

# GEOTECHNICAL FLOOD HAZARD ASSESSMENT

**Two Single-Family Residences:**  
Lot C Laburnum Road, Qualicum  
Beach, BC

**Legal Address:**  
Lot C, District Lot 17, Newcastle  
District, Plan VIP71752

**Prepared For:**  
Ballard Fine Homes Ltd.  
1-546 Island Highway, Parksville, BC  
V9P 1H2

**Attention:**  
Mr. Darren Gaudreault

**May 7, 2020**

File No.: F8095.02  
Revision No.: 01  
Prepared by: Chris Hudec, M.A.Sc., P.Eng.  
and Steve Stacey, B.A., CTech

Lewkowich Engineering Associates Ltd.  
1900 Boxwood Road  
Nanaimo, BC, V9S 5Y2  
250-756-0355 (Office)  
250-756-3831 (Fax)  
[www.lewkowich.com](http://www.lewkowich.com)  
[geotech@lewkowich.com](mailto:geotech@lewkowich.com)



**LEA** Lewkowich  
Engineering  
Associates Ltd.



ENGINEERS &  
GEOSCIENTISTS  
BC

**OQM**  
CERTIFIED

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## DISCLAIMER

1. Lewkowich Engineering Associates Ltd. (LEA) acknowledges that this report, from this point forward referred to as “the Report,” may be used by the Town of Qualicum Beach (TQB) as a precondition to the issuance of a development and/or building permit and that this Report and any conditions contained in the Report may be included in a restrictive covenant under Section 56 of the Community Charter and registered against the title of the property at the discretion of the TQB.
2. This Report has been prepared in accordance with standard geotechnical engineering practice solely for and at the expense of Ballard Fine Homes Ltd. We have not acted for or as an agent of the TQB in the preparation of this Report.
3. The conclusions and recommendations submitted in this Report are based upon information from relevant publications, a visual site-assessment of the property, anticipated subsurface soil conditions, available floodplain data, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. If unanticipated conditions become known during construction or other information pertinent to the structures becomes available, the recommendations may be altered or modified in writing by the undersigned.
4. The conclusions and recommendations issued in this Report are valid for a maximum of two (2) years from the date of issue. The 2-year term may be reduced as a result of updated bylaws, policies, or requirements by the authority having jurisdiction, or by updates to the British Columbia Building Code. Updates to professional practice guidelines may also impact the 2-year term. If no application of the findings in this Report have been made to the subject development, the conclusions issued in this Report become void and re-assessment of the property will be required.
5. This Report has been prepared by Mr. Steve Stacey, B.A., CTech, and reviewed by Mr. Chris Hudec, M.A.Sc., P.Eng. Messrs. Stacey and Hudec are both adequately experienced in geotechnical engineering and hazard assessments and are also members in good standing with the Applied Science Technologists & Technicians of British Columbia (ASTTBC) and Engineers and Geoscientists of British Columbia (EGBC).

## EXECUTIVE SUMMARY

1. The following is a brief synopsis of the property, assessment methods, and findings presented in the Report. The reader must read the Report in its entirety; the reader shall not rely solely on the information provided in this summary.
2. The property, Lot C Laburnum Road, Qualicum Beach, BC, from this point forward referred to as “the Property,” is located on the east coast of Vancouver Island near the western edge of the TQB. The proposed development for the Property at the time of this Report includes clearing and grubbing of the building sites and construction of two new, single-family dwellings.
3. A site-specific hazard assessment was conducted to identify potential geotechnical hazards for the subject Property. The primary geotechnical hazard identified relates to the Property’s proximity to existing drainage courses and a wetland.
4. It was determined that an FCL of 5.3m geodetic datum be used for any future development relating to habitable residential construction.
5. Implications for future development as they relate to erosion, resultant shift of the natural boundary, and potential sterilization of the Property are also discussed. The design and implementation of mitigation measures are beyond the scope of this Report.

### List of Abbreviations Used in the Report

Abbreviation	Title
CM	Combined Method
DFO	Department of Fisheries and Oceans
TQB	Town of Qualicum Beach
EGBC	Engineers and Geoscientists of British Columbia
FB	Free Board
FCL	Flood Construction Level
FHA	Flood Hazard Assessment
FNB	Future Natural Boundary
GD	Geodetic Datum
KWL	Kerr Wood Leidal Associates Ltd.
LEA	Lewkowich Engineering Associates Ltd.
MFLNRO	Ministry of Forests, Lands, and Natural Resources
PNB	Present Natural Boundary
RA	Regional Adjustment for Isostatic Rebound
RDN	Regional District of Nanaimo
SLR	Sea Level Rise
SS	Storm Surge
JEA	JE Anderson & Associates
WE	Wave Effect



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## 1.0 INTRODUCTION

### 1.1 Background

- a. The Property is located on the east coast of Vancouver Island, within the limits of the TQB. The Property is located near the western edge of the TQB. See Figure 1.1 below.

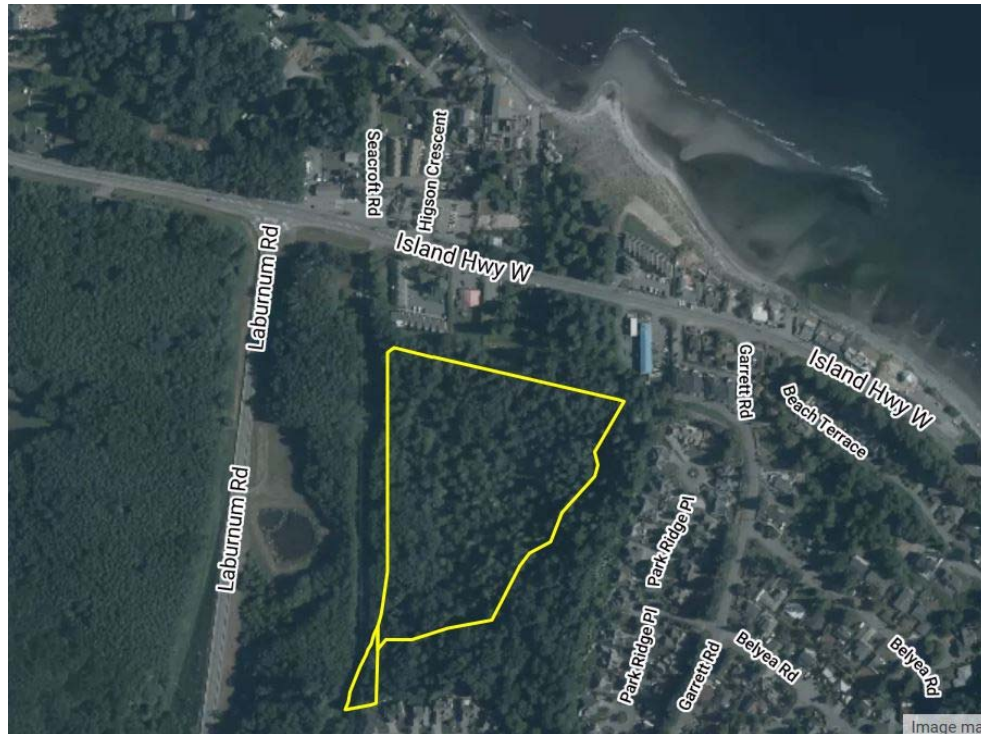


Figure 1.1 – Large Scale Location Plan (Satellite Imaging from TQB Mapping)

- b. The proposed development for the Property at the time of this Report includes clearing and grubbing, and the construction of two new, single-family dwellings.
- c. We (LEA) understand that future development of the subject Property requires a geotechnical report stating what (if any) natural hazards exist that may impact the proposed development and make comment and recommendations for those hazards. The primary geotechnical hazard of concern for the Property relates to the Property's proximity to existing drainage courses and a wetland.
- d. Following EGBC's Professional Practice Guidelines for Legislated Flood Assessments<sup>1</sup>, this FHA would be categorized as a Class 0 assessment, applicable for developments related to:
- Renovations
  - Expansions
  - New single-family residence
  - New duplex residence
- e. In preparation of this Report we have reviewed the most current and relevant technical documents

provided by EGBC, MFLNRO, Toth and Associates Environmental Services, along with previous reporting done by LEA, and the attached site-specific survey information provided by JEA.

## 1.2 Covenant Review

- a. As part of our assessment we have reviewed the documents registered on the legal title of the Property, specifically, any restrictive covenants registered against the Property that may relate to the conclusions and recommendations provided in this Report.
- b. Current to the date of this Report, the covenants are outdated and relate to previous subdivision of the property east of the wetland area, and setbacks from slopes in that area. Updated environmental requirements exclude most of the remaining area from development.

## 2.0 SITE CONDITIONS

### 2.1 Physical Setting

- a. The Property is located in the western region of the TQB. The site is situated on the east side of Laburnum Road, approximately 50m south of the Island Highway. The site is accessed via the Island Highway. The Property location's building area and alternate building area is shown below in Figure 2.1, as well as in the attached Site Plans prepared by JEA.

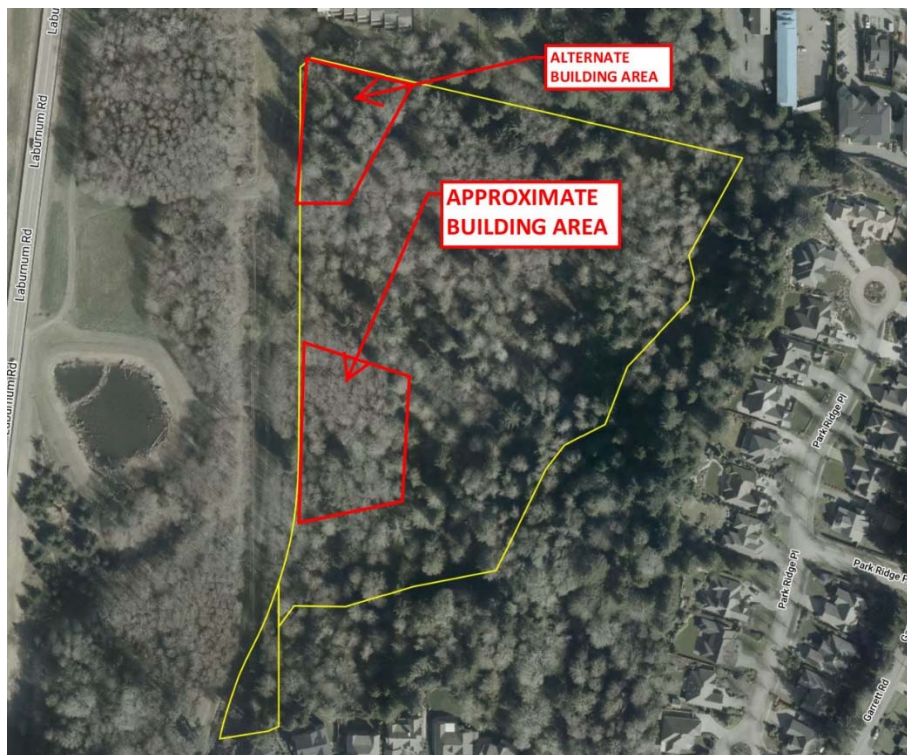


Figure 2.1 – Small Scale Location Plan (Satellite Imaging from TQB Mapping)

### 2.2 Terrain and Features

- a. LEA visited the Property on April 30, 2020 and conducted a visual hazard assessment. At the time of our assessment, the building area on the Property was cleared of trees, and a driveway was under construction to access the building area.
- b. The topography of the Property was predominantly level in the proposed building area, though grades have been manipulated to clear and level the building areas, and to build the driveway access. Surface grades, based on JEA's survey, indicated mostly level ground between 3.5m and 4.5m geodetic elevation. The eastern/southern side of the Property runs approximately along the toe of a slope that rises above the 12m geodetic elevation.

## **2.3 Soil Conditions**

- a. A subsurface investigation was not included as part of this assessment, but was included in the report covenanted on the Property. Generally, subsurface soil conditions consist of a layer of topsoil, underlain by compact, naturally deposited sand, a layer of silt, and sand grading to dense, rapidly draining sand and gravel approximately 3m below the ground surface.
- b. Published surficial geology mapping identifies the area as part of the Hawarth formation, a fluvial soil formation consisting of level, gravelly soils.<sup>2</sup>

## **2.4 Surface and Groundwater Conditions**

- a. There was minor surface water observed during our field review, due to recent rainy weather. The drainage courses contained minor amounts of water. There was no evidence of abnormal groundwater conditions.
- b. Groundwater flows may fluctuate seasonally with cycles of precipitation. Groundwater conditions observed at other times may differ from those observed during our assessment. We would expect that groundwater movement would be rapid, given the coarse nature of the site soil conditions.

## **3.0 RIVERINE SYSTEMS**

### **3.1 Little Qualicum River**

- a. We reviewed the Property location relative to the nearby riverine systems that may potentially flood the subject site. We identified the Little Qualicum River, which is located approximately 500m west of the Property. The Little Qualicum River has floodplain mapping, and the Property is on the map.
- b. The Property, and particular the proposed building sites are located between the 5m and 6m flood elevations, and is shown below in Figure 3.1.



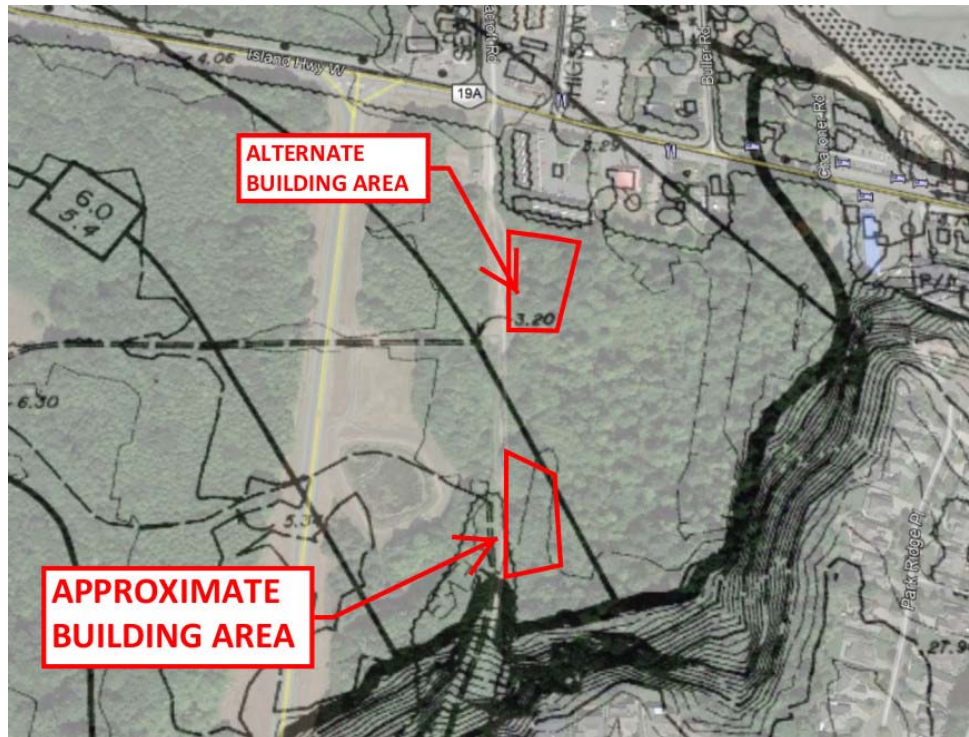


Figure 3.1 – Floodplain Limits of Little Qualicum River Relative to Property Location

## 4.0 COASTAL FLOOD COMPONENTS

- a. Following recommendations from the MFLNRO report prepared by KWL, the Property is more than 100m from ocean flooding, and should not be impacted by oceanic flooding.

## 5.0 DISCUSSION AND RECOMMENDATIONS

### 5.1 Recommended FCL

- a. We recommend that an FCL of 5.3m GD be used for any future development relating to habitable residential construction. It is worth noting that this FCL is similar to ocean flood construction levels in the area. Therefore, the FCL is the same for both building areas due to potential ocean influence.

### 5.2 Floodwater and Inundation

- a. In the event of a design flood event (1 in 200-year), it is possible that floodwater from the Little Qualicum River would inundate the Property. The general risk of flooding increases as storm intensity and duration increases.
- b. Provided any construction within the Property satisfies the minimum recommended FCL, we do not anticipate any damage to the structures as a result of floodwater. However, any areas constructed below the recommended FCL could be subject to flooding during less than design flood events.



### **5.3 Scour and Erosion Protection**

- a. As the Property and building locations are near the edges of the Little Qualicum River floodplain area, and that the ground surface is relatively flat, it is expected that floodwaters should be relatively quiescent. Scour and the potential for erosions is expected to be low. Additional information related to floodproofing and constructability of the proposed development is beyond the scope of this Report and would need to be addressed in a construction specific geotechnical Report, if deemed necessary by the Authority Having Jurisdiction.

### **5.4 Slope Discussions**

- a. As discussed earlier in this report, the southern and eastern limits of the Property are bound by an existing slope. Based on our field review and the attached JEA Survey, the slope height varies from approximately 5m to 7m in heights for the limits of survey shown on the plan.
- b. The degree of slope varies, but is typically with the area of 11 degrees, or 20% from horizontal. Based on these measures and our field review, safe building setbacks are not warranted for the proposed development.

### **5.5 Site Grading**

- a. Yard areas between the proposed single-family dwellings should be sloped as to direct water away from the proposed houses and toward the perimeter of the cleared area.

### **5.6 Existing Covenants**

- a. The preparation of this Report included a review of any covenants registered against the Property title; specifically, we have reviewed Covenant documents EP108971 and EP108973.
- b. Covenant EP108971 includes a geotechnical report prepared by a predecessor company to LEA; Covenant EP108978 speaks to generic requirements for minimum FCL requirements and environmental setbacks. While the registered documents were prepared in accordance with engineering practices and local governmental requirements current to the period, the comments, conclusions, and recommendations in covenants are outdated and do not satisfy current jurisdictional requirement or engineering practices.
- c. We recommend the TQB consider removing the referenced covenant documents from the Property title, to be replaced with this current Report.

### **5.7 Local Government Conformance Statement**

- a. LEA confirms that the recommendations made in this Report conform to the guidelines and objectives expressed under RDN Bylaw No. 1469, 2018 and with the TQB Bylaw No. 580, 1999, Consolidated October 2018, Schedule "6D", Tables 1 and 2, Setbacks from Watercourses<sup>5, 6</sup>.

- b. There are defined drainage courses located on the Property. Setbacks from these watercourses and wetlands have been established by others. All construction/development shall be carried out in conformance within the requirements of any jurisdictional limitations. Any jurisdictional limitations applicable to the Property and proposed development shall supersede the geotechnical recommendations made in this Report.

## 6.0 CONCLUSION

- a. Based on our review of the relevant publications and site-specific field assessment, it is the opinion of LEA that flooding from the Little Qualicum River is the only significant aspect, or potential geotechnical hazard within the subject Property.
- b. Provided the recommendations in this Report are followed, we (LEA) confirm that from a geotechnical point of view the site is considered safe and suitable for the permanent sitting of a permanent single-family residence, with the probability of a geotechnical failure resulting in property damage of less than:
- 2% in 50 year for seismic events,
  - 1 in 200-year return for flooding of riverine areas, and
  - 10% in 50 years for all other geotechnical hazards.
- and that the proposed development will not result in a detrimental impact on the environment, subject Property or adjoining properties.
- c. Please refer to the attached EGBC - Appendix I: Flood Assurance Statement for additional information.

## 7.0 CLOSURE

- a. Lewkowich Engineering Associates Ltd. appreciates the opportunity to be of service on this project. If you have any comments, or additional requirements at this time, please contact the undersigned at your convenience.

Respectfully Submitted,  
Lewkowich Engineering Associates Ltd.



Steve Stacey, B.A., CTech  
Senior Technician



2020-05-07  
Chris Hudec, M.A.Sc., P.Eng.  
Senior Project Engineer

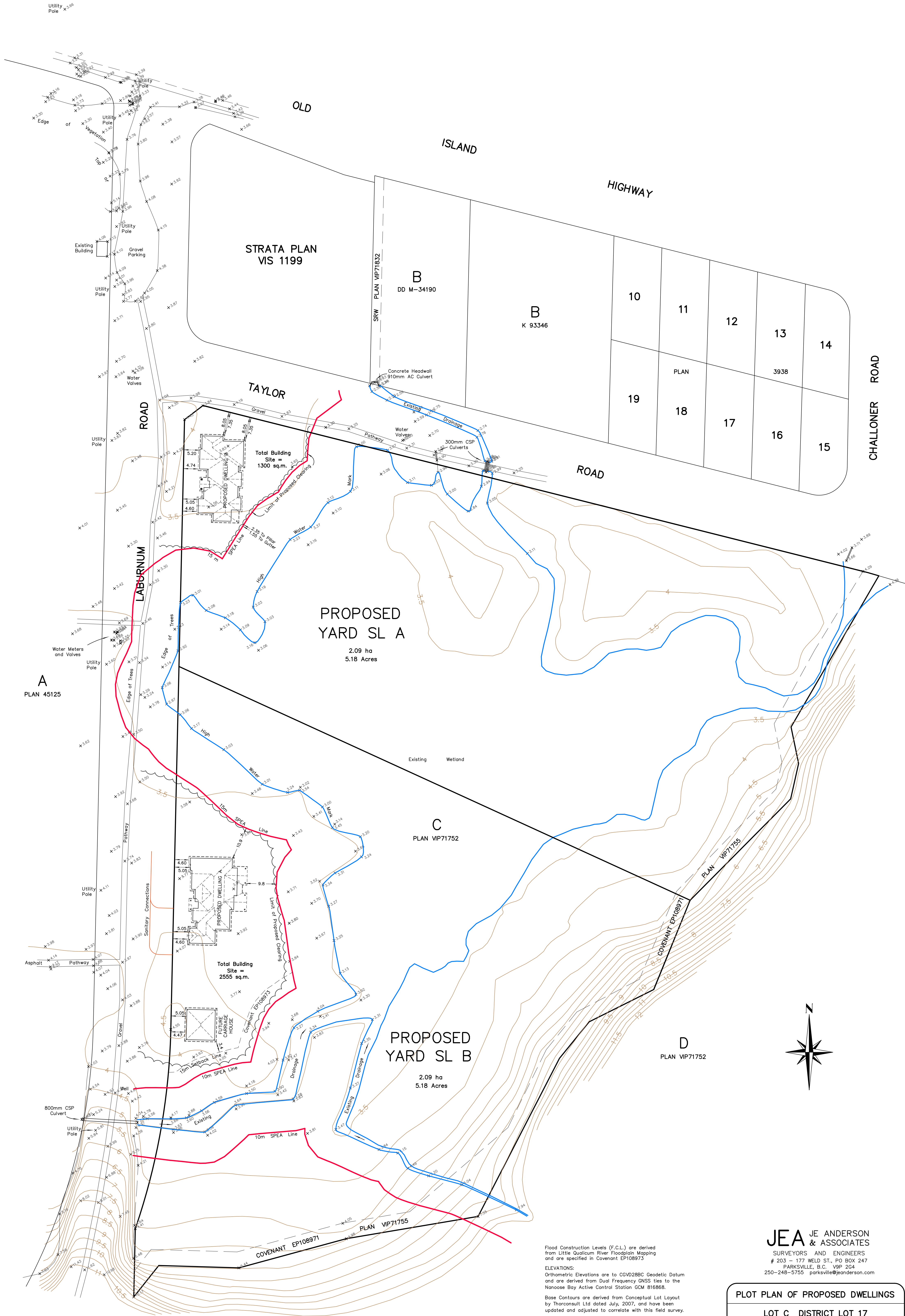
## 8.0 ATTACHMENTS

1. JE Anderson & Associates Surveyors and Engineers, Parksville, BC, Plot Plan of Proposed Dwellings, Lot C, District Lot 17, Newcastle District, Plan VIP71752, File: 61281-10, dated 2020-04-06.
2. JE Anderson & Associates Surveyors and Engineers, Parksville, BC, Plot Plan of Proposed Dwellings, Lot C, District Lot 17, Newcastle District, Plan VIP71752, File: 61281-7, dated 2019-05-23.
3. Engineers and Geoscientists British Columbia (EGBC) Appendix I: Flood Assurance Statement, Signed May 1, 2020.

## 9.0 REFERENCES

1. Engineers and Geoscientists of British Columbia report titled “Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC,” version 2.1, dated August 28, 2018.
2. Soils of South Vancouver Island, British Columbia, Soil Survey Report No. 44 – Sheet 3
3. Ministry of Forests, Lands and Natural Resource Operations report titled – Coastal Floodplain Mapping – Guidelines and Specifications, 2011. Prepared by Kerr Wood Leidal Associates Ltd.
4. Ministry of Water, Land and Air Protection Province of British Columbia report titled – Flood Hazard Area Land Use Management Guidelines. Amended by: Ministry of Forests, Land, Natural Resource Operations and Rural Development, 2018.
5. Regional District of Nanaimo Bylaw No. 1469, titled – A Bylaw to Establish Floodplains, Construction Levels in Floodplains, and Setbacks for Landfill and Structures in Floodplains – 2018.
6. Town of Qualicum Beach, Land Use and Subdivision Bylaw No. 580, 1999, Consolidated October 2019.
7. Toth and Associates Environmental Services report titled “Assessment of Proposed House Sites on Lot C, Plan VIP71752, District Lot 17 & 78, Newcastle Land District (PID# 024-935-000), Qualicum Beach,” Dated May 23, 2020.





A  
PLAN 45125

C  
PLAN VIP71752

D  
PLAN VIP71752

LEGAL NOTATIONS:  
Permit under L.G.A. - see ES6265  
E & N Railway Exceptions and Reservations - M76300  
Covenant - EP108971 - Town of Qualicum Beach,  
Part in Plan VIP71755  
Covenant - EP108973 - Prov of BC and Town of  
Qualicum Beach

All Dimensions are in Metres and decimals thereof  
0 5 10 20 30 40 50  
The Intended Scale of this Plan is 1:500  
when plotted on a 610 mm x 914 mm (24"x36") Sheet

Flood Construction Levels (F.C.L.) are derived  
from Little Qualicum River Floodplain Mapping  
and are specified in Covenant EP108973

ELEVATIONS:  
Orthometric Elevations are to CGVD28BC Geodetic Datum  
and are derived from Dual Frequency GNSS ties to the  
Nanose Bay Active Control Station GCM 816868.

Base Contours are derived from Conceptual Lot Layout  
by Thorconsult Ltd dated July, 2007, and have been  
updated and adjusted to correlate with this field survey.

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No person may copy, reproduce, transmit or alter this document  
in whole or in part without the consent of the signatory.

This Plan has been Prepared in Accordance with the Professional Reference  
Manual and is Certified Correct this 6 th Day of April, 2020.

*[Signature]*  
This document is not valid unless digitally signed.

**JEA** J.E. ANDERSON  
& ASSOCIATES  
SURVEYORS AND ENGINEERS  
# 203 - 177 WELD ST., PO BOX 247  
PARKSVILLE, B.C. V9P 2G4  
250-248-5755 parksville@jeanderson.com

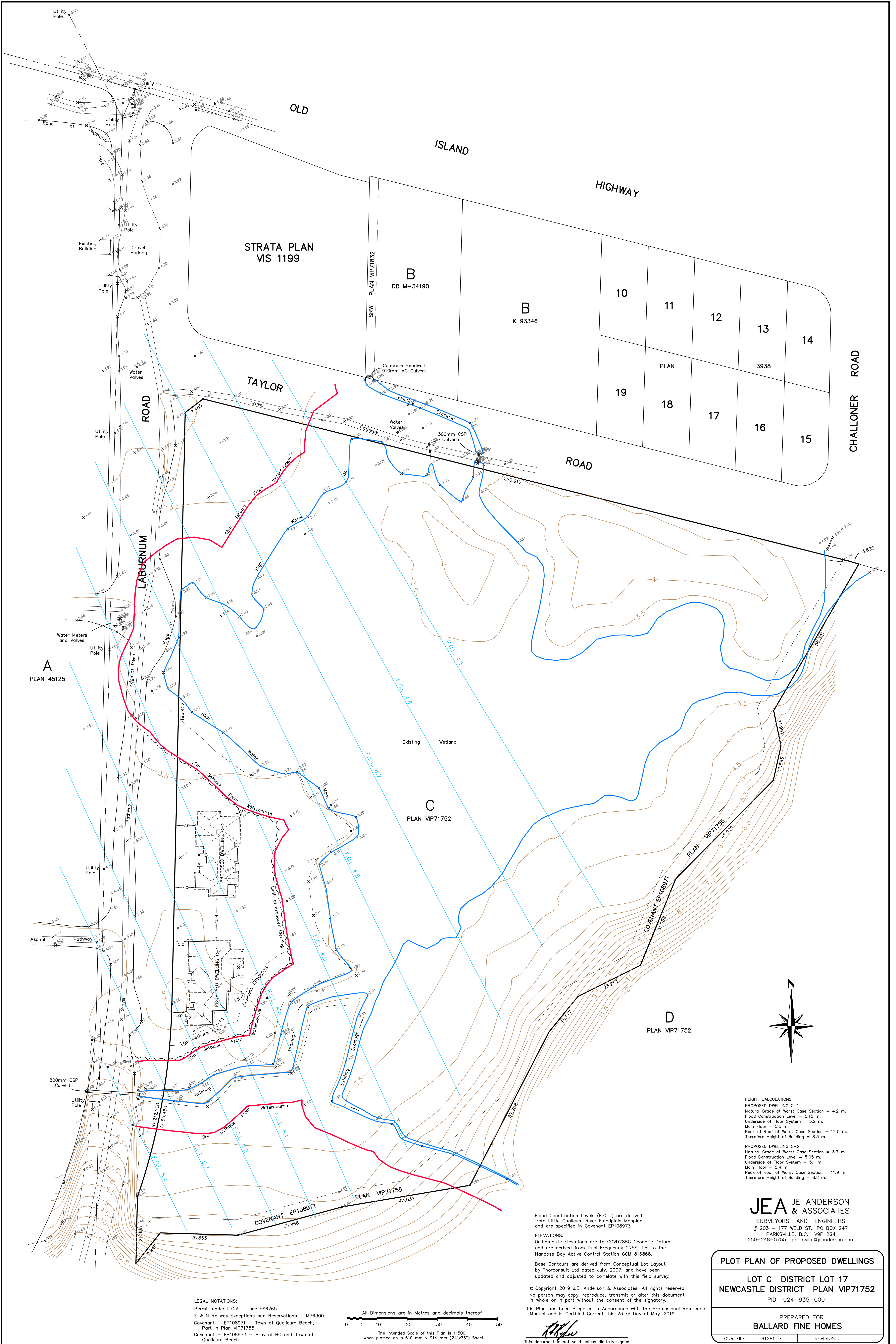
PLOT PLAN OF PROPOSED DWELLINGS

LOT C DISTRICT LOT 17  
NEWCASTLE DISTRICT PLAN VIP71752  
PID 024-935-000

PREPARED FOR  
BALLARD FINE HOMES

OUR FILE : 61281-10 REVISION :





HEIGHT CALCULATIONS  
PROPOSED DWELLING C-1  
Natural Grade at Worst Case Section = 4.2 m.  
Flood Construction Level = 5.15 m.  
Underside of Floor System = 5.2 m.  
Main Floor = 5.5 m.  
Peak of Roof at Worst Case Section = 12.5 m.  
Therefore Height of Building = 8.3 m.  
PROPOSED DWELLING C-2  
Natural Grade at Worst Case Section = 3.7 m.  
Flood Construction Level = 5.05 m.  
Underside of Floor System = 5.1 m.  
Main Floor = 5.4 m.  
Peak of Roof at Worst Case Section = 11.9 m.  
Therefore Height of Building = 8.2 m.

**JE ANDERSON & ASSOCIATES**  
SURVEYORS AND ENGINEERS  
# 203 - 177 WELD ST., PO BOX 247  
PARKSVILLE, B.C. V9P 2G4  
250-248-5755 parksville@jeanderson.com

Flood Construction Levels (F.C.L.) are derived from Little Qualicum River Floodplain Mapping and are specified in Covenant EP108973

ELEVATIONS:  
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Base Contours are derived from Conceptual Lot Layout by Thorconsult Ltd dated July, 2007, and have been updated and adjusted to correlate with this field survey.

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This Plan has been Prepared in Accordance with the Professional Reference Manual and is Certified Correct this 23 rd Day of May, 2019.

*[Signature]*

This document is not valid unless digitally signed.

LEGAL NOTATIONS:  
Permit under L.G.A. - see ES6265  
E & N Railway Exceptions and Reservations - M76300  
Covenant - EP108971 - Town of Qualicum Beach,  
Part in Plan VIP71755  
Covenant - EP108973 - Prov of BC and Town of Qualicum Beach.

All Dimensions are in Metres and decimals thereof  
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The Intended Scale of this Plan is 1:500  
when plotted on a 610 mm x 914 mm (24"x36") Sheet

PLOT PLAN OF PROPOSED DWELLINGS

LOT C DISTRICT LOT 17  
NEWCASTLE DISTRICT PLAN VIP71752  
PID 024-935-000

PREPARED FOR  
**BALLARD FINE HOMES**

OUR FILE : 61281-7 REVISION :



## FLOOD ASSURANCE STATEMENT

Note: This statement is to be read and completed in conjunction with the current Engineers and Geoscientists BC *Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC* ("the guidelines") and is to be provided for flood assessments for the purposes of the *Land Title Act*, Community Charter, or the *Local Government Act*. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority

Date: May 1, 2020 LEA File# F8095

Town of Qualicum Beach

#201-660 Primrose Street, Qualicum Beach, BC V9K 1S7

Jurisdiction and address

With reference to (CHECK ONE):

- ☐ *Land Title Act* (Section 86) – Subdivision Approval
- ☒ *Local Government Act* (Division 7) – Development Permit
- ☒ Community Charter (Section 56) – Building Permit
- ☐ *Local Government Act* (Section 524) – Flood Plain Bylaw Variance
- ☐ *Local Government Act* (Section 524) – Flood Plain Bylaw Exemption

For the following property ("the Property"):

Lot C, District Lot 17, Newcastle District, Plan VIP71752; Lot C Laburnum Road

Legal description and civic address of the Property

The undersigned hereby gives assurance that he/she is a Qualified Professional and is a Professional Engineer or Professional Geoscientist who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, sealed, and dated, and thereby certified, the attached Flood Assessment Report on the Property in accordance with the guidelines. That report and this statement must be read in conjunction with each other. In preparing that Flood Assessment Report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

\_\_\_ 1. Consulted with representatives of the following government organizations:

- ☒ 2. Collected and reviewed appropriate background information
- ☒ 3. Reviewed the Proposed Development on the Property
- ☒ 4. Investigated the presence of Covenants on the Property, and reported any relevant information
- ☒ 5. Conducted field work on and, if required, beyond the Property
- ☒ 6. Reported on the results of the field work on and, if required, beyond the Property
- ☒ 7. Considered any changed conditions on and, if required, beyond the Property

8. For a Flood Hazard analysis I have:

- ☒ 8.1 Reviewed and characterized, if appropriate, Flood Hazard that may affect the Property
- ☒ 8.2 Estimated the Flood Hazard on the Property
- ☒ 8.3 Considered (if appropriate) the effects of climate change and land use change
- \_\_\_ 8.4 Relied on a previous Flood Hazard Assessment (FHA) by others
- \_\_\_ 8.5 Identified any potential hazards that are not addressed by the Flood Assessment Report

9. For a Flood Risk analysis I have:

- \_\_\_ 9.1 Estimated the Flood Risk on the Property
- \_\_\_ 9.2 Identified existing and anticipated future Elements at Risk on and, if required, beyond the Property
- \_\_\_ 9.3 Estimated the Consequences to those Elements at Risk



## FLOOD ASSURANCE STATEMENT

10. In order to mitigate the estimated Flood Hazard for the Property, the following approach is taken:
- ☐ 10.1 A standard-based approach
  - ☐ 10.2 A Risk-based approach
  - ☒ 10.3 The approach outlined in the guidelines, Appendix F: Flood Assessment Considerations for Development Approvals
  - ☐ 10.4 No mitigation is required because the completed flood assessment determined that the site is not subject to a Flood Hazard
11. Where the Approving Authority has adopted a specific level of Flood Hazard or Flood Risk tolerance, I have:
- ☐ 11.1 Made a finding on the level of Flood Hazard or Flood Risk on the Property
  - ☐ 11.2 Compared the level of Flood Hazard or Flood Risk tolerance adopted by the Approving Authority with my findings
  - ☐ 11.3 Made recommendations to reduce the Flood Hazard or Flood Risk on the Property
12. Where the Approving Authority has not adopted a level of Flood Hazard or Flood Risk tolerance, I have:
- ☒ 12.1 Described the method of Flood Hazard analysis or Flood Risk analysis used
  - ☒ 12.2 Referred to an appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk
  - ☒ 12.3 Made a finding on the level of Flood Hazard or Flood Risk tolerance on the Property
  - ☒ 12.4 Compared the guidelines with the findings of my flood assessment
  - ☒ 12.5 Made recommendations to reduce the Flood Hazard or Flood Risk
- ☒ 13. Considered the potential for transfer of Flood Risk and the potential impacts to adjacent properties
- ☒ 14. Reported on the requirements for implementation of the mitigation recommendations, including the need for subsequent professional certifications and future inspections.

Based on my comparison between:

[CHECK ONE]

- ☐ The findings from the flood assessment and the adopted level of Flood Hazard or Flood Risk tolerance (item 11.2 above)
- ☒ The findings from the flood assessment and the appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk tolerance (item 12.4 above)

I hereby give my assurance that, based on the conditions contained in the attached Flood Assessment Report:

- ☐ For subdivision approval, as required by the *Land Title Act* (Section 86), "that the land may be used safely for the use intended":

[CHECK ONE]

- ☐ With one or more recommended registered Covenants.
- ☐ Without any registered Covenant.

- ☒ For a development permit, as required by the *Local Government Act* (Sections 919.1 and 920), my Flood Assessment Report will "assist the local government in determining what conditions or requirements under [Section 920] subsection (7.1) it will impose in the permit".

- ☒ For a building permit, as required by the *Community Charter* (Section 56), "the land may be used safely for the use intended":

[CHECK ONE]

- ☒ With one or more recommended registered Covenants.
  - ☐ Without any registered Covenant.
- ☐ For flood plain bylaw variance, as required by the *Flood Hazard Area Land Use Management Guidelines* and the *Amendment Section 3.5 and 3.6* associated with the *Local Government Act* (Section 524), "the development may occur safely".
- ☐ For flood plain bylaw exemption, as required by the *Local Government Act* (Section 524), "the land may be used safely for the use intended".

PROFESSIONAL PRACTICE GUIDELINES

LEGISLATED FLOOD ASSESSMENTS IN A CHANGING CLIMATE IN BC

## FLOOD ASSURANCE STATEMENT

I certify that I am a Qualified Professional as defined below.

May 1, 2020

Date

Chris Hudec

Prepared by

Chris Hudec

Name (print)



Signature

1900 Boxwood Road

Address

Nanaimo, BC, V9S 5Y2

(250) 756 0355

Telephone

chudec@lewkowich.com

Email

Reviewed by

Name (print)

Signature



(Affix PROFESSIONAL SEAL here)

If the Qualified Professional is a member of a firm, complete the following:

I am a member of the firm Lewkowich Engineering Associates Ltd.  
and I sign this letter on behalf of the firm. (Name of firm)