Planning and Community Development provided an update regarding the Islands Clean Up events that took place in July and August 2019 as follows:

- Event included flag stops and land events at Nelson Island, Gambier Island, Thormanby and Trail Islands, Keats Island
- Successful events with strong participant numbers
- 4.9 tonnes of electronics and small appliances were collected as the special item.
- 23.36 tonnes of municipal solid waste, 25.62 tonnes of metal was collected for recycling, 1.4 tonnes of household recyclables was also collected.
- Continues to be a valuable service appreciated by island residents.

Trustee Stamford suggested to re-institute meetings between the SCRD and Islands Trust to discuss the Islands Clean Up event prior to and post event and have a more direct line of communication between residents.

**Recommendation No. 2**      *Meeting with Islands Trust regarding Islands Clean Up Event*

It was recommended that SCRD staff coordinate meetings with Islands Trustees prior to and post Islands Clean Up events to improve communications between residents.

**Information Updates**

Islands Trust updates were provided on the following topics:

- Park Dedication and Subdivision on Lot 696 Keats Island.
- Keats Island Shoreline Protection Project – Phase 2 update OCP and Land Use Bylaw.
- Riparian Area Regulations for Gambier Island are close to finalization.
- Gambier Island Official Community Plan Review
- Management of the New Brighton dock.

SCRD updates were provided on the following topics:

- New Parks Superintendent position. Budget proposal to establishing a contracted caretaker role on Keats Island, as is in place on Gambier Island. Working on park dedication on Keats Island subdivision.
- Building Division has a full complement of staff. Building officials provide services on the islands.

Director Hiltz noted ongoing discussions with residents regarding MOTI and SCRD role in subdivision process. Noted increased population and development on the island and in particular Gambier Island.

Trustee Rogers inquired about the park discussions on Thormanby Island.

General Manager, Planning and Community Development note that there has been no decision from the community on the matter.

Trustee Rogers noted stormwater damage at West Beach Park on Keats Island.

### **Staff-Elected Officials Communication Protocols**

Trustee Stamford noted that using the SCRD website Feedback Form has been helpful for resolving issues that should be directed to staff.

Discussion ensued about how to bring forward larger issues for regional cooperation, such as Internet access. The Connect the Coast Initiative was discussed.

### **Dock Infrastructure Management**

General Manager, Planning and Development provided an update regarding activity within the SCRD Ports Division as follows:

- SCRD manages nine docks, seven of which are on Gambier Island, Keats Island and North Thormanby Island, two mainland.
- Major capital upgrades happening at Vaucroft dock, North Thormanby
- Capital upgrades for Halkett Bay (Fircom) dock proposed (bids being reviewed)
- Work to conduct repairs to Keats Landing dock following collision
- Dock infrastructure is aging and costs are high
- Ports Monitors Committee re-appointment of current members, advertisements for recruitment for representative at Port Graves (Gambier Island), next meeting will be in December or early 2020.
- Assistance from Islands Trustees in communication is appreciated.

Discussion regarding dock infrastructure management included the following points:

- Dock services are integral for island residents.
- Island residents would like to see an increased focus on the management of docks and upgrading/expanding on the docks.
- Costs to maintain and repair the docks.
- Considering climate change and sea level rise, are the docks sustainable?
- Needs to be a large discussion on the docks.
- As populations increase, the stress on the docks has increased. Infrastructure was designed for less number of people.
- Need for more strategic thinking on dock management.
- New Brighton dock is critical to Gambier Island residents. Concerns regarding future management of the dock. Divestiture of New Brighton dock by Squamish Nation, early 2021.
- Potential for community partnership with other organizations.

### **Recommendation No. 3**      *Community Dock Management Workshop*

It was recommended that an information sharing workshop on community dock management, strategic planning and service levels be organized for SCRD and Islands Trust elected officials and staff representatives for the end of January/early February 2020.

### **Cooperation on Regional Initiatives**

- Has AVICC looked at marine debris (Styrofoam, plastics, boats)?
- Islands Trusts had a resolution at AVICC and UBCM that passed two years ago.

- A report should be coming out from the province regarding a pilot project.
- Cooperation between SCRD and Islands Trust on ministerial meetings has proven to be successful.
- Information sharing about resolutions and advocacy.
- Derelict Boat inventory for Islands Trust area. Could there be a service area collaboration with Regional Districts and Islands Trust?
- Intergovernmental meeting on November 25 2019 at Gibsons Public Market.

*Islands Trust CAO Hotsenpiller and Islands Trust Planner, Heather Kauer left the meeting at 3:00 p.m.*

## **Service Delivery and Taxation**

### **Recommendation No. 4**      *Campfire ban on Islands*

It was recommended that SCRD staff look into the possibility to include the islands (Islands Trust area) in SCRD campfire regulations.

## **Emergency Planning Grants and Funding**

Matt Treit, the new SCRD Manager, Protective Services was introduced.

Discussion regarding inability for community groups to access grants for emergency purposes resulted in the following recommendation:

### **Recommendation No. 5**      *Funding Fire Equipment through Grant-In-Aid*

It was recommended that SCRD staff investigate opportunities to fund fire equipment for the islands through the Grant-in-Aid process.

## **Bylaw Enforcement Coordination**

Warren Damon is the new Bylaw Enforcement Manager for the Islands Trust. Enforcement issues are for land use, setbacks and encroachment on the ocean.

There is cross over between Islands Trust bylaws and Building Permit infractions.

The Building Permits process for the islands and referral to Islands Trust for planning review was discussed.

Islands Trust receives referrals for Private Moorage dock applications from the province. Islands Trust provides referral comments back to the province, for final decision.

### **Recommendation No. 6**      *Meeting Minutes*

It was recommended that the minutes of this meeting be forward to the SCRD Planning and Community Development Committee and the Gambier Island Local Trust Committee.

**ADJOURNMENT**      3:25 p.m.



**SUNSHINE COAST REGIONAL DISTRICT  
NATURAL RESOURCE ADVISORY COMMITTEE**

**November 20, 2019**

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MINUTES FROM THE NATURAL RESOURCES ADVISORY COMMITTEE MEETING HELD IN THE CEDAR ROOM AT THE SUNSHINE COAST REGIONAL DISTRICT OFFICES, 1975 FIELD ROAD, SECHELT, BC

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<b>PRESENT:</b>	Alternate Chair Members	Andre Sobolewski Gordon Littlejohn Gordon Cassidy Shawna Van Poppelen
<b>ALSO PRESENT:</b>	Electoral Area D Director Electoral Area E Director Planner Planning Office Assistant/Recorder	Andreas Tize Mark Hiltz Julie Clark Genevieve Dixon
<b>REGRETS:</b>	Members	Gordon White Anayansi Cohen-Fernandez
<b>ABSENT:</b>	Members	Burt Meyers Mariel Yglesias

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**CALL TO ORDER**     3:30 p.m.

*Andre Sobolewski assumed the role of Chair for the meeting.*

**AGENDA**             The agenda was adopted as presented.

**MINUTES**

**Recommendation No. 1**     *NRAC Meeting Minutes of June 27, 2019*

The Natural Resource Advisory Committee recommended that the meeting minutes of June 27, 2019 be received and approved as presented.

**REPORTS**

Provincial Referral CRN00088 for Log Handling and Storage (A & A Trading Ltd) – Electoral Area A

The SCRDP Planner provided an overview of the report to the committee.

## Key points of discussion:

- 10 - 30 year lease for log handling.
- A provincial referral for a road application will be referred to the SCRD in the future.
- Was there a depth assessment?
- A recent lot purchased in-trust up Princess Louisa inlet, will the log handling storage area turn the natural area into a more commercial zone and inhibit recreational use?
- Is this area frequented or rarely frequented?
- Herring spawning grounds not far from site.
- In future, could the herring spawning grounds be moved elsewhere?
- Majority of traffic for recreational use is 3-4 months in the summer.
- Any issues with log sorts in port melon or twin creek in the summer for recreational use?
- Is there an option for the lease to be reviewed every five years?
- No float camp
- Environmental assessments should be conducted after the lease for silt entering the ocean.

**Recommendation No. 2**      *Provincial Referral CRN00088 for Log Handling and Storage (A & A Trading Ltd) – Electoral Area A*

The Natural Resource Advisory Committee recommends A & A Trading Ltd conduct a review of harvesting time and the impacts on recreational use specifically with tour operators, every five years.

**Recommendation No. 3**      *Provincial Referral CRN00088 for Log Handling and Storage (A & A Trading Ltd) – Electoral Area A*

The Natural Resource Advisory Committee supports the staff report recommendations for Provincial Referral CRN00088 for log handling and storage (A & A Trading Ltd).

**BCTS Consultation**

The SCRD Planner provided an overview of the report to the committee.

## Key points of discussion:

- Articulate how BCTS's consultation feedback will be used?
- Other external stakeholders to be involved: Beyond private and public water license holders, stream keepers association, mushroom, salal pickers, equestrian users and mountain bikers
- Public consultation will be costly and a time sensitive process.
- From the meaningful engagement with enough public concerns would the project be rejected?
- How well is the process suited to help BCTS through this process?
- BCTS to conduct two stage public consultation events.
- If BCTS didn't log District Lot 1313 they would harvest a similar lot somewhere else.
- Economic values on top of land value?
- Does the SCRD Board know what the tree value is on District Lot 1313?

**Recommendation No. 4**     *BCTS Consultation*

The Natural Resource Advisory Committee supports the staff report recommendations for BCTS Consultation process.

AND THAT BC Timber Sales includes the following information as a preface to the consultation process with the public about District Lot 1313:

- Economic assessment of the harvest potential.
- That BCTS identify the goals of consulting, how the feedback will be used and the process of making decisions.
- To identify whether the consultation process seeks to inform mitigating impacts of a full harvest.

**Provincial Referral CRN00095 for Log Handling and Storage (Interfor) - Electoral Area F**

Key points of discussion:

- What is happening to the water lot in the southeast that's being replaced?
- Communitive impacts from the expansion?
- Does Avalon treat the run off/ leachate properly?
- Will Avalon's wood debris pile grow larger as a result of this application?
- Depth in the staff report would have been useful.

**Recommendation No. 5**     *Provincial Referral CRN00095 for Log Handling and Storage (Interfor) – Electoral Area F*

The Natural Resource Advisory Committee supports the staff report recommendations for Provincial Referral CRN00095 for Log Handling and Storage (Interfor) – Electoral Area F.

AND THAT SCRD staff ask the Province what the use of the area that has been vacated by Interfor is going to be used for in the future, with a view to mitigate cumulative impacts.

AND FURTHER THAT Interfor clarifies what they plan to do with their wood waste pile.

**NEW BUSINESS**

Staff Memo – Tsain-Ko Forest Products

- The SCRD Planner provided an update on the forest stewardship plan.
- SCRD will not be making a response to the Tsain-Ko FSP referral.
- The committee thanks staff for the memo.

**NEXT MEETING**     Wednesday, January 22, 2020

**ADJOURNMENT**     5:49 p.m.

**SUNSHINE COAST REGIONAL DISTRICT  
AGRICULTURAL ADVISORY COMMITTEE**

**November 26, 2019**

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MINUTES FROM THE AGRICULTURAL ADVISORY COMMITTEE MEETING HELD IN THE CEDAR ROOM AT THE SUNSHINE COAST REGIONAL DISTRICT OFFICES, 1975 FIELD ROAD, SECHELT, BC

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<b>PRESENT:</b>	Chair	Paul Nash
	Members	Gretchen Bozak David Morgan Jon Bell
<b>ALSO PRESENT:</b>	Electoral Area F Director	Mark Hiltz (Non-Voting Board Liaison)
	Electoral Area E Director	Donna McMahon (Non-Voting Board Liaison)
	Manager, Protective Services Planner	Matt Treit (part) Julie Clark
	Recording Secretary	Genevieve Dixon
<b>REGRETS:</b>	Members	Gerald Rainville Erin Dutton Barbara Seed
<b>ABSENT:</b>	Members	Faye Kiewitz Raquel Kolof

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**CALL TO ORDER**     3:35 p.m.

**DELEGATION**

Matt Treit, Manager, Protective Services provided an introduction regarding emergency planning for farmers and people with livestock.

Key points of discussion:

- Committee suggested that the Manager, Protective Services discuss emergency/evacuation planning with the Farmers Institute
- Will the SCRD provide animal evacuation services?
- Committee member asked - Does the equestrian community have an evacuation plan in place? The equestrian community often has trailers that could be used in evacuations.
- How many farms on the Sunshine Coast would require evacuation services?
- Provincial funding available for classified farmers.
- Where would livestock go if evacuated either for a fire/earthquake?
- Food source a concern.



- Provincial (Ministry of Agriculture) recently updated Agricultural Land Use Inventory which is a resource for emergency planning.
- Staff to provide Manager, Protective Services with the contact information for the Farmers Institute.

**AGENDA** The agenda was amended and adopted as follows:

**NEW BUSINESS:**

Ponds and Rainwater Harvest

**MINUTES**

**Recommendation No. 1** *AAC Meeting Minutes of October 22, 2019*

The Agricultural Advisory Committee recommended that the meeting minutes of October 22, 2019 be received and adopted as presented.

**REPORTS**

**Regional Inter-Jurisdictional Invasive Plant Management Strategy**

The Planner gave a brief background introduction to the committee.

Key points of discussion:

- Is there a technical working group meeting in the future?
- Different disposal techniques per each species.
- MoTI is responsible for mowing of the highways and roads (outside the municipalities). MoTI has a policy / treatment schedule in place regarding invasive plants.
- SCRD remains with the Coast Invasive Plant council, and has looked into the Sea to Sky Invasive Plant Council.
- Land owners are required to control noxious plants on private property (*BC Weed Control Act*).
- Updated invasive plant control plan required.
- Incentive/rebate approach is favoured over restrictive bylaws for control
- Collaboration with local municipalities.
- Invasive plant public awareness day in the spring.
- Increase in public communication.
- Make a disposal option available for larger land clearing needs (i.e. incinerator).
- Education regarding onsite management for home owners is needed.

**Recommendation No. 2** *Regional Inter-Jurisdictional Invasive Plant Strategy*

The Agricultural Advisory Committee recommends that staff engage with the Coastal Invasive Plant Council to conduct an annual invasive plant awareness event suitable for farmers and residents of the Sunshine Coast.

## **NEW BUSINESS**

### **Ponds and Rainwater Harvest**

- Digging a pond is eligible for rain water harvesting rebate program.
- Staff are requested to provide the AAC, the Drought Management Plan clarification/information regarding, “what is eligible for rebate”.
- Drought Management Plan information to be provided by staff to the AAC in early 2020.

**NEXT MEETING**      Tuesday, January 28, 2020

**ADJOURNMENT**      5:00 p.m.

**SUNSHINE COAST REGIONAL DISTRICT****AREA A - EGMONT/PENDER HARBOUR  
ADVISORY PLANNING COMMISSION****November 27, 2019**


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RECOMMENDATIONS FROM THE AREA 'A' ADVISORY PLANNING COMMISSION MEETING  
HELD AT THE PENDER HARBOUR SECONDARY SCHOOL, 13639 SUNSHINE COAST  
HIGHWAY, MADEIRA PARK, BC

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<b>PRESENT:</b>	Chair Vice Chair Members	Alan Skelley Peter Robson Janet Dickin Dennis Burnham
<b>ALSO PRESENT:</b>	Electoral Area A Director  Recording Secretary Public	Leonard Lee (Non-Voting Board Liaison) Kelly Kammerle 9
<b>REGRETS:</b>	Members	Gordon Littlejohn Tom Silvey Catherine McEachern Sean McAllistar Jane McOuat Yovhan Burega Gordon Politeski Alex Thomson

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**CALL TO ORDER**    7:00 p.m.

**AGENDA**            The agenda was adopted as presented.

**DELEGATIONS**

Kerry & Debbie Rand and Peter Gordon Land Surveyor for Subdivision Application SD000064

Gordon & Todd McGill and Peter Gordon Land Surveyor for Subdivision Application SD000065

Larry & Bev Van Hatten, Cam Forrester (Riparian Expert) and Nigel Cook (Contractor) for  
Development Variance Permit Application DVP00052 (Van Hatten)

**MINUTES**Area A Minutes

The Egmont/Pender Harbour (Area A) APC Minutes of October 30, 2019 were approved as circulated.

The following minutes were received for information:

- Halfmoon Bay (Area B) APC Minutes of October 22, 2019
- Elphinstone (Area E) APC Minutes of October 23, 2019
- Planning and Community Development Committee Minutes of October 10, 2019

## **REPORTS**

### Provincial Referral CRN00088 for Logging Handling Storage (A & A Trading Ltd)

There are many inconsistencies and contradictions in the report:

- Will there or will there not be a floating barge?
- Could the adjacent tender holder be affected or not?
- One part of the report says there will be no noise and in another it reports there will be blasting.

#### **Recommendation No. 1**      *Provincial Referral CRN00088 for Logging Handling Storage (A & A Trading Ltd)*

The Area A APC recommended that Provincial Referral CRN00088 be supported with the following recommendations:

- SCRD requirements are met
- Substantial performance bond should be in place

### Subdivision Application SD000064 (Peter M Gordon Land Surveying Ltd. For 1165366 B.C. Ltd)

#### **Recommendation No. 2**      *Subdivision Application SD000064 (Peter M Gordon Land Surveying Ltd. For 1165366 B.C. Ltd)*

The Area A APC recommends the approval of Subdivision Application SD000064 provided all SCRD requirements are met.

### Subdivision Application SD000065 (Peter M Gordon Land Surveying Ltd for McGill)

#### **Recommendation No. 3**      *Subdivision Application SD000065 (Peter M Gordon Land Surveying Ltd for McGill)*

The Area A APC recommends approval of Subdivision Application SD000065 provided all SCRD requirements are met.

### Development Variance Permit Application DVP00052 (Van Hatten)

#### **Recommendation No. 4**      Development Variance Permit Application DVP00052 (Van Hatten)

The Area A recommends approval of Development Variance Permit Application DVP00052 provided all SCRD requirements are met.



The APC recommends that the SCRD give consideration to hosting an information session with Planners, Certified Riparian Professionals, Surveyors and Coast APC's to identify and clarify issues affecting setbacks.

**DIRECTOR'S REPORT**

The Director's report was received.

**NEXT MEETING**      January 29, 2020

**ADJOURNMENT**      8:40 p.m.

## SUNSHINE COAST REGIONAL DISTRICT

AREA B - HALFMOON BAY  
ADVISORY PLANNING COMMISSION

November 26, 2019

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RECOMMENDATIONS FROM THE AREA B ADVISORY PLANNING COMMISSION MEETING  
HELD IN THE COOPERS GREEN COMMUNITY HALL AT COOPERS GREEN PARK, 5500  
FISHERMAN ROAD, HALFMOON BAY, BC

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<b>PRESENT:</b>	Chair	Frank Belfry
	Members	Elise Rudland Barbara Bolding (Recorder) Catherine Onzik Bruce Thorpe Jim Noon Marina Stjepovic
	Electoral Area B Director	Lori Pratt (Non-Voting Board Liaison)
	Public	1
<b>REGRETS</b>	Members	Nicole Huska Eleanor Lenz
<b>ABSENT</b>	Member	Guy Tremblay Alda Grames

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**CALL TO ORDER**                      7:00 p.m.

Meeting minutes taken by an APC member.

**AGENDA**                              The agenda was amended and adopted as follows:

Move # 10 under Reports to #8

**MINUTES**Area B Minutes

The Area B APC minutes of October 22, 2019 were adopted as presented.

Minutes

The following minutes were received for information:

- Egmont/Pender Harbour (Area A) APC Minutes of October 30, 2019
- Elphinstone (Area E) APC Minutes of October 23, 2019
- Planning and Community Development Committee Minutes of October 10, 2019

## REPORTS

### Provincial Referral CRN00092 for a Private Moorage (2412002)

The following comments were made:

- The property cannot have two water access tenures i.e. concrete boat launch and a dock.
- The owner has no intention of using the remaining ramp.
- The owner has an opinion from a Registered Professional Biologist that removal of the concrete would damage the existing foreshore more than would leaving it in place.
- Future use of the concrete ramp could be prevented by the installation of a permanent concrete barrier/bollards on the upland side.
- Property is zoned W1 which does not allow a private boat ramp/launch.
- Highly likely that a Registered Professional Biologist's opinion supporting safe removal of the concrete could be obtained.
- Should the SCRD or the Ministry allow the ramp to remain in place, we suggest that the tenure include specific wording to clearly and specifically indicate that if the ramp is used in the future, the dock tenure would become invalid and the dock would need to be removed.

### **Recommendation No. 1**      *Provincial Referral CRN00092 for a Private Moorage (2412002)*

The APC recommends option 3 listed in the staff report as reads "no objection to approval of the project subject to conditions. Those conditions are items 2 a-f of the Recommendations on the first page of the Report.

AND THAT The APC strongly supports Condition 2.a: "The existing boat ramp is removed and the foreshore restored under Provincial direction."

### Crab Road Beach Access Enhancement Opportunities

- The staff report was received and discussed.

### **Recommendation No. 2**      *Crab Road Beach Access Enhancement Opportunities*

The APC wishes to reiterate the importance of addressing:

- Debris and dead trees in the area (fire hazard);
- Neighbour encroachment onto the public access.

### Regional Inter-Jurisdictional Invasive Plant Management Strategy

The following comments were made:

- We were frustrated by the separate and different requests sent to the APC in the 2 documents:
  - 1) The "Referral" sent on November 19, 2019, and
  - 2) The "Staff Report" Recommendations dated May 9, 2019.After discussion we chose to respond to the "Staff Report...request for identification of priorities".

- Prioritizing and implementing actions to manage invasive species is complex and time consuming. It cannot be done off the side of someone's desk. Nor can it be done by volunteers. At this point the **SCRD must support the implementation of a plan that addresses local accountability** e.g. goals, objectives, policies, procedures, education/training programs, outcome measurements and timelines for the Board, for SCRD employees and for SCRD citizens. The management plan must have a budget and it must have a designated manager. And both must be in place soon because the longer they are delayed, the worse the problems will become.

Note: Other jurisdictions e.g. Squamish have already developed Invasive Species Management Plans. It may be possible to adapt an existing plan to meet the SCRD's requirements. Budget dollars will still be required, as will a SCRD project manager to adapt and implement an external plan.

**Recommendation No. 3**     *Regional Inter-Jurisdictional Invasive Plant Management Strategy*

The APC feels strongly that the priority for invasive plant management strategy is local accountability. A strategic plan has been developed. It must now be operationalized and this will require:

- A designated project manager
- A budget sufficient to achieve the project goals

**DIRECTORS REPORT**

The Director's report was received.

**NEXT MEETING**     January 28, 2020

**ADJOURNMENT**     8:40 p.m.



## SUNSHINE COAST REGIONAL DISTRICT

ROBERTS CREEK (AREA D)  
ADVISORY PLANNING COMMISSION

November 18, 2019

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RECOMMENDATIONS FROM THE ROBERTS CREEK (AREA D) ADVISORY PLANNING COMMISSION MEETING HELD IN THE ROBERTS CREEK LIBRARY READING ROOM LOCATED AT 1044 ROBERTS CREEK ROAD, ROBERTS CREEK, B.C.

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<b>PRESENT:</b>	Chair	Mike Allegretti
	Members	Nichola Kozakiewicz Marion Jolicoeur Dana Gregory Alan Comfort Chris Richmond
<b>ALSO PRESENT:</b>	Recording Secretary Public	Diedra Goodwin 1
<b>REGRETS:</b>	Electoral Area D Director	Andreas Tize (Non-Voting Board Liaison)
	Vice Chair Members	Gerald Rainville Heather Conn Bill Page Cam Landry David Kelln Danise Lofstrom

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**CALL TO ORDER**                      7:00 p.m.

**AGENDA**                              The agenda was adopted as presented

**MINUTES**

Roberts Creek (Area D) APC minutes of September 16, 2019 were approved as circulated.

The following minutes were received for information:

- Egmont/Pender Harbour (Area A) APC Minutes of September 25 & October 30, 2019
- Halfmoon Bay (Area B ) APC Minutes of September 24 & October 22, 2019
- Elphinstone (Area E) APC Minutes of September 25 & October 23, 2019
- West Howe Sound (Area F) APC Minutes of September 24, 2019
- Planning and Community Development Committee Minutes of September 12 & October 10, 2019

## REPORTS

### Subdivision Application SD000063 (Palmer)

The applicant was invited to present his proposal. The Chair had obtained a more useful copy of the map which could be viewed by all parties and this was used to facilitate discussion.

Key points of discussion:

- The Chair has walked the lot and provided his observations.
- Logging has recently taken place. Trees were removed by the applicant due to his belief that it would be required to meet MoTI's objectives.
- It is not desirable to put a driveway down the Clough Road right of way. It is not desirable to have the trail changed from its more natural state.
- A right of way through the middle of the proposed upper lot would not serve long term interests of property owners.
- Panhandle driveways have been accepted solutions in small subdivisions like this.
- The SCRd beach access must not be disturbed. Enhancing the use and enjoyment of the public and neighbours is desirable.
- Exceptional prohibitive costs of meeting MoTI's perceived requirements concerned the applicant.

### **Recommendation No. 1**    *Subdivision Application SD000063 (Palmer)*

The Roberts Creek Advisory Planning Committee recommends the applicant put a panhandle on the east side of the upper proposed lot to provide access to the lower lot.

**NEXT MEETING**                      Monday, December 16, 2019

**ADJOURNMENT**                    7:55 p.m.

## SUNSHINE COAST REGIONAL DISTRICT

**AREA E – ELPHINSTONE  
ADVISORY PLANNING COMMISSION**

**November 27, 2019**

RECOMMENDATIONS FROM THE AREA E ADVISORY PLANNING COMMISSION MEETING  
HELD AT FRANK WEST HALL, 1224 CHASTER ROAD, ELPHINSTONE, BC

<b>PRESENT:</b>	Chair	Mary Degan
	Members	Mike Doyle Rick Horsley Dougald Macdonald Nara Brenchley Rod Moorcroft
<b>ALSO PRESENT:</b>	Electoral Area E Director	Donna McMahon Non-Voting Board Liaison)
	Recording Secretary	Diane Corbett
<b>REGRETS:</b>	Members	Lynda Chamberlin
		Anne Cochran
<b>ABSENT:</b>	Member	Bob Morris

**CALL TO ORDER**                      7:04 p.m.

**AGENDA**                              The agenda was adopted.

**MINUTES**

Area E Minutes

The Area E APC minutes of October 23, 2019 were approved as circulated.

Minutes

Received for information:

- Egmont/Pender Harbour (Area A) APC Minutes of October 30, 2019
- Halfmoon Bay (Area B) APC Minutes of October 22, 2019
- Planning and Community Development Committee Minutes of October 10, 2019

## REPORTS

### Subdivision Application SD000057(Kirsten Reite Architecture for Secret Beach Development Corporation)

The APC received the staff report regarding Subdivision Application SD000057 (Kirsten Reite Architecture for Secret Beach Development Corporation), to subdivide a Residential A-zoned parcel to create seven lots off Gower Point Road. Emails received by members with concerns pertaining to the application were read aloud. Discussion ensued.

Concerns were raised around: the flow of movement through the area of vehicles, pedestrians, cyclists, wildlife and water; environmental impacts of this and adjacent developments; and park, trail, and infrastructure connectivity. The adjacency of the property to the Town of Gibsons and the Gospel Rock development(s) was highlighted.

Concerns and issues included:

- Sightlines on Gower Point Road at proposed private road access point:
  - That area of Gower Point Road is considered a “high crash” zone and is already a difficult section of road for cyclists and pedestrians;
  - Need for developer consultation with Transportation Choices (TraC), Town of Gibsons and MoTI to develop best and safest options.
- Private road concerns:
  - safety regarding sightlines
  - maintenance
  - snow removal
  - garbage removal (sightline issues at Gower Point Road)
  - hydro, fire and ambulance access
  - erosion issues
  - possibility owner may be skirting some of MoTI's requirements for land dedication.
- This development should be coordinated with the Gospel Rock plan, to optimize the flow of wildlife and transportation. Need to link with pedestrian and cycling trails from Gospel Rock developments.
- Concern about public access to trails. Request the developer include a pathway through the covenanted area.
- Need for a transportation plan for this area. It is hard to work without it.
- This should be referred to the area fire departments and maybe also ambulance.
- The area was one of the few remaining wildlife corridors to the ocean in this part of Gibsons and requires protection.
- Need for environmental assessment of impact on water run-off, creek and riparian area, especially in light of logging in Gospel Rock developments and in this lower area.
- A watercourse identified by staff within the riparian area was not mapped as part of the Riparian Areas Assessment submitted with the subdivision application.
- Other than the access, which is an issue, it looks like everything meets requirements.
- Issue: the subdivision is going ahead without a transportation plan in place. Gibsons needs to develop Shaw Road; it needs to be four lanes because of the number of properties that will be developed. There is some kind of myopia vision going on. Don't see any plans for access including pedestrian access.



**Recommendation No. 1** *Subdivision Application SD000057 (Kirsten Reite Architecture for Secret Beach Development Corporation)*

The APC recommended, regarding Subdivision Application SD000057(Kirsten Reite Architecture for Secret Beach Development Corporation), support for the following actions:

- That the applicant provides a thorough riparian area assessment submitted by a hydrologist, especially in light of the drainage issues with the Gospel Rock development above that is just one of several properties that will be developed.
- Development of a transportation plan that shows this area and Gospel Rock area in its built out state to help in planning, showing how to develop the area in a cohesive manner.
- Consideration of removing the access point off Gower Point Road, connecting with infrastructure and roadways above in Gibsons, to prevent having more traffic in this high crash zone, a location with poor visibility.
- Ensure that there is a parks plan that is cohesive between Gibsons and Elphinstone OCP and the suggested development, so that parks access is contiguous and seaward. Developing this edge between Elphinstone and Gibsons needs to have equal input from both sides; need to plan how all the services are going to be delivered before the subdivision is built.
- Private road related issues and concerns should be addressed: maintenance, snow removal, garbage removal services; hydro, fire and ambulance access.

**Note to staff:**

The APC requests guidance about private roads and what that means, allows, and restricts, including what the designation means in terms of public access and services access.

**Development Variance Permit Application DVP00049 (Watson)**

The APC discussed the staff report regarding Development Variance Permit Application DVP00049 (Watson) to vary the maximum floor area of an auxiliary dwelling unit located at Mahon Road from 55 m<sup>2</sup> to 88.5 m<sup>2</sup>. The following points were noted:

- No issues with this.
- Makes no impact on the neighbourhood.
- No problems received from neighbours.
- Agreement with staff. This is something we've been asking private people to do: build and create housing. This is already something that is in the books.
- Urge SCRD to get on with proposed bylaw change regarding auxiliary dwellings, so that people will not have to keep applying for variances.

**Recommendation No. 2** *Development Variance Permit Application DVP00049 (Watson)*

The APC recommended support for Option 1: to issue the permit, for the following reasons:

- It appears the applicant has completed all the criteria;
- The APC is in favour and grateful for people creating more versatile housing options.

Regional Inter-Jurisdictional Invasive Plant Management Strategy

The APC discussed the staff report regarding the Regional Inter-Jurisdictional Invasive Plant Management Strategy. The following concerns/points/issues were raised:

- Some of the invasive species are medicinal plants. Need to reframe; there may be uses for these plants. Figure out what to do with the different plants. Know the lifecycle of the plant, how it is spread and used. Work with First Nations, herbalists, harvesters; find ways to use plants in remedial ways, in a timely manner; educate people and increase awareness about the uses. Identify where they are; teach people how to harvest them.
- Problem: disposal. Need to create disposal strategies.
- There are a number of things that are issues that aren't in the Management Strategy.
- An actual hierarchy of what the truly concerning ones are would be helpful. Figure out which plants are doing the most damage to the most areas, and fastest.
- Japanese knotweed is a traffic problem. Example: near B and K Road it is dangerous for cyclists; blackberries are growing into it.
- Highest priority: knotweed in riparian zones and along highways.
- Issue: large amounts of land clearing by forestry and large developments that disturbs the natural habitat and soil; they should be required to replant immediately with a groundcover, and have a succession plan.
- Need for education:
  - For private property owners
  - How to identify the worst invasive plant offenders and report using the app "Report A Weed". App helps to identify plants.
  - Create an awareness campaign.
  - Use resources that are out there.
  - Part of the education: some can be harvested and used. There may be ways the community can glean some of these things.
- Find funding for staff to put education packages together; work with other groups (such as One Straw). Seek funding to help keep this document updated and the community updated and current.
- Like that this is a living document. Find more creative ways to deal with this.
- The SCRD has a good neighbour guideline but invasive plants aren't mentioned.
- Create Sunshine Coast Invasive Species group that is funded to help look after working with others on the coast to get information out, and create awareness the "Report A Weed" app exists, co-working with schools to increase awareness of the app.
- How do you get to people who aren't aware of invasive plants and don't care that there is a real issue?

**DIRECTOR'S REPORT**

The Director's report was received.

**NEXT MEETING**      January 22, 2020

**ADJOURNMENT**      9:12 p.m.

**SUNSHINE COAST REGIONAL DISTRICT****AREA F – WEST HOWE SOUND  
ADVISORY PLANNING COMMISSION****November 26, 2019**


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RECOMMENDATIONS FROM THE WEST HOWE SOUND (AREA F) ADVISORY PLANNING COMMISSION MEETING HELD AT ERIC CARDINALL HALL, 930 CHAMBERLIN ROAD, WEST HOWE SOUND, BC

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<b>PRESENT:</b>	Chair Members	Fred Gazeley Susan Fitchell Gretchen Bozak John Rogers
<b>ALSO PRESENT:</b>	Director, Electoral Area F  Recording Secretary Public	Mark Hiltz (Non-Voting Board Liaison) Diane Corbett 1
<b>REGRETS:</b>	Members	Doug MacLennan Kate-Louise Stamford
<b>ABSENT:</b>	Members	Bob Small

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**CALL TO ORDER**                      7:05 p.m.

**AGENDA**                              The agenda was adopted as circulated.

**MINUTES**West Howe Sound (Area F) Minutes

The West Howe Sound (Area F) APC minutes of September 24, 2019 were approved as circulated.

Minutes

Received for information:

- Egmont/Pender Harbour (Area A) APC Minutes of September 25 & October 30, 2019
- Halfmoon Bay (Area B) APC Minutes of September 24 & October 22, 2019
- Roberts Creek (Area D) APC Minutes of September 16, 2019
- Elphinstone (Area E) APC Minutes of September 25 & October 23, 2019
- Planning and Community Development Committee Minutes of September 12 & October 10, 2019

## **BUSINESS ARISING FROM MINUTES AND UNFINISHED BUSINESS**

### Planning and Community Development Committee Minutes of September 12 & October 10, 2019

Director Hiltz provided updates regarding further actions pertaining to West Howe Sound APC recommendations:

- DVP00043 (Wright), regarding impacts of a proposed retaining wall on a future potential bike path: DVP issued subject to applicant obtaining a setback permit from the Ministry of Transportation and Infrastructure;
- ALC Application 58605 for Land Exclusion from and Inclusion into the ALR (Morgan): SCRD Board not in a position to provide recommendation; application to proceed to Agricultural Land Commission.

## **DELEGATIONS**

### Mr. Rockford regarding Frontage Waiver FRW00006 (Rockford)

Mr. Rockford described plans for a 13-lot subdivision called Elphinstone Crossing Phase Two, near Storvold Road in West Howe Sound. Mr. Rockford explained that he had consulted with other owners in the area regarding property size. The average lot width of 60 metres was similar to existing adjacent lots and was designed to provide a driveway access point, enhance usability, and enhance the ability for people to enjoy their lot and not feel impinged upon by the neighbours. The asphalt road was designed to terminate before the creek due to environmental and cost impacts. There would be underground utilities.

Mr. Rockford responded to Advisory Planning Commission member inquiries.

## **REPORTS**

### Frontage Waiver FRW00006 (Rockford)

The APC discussed the application for Frontage Waiver FRW00006 (Rockford). The following points were noted:

- Cannot see a reason not to support the application.
- It meets the zoning requirements.
- It is within the OCP vision for the area.

### **Recommendation No. 1**      *Frontage Waiver FRW00006 (Rockford)*

The APC recommended that Frontage Waiver FRW00006 (Rockford) be issued and that the application be supported for the following reasons:

- Application conforms to zoning regulations and vision of OCP;
- Issuance of the frontage waiver will enable the subdivision to receive final approval.

### Provincial Referral CRN00095 for Log Handling and Storage (Interfor)

The APC discussed the staff report regarding Provincial Referral CRN00095 for a License of Occupation for the expansion of a log handling and storage facility at the mouth of Bear / Avalon



Creek, Thornborough Channel, Howe Sound, approximately 7 km north of Langdale and 2.5 km south of Port Mellon.

The following points were noted:

- They have always used that area but it wasn't covered under a license. They are bringing themselves into compliance.
- There is no mention of any feedback from Gambier; is there any need for it? It isn't far from Gambier.
- It seemed vague.

**Recommendation No. 2**      *Provincial Referral CRN00095 - Log Handling, Storage (Interfor)*

The APC recommended agreement with the staff recommendation to support Option 3: no objection to approval of the project subject to conditions.

**Regional Inter-Jurisdictional Invasive Plant Management Strategy**

The APC discussed the staff report regarding the Regional Inter-Jurisdictional Invasive Plant Management Strategy.

There was extensive discussion about the issue of invasive plants on the Sunshine Coast. Points noted included:

- Cost in addressing eradication or management of invasive species;
- multi-jurisdictional nature of the issue;
- SCRD does not have a defined active role;
- importance of managing the spread of invasive plants, and in a timely manner with regard to the plants' lifecycle.

Potential priorities in addressing the issue focused on education, communication, public awareness, resources access, and included:

- Increase public awareness; post signs and notices in public areas, like the ferry, nurseries, parks, and green waste sites.
- Encourage the public to do their part and report invasive species through "Report-a-Weed".
- Be specific about treatment and disposal of hogweed, Japanese knotweed, broom, ivy.
- Maybe where you have an obvious infestation, assist the landowner; give a permit to use glyphosate.
- Impress on the homeowner to not allow invasive species to grow on their property.
- People would get rid of it if they didn't have to pay big bucks for it. Sechelt has been proactive with eradication and staff has gone onto private land.
- Put some effort to bring existing committees together to confer on actions for the SCRD. There are a lot of resources out there. Get into the Sea-to-Sky group; get resources.
- Have someone on SCRD staff analyze how staff can better access resources.
- Train SCRD outdoor personnel in invasive species identification, monitoring, treatment and reporting.
- Focus on broom and knotweed.

**DIRECTOR'S REPORT**

The Director's report was received.

**NEXT MEETING**      January 28, 2020

**ADJOURNMENT**      9:20 p.m.

**Subject:** Renaming Halkett Bay dock

SCRD  
RECEIVED

NOV 25 2019

CHIEF ADMINISTRATIVE  
OFFICER

**From:** Jason Cyr [mailto: ]

**Sent:** Monday, November 25, 2019 11:40 AM

**To:** Ian Hall <Ian.Hall@scrd.ca>

**Cc:** Grant Henderson <grant@gambierpoint.com>; V. Carrington < >; Mark Hiltz  
<Mark.Hiltz@scrd.ca>

**Subject:** Renaming Halkett Bay dock

Dear Ian,

On behalf of the owners and residents of the 79 lots in Fircom Plateau and Sunset Estates on Gambier Island, the Fircom/Sunset Owners Society is requesting that the SCRD owned Halkett Bay dock be renamed to avoid confusion for first responders.

In the event of fire and medical emergencies, this dock is the primary access point for emergency responders into our community. We are concerned there is high risk of confusing Halkett Bay Dock with the federal government operated dock located nearby in Halkett Bay which serves the Halkett Bay Marine Provincial Park. In fact, many property owners and service providers already refer to the SCRD's Halkett Bay Dock as Fircom Dock to avoid this very confusion. We are open to any new name provided that the name is distinct/unambiguous.

While we recognize that a proposed name change to an SCRD managed government dock comes with several considerations, such as changes to signage and other documentation, we consider this an important step forward in risk mitigation for our community.

Sincerely,

Jason Cyr

Chair, Fircom/Sunset Owners Society