REPORT TO COUNCIL

Council Meeting: February 27, 2024

500 Matterson Drive, Ucluelet, BC V0R 3A0

FROM: JOHN TOWGOOD, MUNICIPAL PLANNER **FILE NO:** 3360-20-RZ22-04

SUBJECT: REZONING AND OCP AMENDMENT FOR 1061 HELEN ROAD

REPORT NO: 24- 16

ATTACHMENT(S):
APPENDIX A - APPLICATION
APPENDIX B - OCP BYLAW NO.1337
APPENDIX C - ZONING BYLAW NO.1322
APPENDIX D - DEVELOPMENT PERMIT 22-13
APPENDIX E - GEOTECHNICAL ASSESSMENT
APPENDIX F - ENVIRONMENTAL ASSESSMENT
APPENDIX G - INTERIM FLOOD RISK POLICY-DRAFT UPDATE

RECOMMENDATION(S):

It is recommended that Council consider the following resolutions regarding the proposed development at 1061 Helen Road:

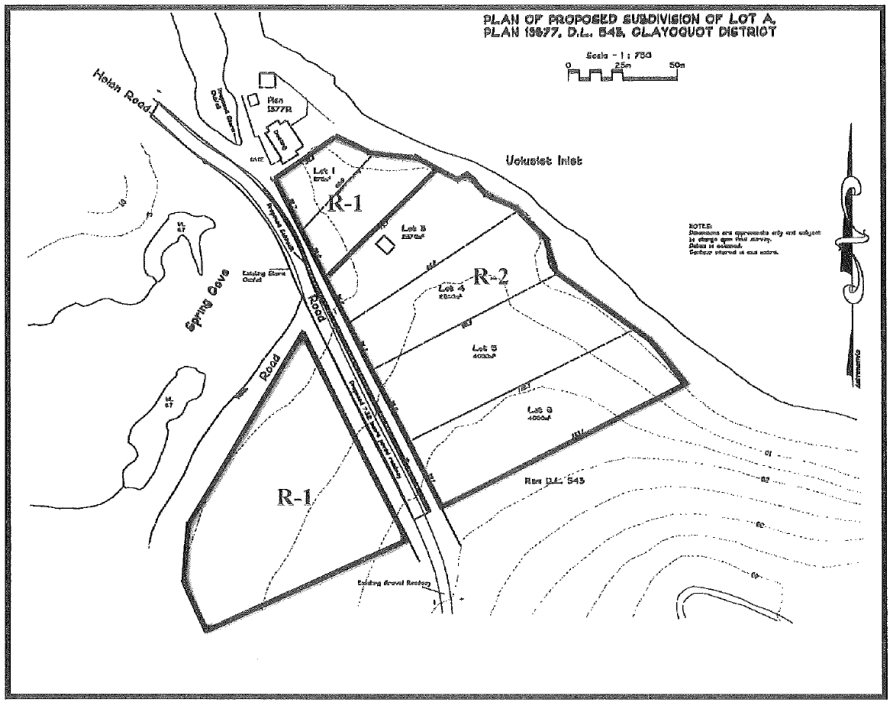
1. THAT *District of Ucluelet Official Community Plan Amendment Bylaw No. 1337, 2024*, be introduced and be given first and second reading.
2. THAT Council considers the *District of Ucluelet Official Community Plan Amendment Bylaw No. 1337, 2024*, in conjunction with the *District of Ucluelet 2023 – 2027 Financial Plan Bylaw No. 1329, 2023* and the Alberni-Clayoquot Regional District Waste Management Plan.
3. THAT *District of Ucluelet Official Community Plan Amendment Bylaw No. 1337, 2024*, be referred to the Yuułuʔiłʔatḥ Government and that, given the narrow focus of Bylaw No. 1337, 2024, Council is satisfied that no further consultation is required with other persons, organizations, and authorities identified in sections 475(2)(a) and (b) of the *Local Government Act*.
4. THAT *District of Ucluelet Official Community Plan Amendment Bylaw No. 1337, 2024*, be referred to a public hearing.
5. THAT *District of Ucluelet Zoning Amendment Bylaw No. 1322, 2024* be introduced, given first and second reading, and advanced to a public hearing.
6. THAT *District of Ucluelet Tsunami Risk Tolerance Interim Policy 8-5280-2*, which supersedes *District of Ucluelet Tsunami Risk Tolerance Interim Policy 8-5280-1*, be adopted.

BACKGROUND:

The development proposed is for six multiple family residential dwelling units at 1061 Helen Road; Lot B, District Lot 543 Native Island, Clayoquot District, Plan VIP78185 (the "**subject property**").

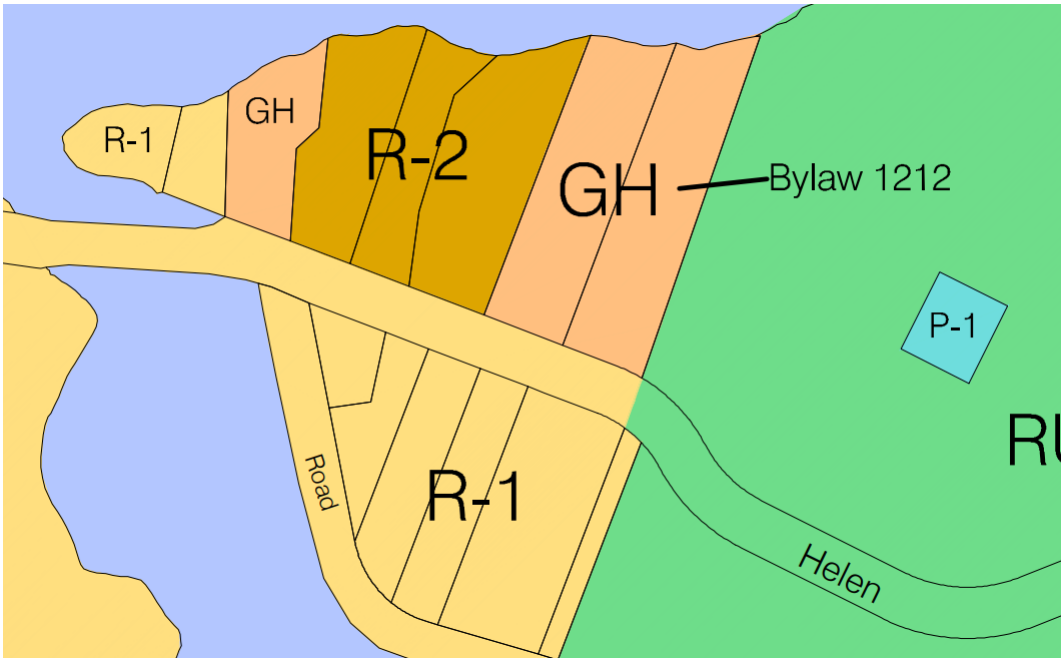
(Figure 1 – Subject Property)

The subject property is located on Hyphocus Island, it is currently vacant and well vegetated. In 2002 the northern end of Hyphocus Island was rezoned from a mix of Rural and Single-Family properties to a mix of Single-Family Residential (**R-1**) and Medium Density (**R-2**) properties (**Figure 2**) with a specific prohibition of Multiple Family Residential (**MFR**) uses on all the R-2 properties.



(Figure 2 – 2002 Zoning)

Since that time, three properties have been rezoned from R-2 to the Guest House (**GH**) zone.



(Figure 3 – Current zoning of the area)

DISCUSSION:

OFFICIAL COMMUNITY PLAN

The subject property is currently designated as Single Family residential. The Official Community Plan (OCP) Describes the Single-Family Residential land use as follows:

> ***Single-Family Residential***
>
> *This designation includes detached single-family homes and duplexes. Single-family properties may include secondary suites, accessory dwelling units, home occupations and guest accommodation. Some small-scale multi-family land uses exist within single-family neighbourhoods. Further small-scale development of multifamily uses - which demonstrate how they fit within the neighbourhood context specific to their location - may also be approved within these areas without amendment of this OCP.*

The policy statement above clearly contemplates that small-scale multi-family zoning amendment proposals which demonstrate that they fit within the neighbourhood context may be approved without an OCP amendment. This is a new statement that was adopted in 2022 and it was understood at that time that while a OCP amendment may not be required for small scale residential proposals, a public hearing would still be held for the required zoning amendment. A scan of Ucluelet's Future Land Use Plan show that all multi-family uses (3 units or more) have a separate colour designation in the plan. If this application were to be approved without an OCP amendment it would be the only property shown designated as single family but then zoned for multi-family residential. In consideration that approving zoning amendments for small-scale

multifamily uses without amendment of this OCP is a relatively new idea and that recent Provincial legislation around the prohibition of public hearings for residential development; it may be more transparent and consistent with past practices to require an OCP bylaw amendment to change the land use designation to MFR for this proposal. To those ends, an OCP amendment bylaw was drafted and forms part of the recommendation.

Alternatively, Council could process this application without an OCP amendment if it determines that the proposal is consistent with the OCP. In that case, it should be noted that Council would be prohibited from holding a public hearing on the zoning amendment bylaw.

The following OCP policies and statements are specifically relevant to this application:

> *Guiding Principles*
> *7. Broaden the spectrum of housing options to improve the availability of appropriate, affordable housing for all*
>
> *Residential – Multi Family*
> *Smaller units in higher density, multifamily areas are an important component of the District's affordable housing strategy. Residential uses within and in close proximity to the Village Square help create a more vibrant and compact community where residents can walk to services and amenities.*
>
> *Multi Family Residential Policies:*
> *Policy 3.147 Encourage the development of multi-family residential units within an approximate five-minute walk of the Village Square;*
>
> (Note: a 5 minute walk is a distance of 400m; the subject property is 1200m from the Village Square but should still be considered within a walkable distance.)
>
> *Short-term Housing Action Plan:*
> *Policy 3.131 G. explore zoning opportunities for infill of compact, more affordable units in existing and new neighbourhoods (e.g., small lots, rental cottages, etc.)*
>
> *Policy 3.143 Rezoning applications involving more than five dwelling units shall provide a statement describing the affordable housing components achieved by the proposal.*

Regarding *Policy 3.143*, a statement describing the affordable housing components is not formally being required because:

1. There is a theoretical (and subjective) equivalent number of potential units allowed in the current zone.
2. The proposal removes the tourist accommodation elements of the zoning.
3. The number of units is at the threshold of this policy.

ZONING

The application in front of Council is for a change of use on the subject property from a low-density single-family dwelling or a duplex form to a medium density MFR form. It should be noted that Ucluelet's current low density land use form of single-family dwellings has extensive secondary use potential that can result in these properties having a substantial level of density. The following

looks at the relevant principle and secondary uses allowed under the existing zone in comparison to what would be allowable under the bylaw changes proposed in Bylaw No. 1322:

From:

- *Single Family Dwelling (1 Dwelling unit) with the following secondary uses:*
    - *Secondary Suite (1 Rental Dwelling Unit)*
    - *Accessory Residential Dwelling Unit (1 Rental Dwelling Unit)*
    - *Bed and Breakfast (3 Tourist accommodation "Guest Room" Units)*
        - *Total of 6 Units of a mix of residential and tourist accommodation use*
        - *Total Floor Area Ratio allowed = 15,112sqft*

or

- *Duplex Dwelling*
    - *½ Duplex (1 Dwelling Units)*
    - *½ Duplex (1 Dwelling Units)*
        - *Total of 2 Units of a residential use*
        - *Total Floor Area Ratio allowed = 15,112sqft*

To:

- *Multiple Family Residential (6 Dwelling Units)*
    - *½ Duplex (1 Dwelling Units)*
    - *½ Duplex (1 Dwelling Units)*
    - *4 Single MFR Unit (4 Dwelling Units)*
        - *Total of 6 units of a residential use*
        - *Total Floor Area Ratio allowed = 15,070sqft (1200sqm)*

The change of use proposed has the following advantages:

- Every unit would be for residential purposes only - with no option for tourist accommodation, creating more housing.
- The 6-unit building strata would have six owners and would result in a lower price point per unit when compared to a single owner in the case of a SFD, or two owners in the case of a duplex dwelling.
- The interior yard setback for the proposed under MFR is 20' rather than 5'.
- The total maximum floor area would be the same as under the existing zoning.

The change of use proposed has the following disadvantages:

- The original intent of the zoning is modified.
- The units could be used as second homes and not provide housing for people living and working in Ucluelet and area (this could also be true in the case of any SFD or a Duplex dwelling).
- The multi-family use is different than the surrounding uses. It should be noted that this application can also be seen as creating a diversity of uses within a neighboured which could be seen as an advantage.

Bylaw No. 1322 proposes to remove and replace Section R-2.1.2(1)(b)(i) of Zoning Bylaw 1160, 2013 which read as follows:

> *"(i) Despite the above, Multiple Family Residential is not permitted on Lots 3, 4, 5 and 6 of Plan VIP76238."*

This section restricts MFR use from the subject property and the two neighbouring properties. It is proposed to amend section R-2.1.2(1)(b)(i) to remove the subject property from the clause and to update the lot number of one of the neighbouring properties as follows:

> *"(i) Despite the above, Multiple Family Residential is not permitted on Lot 3, Plan VIP76238, District Lot 543, Clayoquot Land District, Native Island [PID 025-815-059] and Lot A, District Lot 543, Native Island, Clayoquot Land District, Plan VIP78185, [PID 026-159-511]"*

To allow the building configurations as proposed but restrict the allowable floor area ratio to be limited to the approximate floor area ratio currently allowed, it is proposed to replace section R-2.1.2(1)(b) as follows:

> *"(ii) Despite other sections of this bylaw, Lot B, District Lot 543, Native Island, Clayoquot Land District, Plan VIP78185, [PID 026-159-511] Multiple Family Residential use is the only allowable principal use and the Multiple Family Residential use may be in a building or group of buildings containing one or more dwelling units, and be limited to a maximum of six units with a maximum total combined gross floor area of 1200m^2."*

The proposed amendments have been designed to accommodate the proposed development but also confine the allowable floor area so that it does not allow for more than what is currently allowed under the SFD or Duplex use.

Based on the preliminary information provided, this development meets the applicable zoning regulations if the zoning amendment were to proceed. It should be noted that a more detailed planning and building review would be required at the building permit stage.

TSUNAMI RISK

Ucluelet is subject to both tsunami and coastal flooding risks. On March 29, 2022, Council adopted a "Tsunami Risk Tolerance" interim policy. This policy applies to decisions on locating critical municipal assets, investments in infrastructure, rezonings, and the subdivision of land.

This application involves rezoning, but it does not involve the direct creation of new lots or the potential for new lots to be created. Both the interim District of Ucluelet policy and the relevant provincial legislation have the underlying implication that land use decisions be made based on keeping the risk due to tsunami inundation as low as reasonably practicable.

The policy is clear on the creation or the potential to create new lots through a zoning amendment or subdivision. It is less clear on the increase of density by rezoning on existing lots. Regarding this application, the density is arguably equal in the context of what is the existing zones potential density of people and infrastructure and the proposed MFR development. Staff consider that a reasonable approach would be to consider coastal storm Flood Construction Levels (FCL) in this case and not require the additional measures to address potential tsunami flood risk. It should be

noted that the FCL of the proposed development is above the tsunami flood reference plane as assessed by the applicant's consultants.

The review of this application identified an area where the interim policy could be clarified. Currently the policy is silent on existing lots where an applicant proposes a zoning amendment to change the use and/or density (similar to this application), this could be clarified by adding the following two lines in the policy chart after the "New residential and commercial buildings on new lots" :

A change in use that would increase density and/or infrastructure on existing lots	Tsunami Flood Reference Plane	Site-specific analysis by suitably qualified Professional Engineer experienced in coastal engineering
A change in use that would not increase density and or infrastructure on existing lots	Coastal Storm FCL	OCP Map 4

This change would clarify the application of the interim policy both for staff and potential applicants. Staff are recommending that this change be instituted by adopting District of Ucluelet Tsunami Risk Tolerance Interim Policy 8-5280-2 (**Appendix G**) which would supersede its predecessor Policy 8-5280-1.

SERVICING

Public services of sufficient size and capacity to serve the proposed development are available at Helen Road.

FIRE PROTECTION

The proposed access dimensions are good but will require markings designating no parking and fire lane in the turnaround area (other than in the designated spots).

BUILDING SERVICES

A comprehensive code review of this application will occur during the building permit process, however, we note at this time, that this project falls under Building Bylaw 1165, 2014, Section 10.3, and where a project involves a) two or more buildings, which in aggregate total more than 1,000 square meters; or b) two or more buildings that will contain four or more dwelling units; or c) where the complexity of the proposed building or structure or siting circumstances warrant, then the Building Official may also require the involvement of registered professionals. We anticipate asking for the following: geotechnical engineering and structural engineering, mechanical engineer for building plumbing, a plumbing engineer/ civil engineer to undertake the design and review of all the building plumbing and site servicing ie: sizing the main waterline/ proposing the meter, sizing and layout of the sewer system, storm and site drainage, fire-fighting access and provisions, as well as any proposed works, construction staging or parking on District property that may require a separate permit.

The district Building Official will require a geotechnical hazard assessment in accordance with Section 56 of the *Community Charter*. The assessment will likely contain conditions for the safe use of the land and will need to be registered on title attached to a covenant pursuant to Section 219 of the Land Titles Act. Covenant registration must be complete before the District can issue this building permit.

ARCHAEOLOGICAL

The applicant has contacted the Archaeological Branch and the branch stated to the applicant that there are no known sites located on the subject property. They note that if archaeologic materials are exposed or impacted all activities must be halted and an archaeological investigation must be conducted, and permit requirements must be established.

GEOTECHNICAL

The applicant completed a geotechnical hazard assessment for the subject property by Lewkowich Engineering and associates (Appendix E). This assessment reviewed the property in the context of soil stabilization and flood construction level. The report establishes a 30m horizontal building setback from the natural boundary and a flood construction level of 10.5m geodetic (above high tide).

DEVELOPMENT PERMITS

This application falls within the Shorelines Development Permit area and is also subject to a Multi-Family, Form and Character Development Permit. It should be noted that the approval of the development permit would occur at adoption of Bylaw No. 1322 if it were to proceed to adoption.

FORM AND CHARACTER - MULTI-FAMILY, COMMERCIAL & MIXED-USE (DPA IV)

Form and Character Development Permit Areas are established to guide development and land use to ensure a pedestrian-oriented, compact, and vibrant community which maintains its coastal village character.

Building Design

The applicant is proposing four single MFR buildings and one duplex building, these buildings are similar in look with the single buildings having same basic design. The roofs are a mix of low slope gable and hip styles and clad in asphalt shingle roofing. The buildings are clad in Hardie-board with Vinyl trim. The materials are consistent with the OCP guidelines.

While the repetitive nature of the building design of the units is not ideal, this repetition can represent a savings in construction costs and in turn represent a cost savings to ultimate owner and subsequent owners. The design and siting of the buildings could be closer to the naturally inspired form and sensitively sited buildings as indicated in the OCP guidelines but there is a cost associated to that rigor and as the project is residential and is to retain the majority of the shoreline and road frontage vegetation, the totality of the application is supportable.

Landscaping

The applicant is proposing to repair and retain existing landscape with focused landscaping elements occurring in front and between the proposed units (see Landscape Plan within **Appendix A**).

Parking and pedestrian movement

The applicant is proposing a modest sized development similar in potential scale to what is currently allowed; consequently, larger off-site and frontage improvements like sidewalks are not being required. That is not to signal that a full pedestrian connection is not to be required or desired for larger developments where density is increased.

ENVIRONMENTAL - MARINE SHORELINE (DPA VII)

Environmental Development Permit Areas are established to guide development and land use to ensure the most sensitive environmental features of a site are protected and ecological functions are not needlessly disturbed by development activities. For all land lying within an Environmental DP area, an assessment of the site, its natural features and the development must be undertaken, and the applicant must submit a report prepared by a Qualified Environmental Professional (QEP) establishing conditions for development. Staff draft the associated development permit terms and conditions from the recommendations in the QEP's report. The subject property falls within the Marine Shoreline Development Permit Areas, which includes lands within 30m above and below the natural boundary of the sea.

The applicant has submitted an environmental assessment by Current Environmental (**Appendix F**). This report prescribes a 20m setback area from the natural boundary, for the preservation of the backshore habitat as listed in section 4.1 of the report. This proposal does not contemplate works within the 20m setback area.

ANALYSIS OF OPTIONS:

A	Give OCP Amendment Bylaw No. 1337 and Zoning Bylaw No. 1322 first and second reading and advance to a public hearing	Pros	• Allows the application to proceed to public hearing. • Allows the public the opportunity provide input on the merits or drawbacks of the applications.
		Cons	• Unknown at this time
		Implications	• District Staff will give notice of a public hearing.

B	That Council considers the application consistent with the OCP and proceed with only a zoning amendment	Pros	• Allows applicant's zoning amendment to proceed without the need for an OCP amendment or a public hearing.
		Cons	• Allows the applications to proceed with less public input
		Implications	• Less staff time will be required to process the application. • Staff suggest that amending the interim policy still be included as part of the resolutions.
		Suggested Motion	1. THAT Council direct Staff to give notice of first reading and that a public hearing will not be held for Ucluelet Zoning Amendment Bylaw No. 1322, 2024; and, 2. THAT District of Ucluelet Tsunami Risk Tolerance Interim Policy 8-5280-2, which supersedes District of Ucluelet Tsunami Risk Tolerance Interim Policy 8-5280-1, be adopted.
C	Reject the application	Pros	• Time would not be spent on a public hearing, and the applicant would be saved the cost of the notification of a public hearing.
		Cons	• Does not allow applicant's development to proceed.
		Implications	• The application would not proceed. • Additional staff time will be required to follow up with applicant and consultants.
		Suggested Motion	No motion required.

POLICY OR LEGISLATIVE IMPACTS:

Approval of this application would amend the Official Community Plan bylaw, the Zoning bylaw and the interim Tsunami Flood Risk Tolerance Policy. As with any OCP bylaw amendment, Council must consider the impact of the amendment in the context of the regional waste management plan and the municipal five-year financial plan – given the narrow focus of this OCP amendment the impact on municipal services and finances would be negligible.

NEXT STEPS

If this application is approved District Staff will set up a public hearing and complete the required notification.

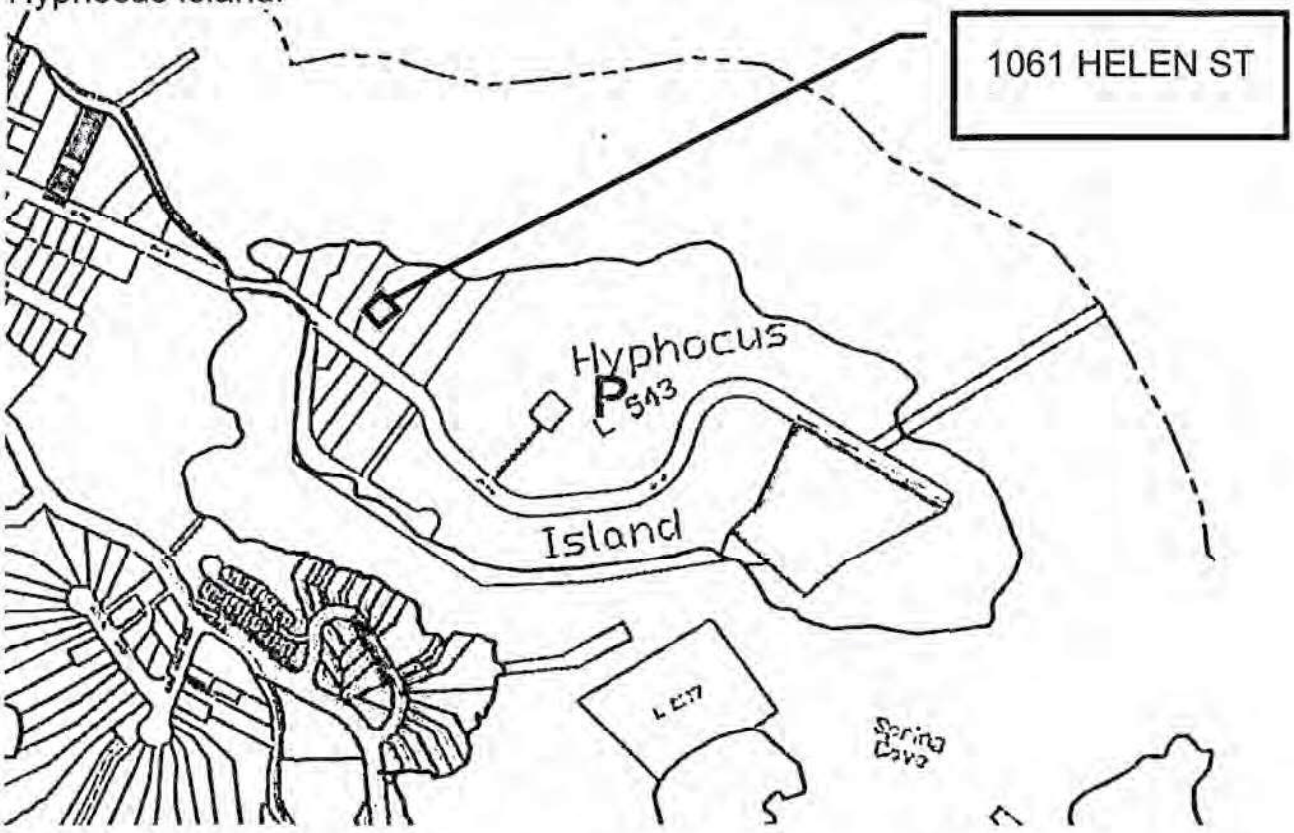
Respectfully submitted: JOHN TOWGOOD, MUNICIPAL PLANNER

BRUCE GREIG, DIRECTOR OF COMMUNITY PLANNING

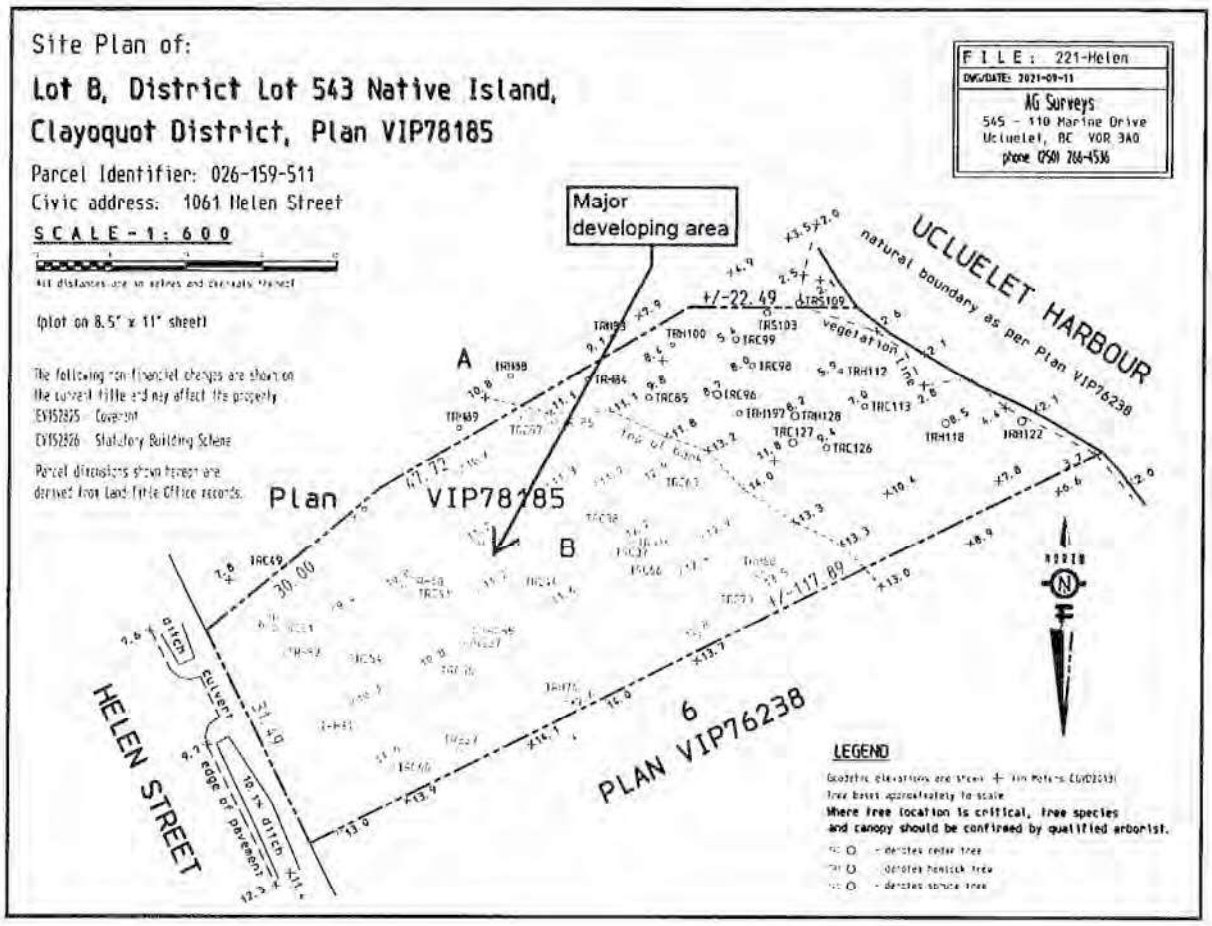
DUANE LAWRENCE, CAO

April 03, 2022
1061 HELEN ST
To District of Ucluelet Planning Department:

At present time 1061 HELEN ST is zoned R2 which bylaws state that for using multiple family residential the side setbacks at 20' and rear setbacks be set at *20'* and the front setbacks be set at *20'*. The lot is located in Hyphocus Island.



The north side of the site is facing UCLUELET HARBOUR and has sloped area. We will avoid to put the buildings over the top of bank, the major developing area will limit to the top of sloped area. (see the yellow area)



R-2.1 Permitted Uses:

R-2.1.2 (1) (b) Multiple Family Residential

() Despite the above, Multiple Family Residential is not permitted on Lots 3, 4, 5 and 6 of Plan VIP76238.

Our lot is on B of VIP78185. The lot area is 0.3979 Hectares and we only propose 31.3% FSR with 2 storey townhouse buildings. Please see the following site plan, density, driveway and parking space analysis and let the lot to propose multiple family residential.

R-2.1 lot Regulations:

R-2.1.1 Minimum Lot Size:

(3) Multiple Family Residential: 1,000 m2 (¼ acre),

The lot area is 42,835.84 SF (3,979.58 m2)=0.3979 Hectares >1,000 m2 (¼ acre)

R-2.1.2 Minimum Lot Frontage:

(3) Multiple Family Residential: 23m(75ft)

The lot frontage is 31.49m > 23m

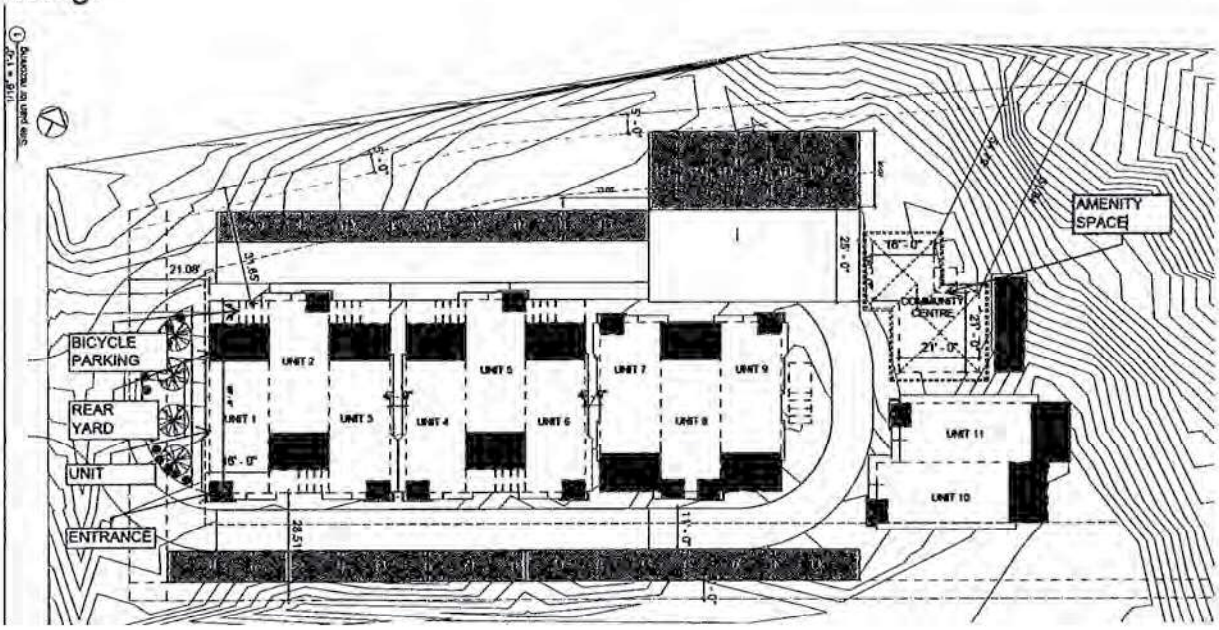
R-2.2 Density:

(3) Multiple Family Residential:

(a) Base Density: 30 units/hectare per lot

In R2 zoning bylaw Density R-2.2 (3) Multiple Family Residential (a) Base Density is 30 units/hectare per lot.
The lot we purchased to build 11 units multiple family townhouse.
The lot area is 42,835.84 SF (3,979.58 SM)=0.3979 Hectares
The units=30*0.3979=11.937 units. We will provide 11units.

The unit size measures 16′ in width x 35' in length. Each unit has 10' rear yard and 6' depth bicycle parking area. There are three groups townhouse which combined with 3 units (unit 1 to unit 9), and one group combined with 2 units (unit 10 to unit 11). We also provide one community centre with outdoor swimming pool for amenity using.



R-2.2.2 Maximum Floor Area Ratio:

(3) Multiple Family Residential: 0.70

The lot area is 42835.84 SF.

The allowable floor area=42835.84*0.7=29985 SF.
We only propose 13413 SF (31.3%), it's more less than 29985 SF(70%).

R-2.2.3 Maximum Lot Coverage:

(3) Multiple Family Residential: 40%

The lot area is 42835.84 SF .

Proposed covered porch area is 269.43 SF, main floor area is 6674.70 SF. Total proposed site coverage area is 6944.13 SF =16.21%. < 40%

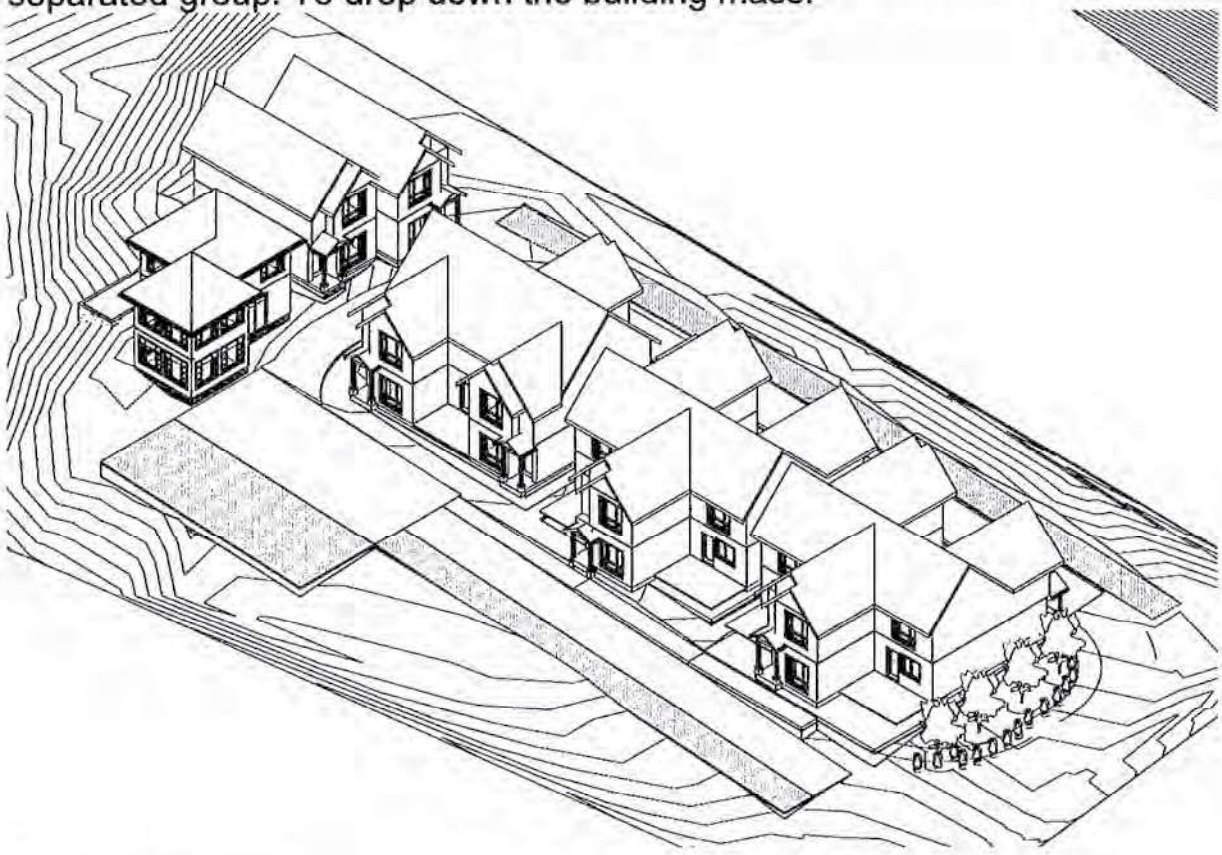
Please consider this small site coverage and let this lot can build multiple family residential.

R-2.4 Maximum Height

R-2.4.1 Principal Buildings & Structures:

(3) Multiple Family Residential: 11m(36ft) or 3 storey

Proposed only 2 storey townhouse building. And make several separated group. To drop down the building mass.



R-2.5 Minimum Setbacks:

Front Yard Setback	6m(20ft)
Rear Yard Setback	6m(20ft)
Side Yard Setback	6m(20ft)

The lot setbacks all equal or large then minimum setbacks.

Proposed front yard setback	21.08ft
Proposed rear yard setback	54.79ft
Proposed side yard setback	20ft
Proposed side yard setback	31.65ft

Proposed Building floor area:

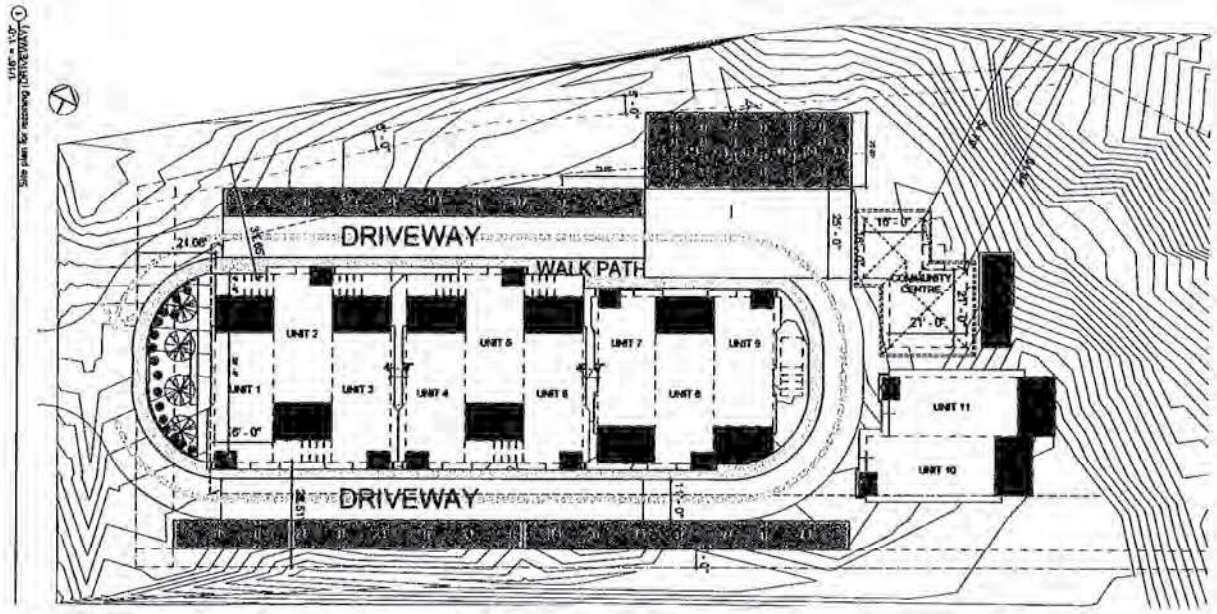
Proposed main floor area is 6,674.70 SF, upper floor area is 6,738.07 SF.
Total proposed floor area is 13,412.77 SF.

Proposed Parking space number:

The required parking space number is:
1.5/per unit=1.5*11unit=16.5=17.
Visitor parking is 1/per 5 units=2.
H/C required is1% of parking space, 1% of 19 parking space (17+2=19) is 1.
Total parking space =17+2+1=20
Proposed parking space is 20.

Proposed Driveway and walk path:

The driveway is around the buildings and parking space is next to the driveway. The walk path is in another side of the driveway.



Thank you for your consideration,

HAODE INVESTMENTS LTD
#5200-4000 NO.3 Rd, Richmond, BC
778.881.0388

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1061 HELEN ST UCLUELET BC
LOT B, District Lot 543 Native Island, Clayoquot District, Plan VIP78185
Parcel Identifier 026-159-511
Zoned R2
Lot area: 42835.84 SF
Front 6 meters (20')
Sides 20'
Rear 20'
Height restrictions 36' or 3 storey
Lot coverage 40%
Max Floor Ratio - 70%

Contacts John Towgood-Ucluelet Planning Department 250-726-4770

1061 HELEN ST UCLUELET BC

SHEET LIST:

PROJECT CONTACTS:

SURVEYOR:
AG SURVEYS
545 - 110 MARINE DRIVE,
UCLUELET, B.C. V0R 3A0
TEL: 250.264.4536
Email: adamgsurveys@gmail.com

OWNER:
--
@
TEL:

DESIGNER:
ELITE DESIGN

STRUCTURAL ENGINEER:
GBS ENGINEERING GROUP LTD.
14329 HAWKSTREAM DR.,
SURREY, B.C. V3W 0N5
TEL: 604.599.8890
Email: projects.gbs@gmail.com

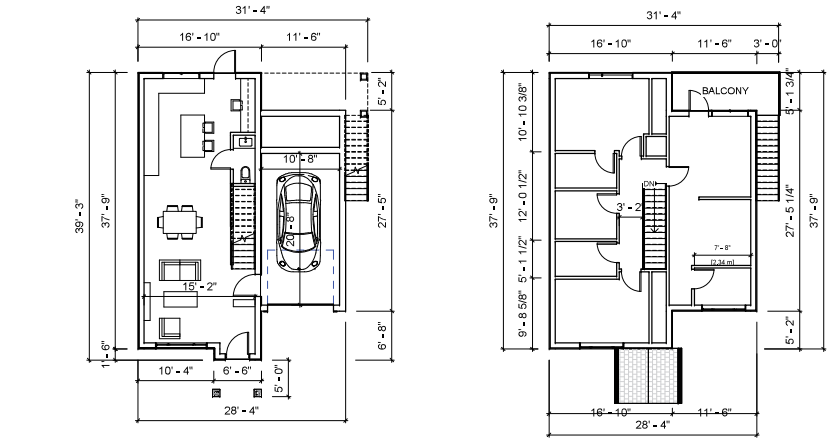
PROJECT SUMMARY:

SITE COVERAGE SUMMARY:		
LOT AREA	42835.84 SF	
ALLOWABLE SITE COVERAGE:40.00%	14992.54 SF	
COVERED AREA	922.89 SF	2.15%
MAIN HOUSE AREA	6053.50 SF	14.13%
PROPOSED SITE COVERAGE:	6976.39 SF	16.29%

ZONING DISTRICT: R2
PROPOSAL: SINGLE FAMILY
CIVIC ADDRESS: 1061 HELEN ST UCLUELET BC
LEGAL DESCRIPTION: LOT B, District Lot 543 Native Island, Clayoquot District, Plan VIP78185
LOT AREA: 42835.84 SF

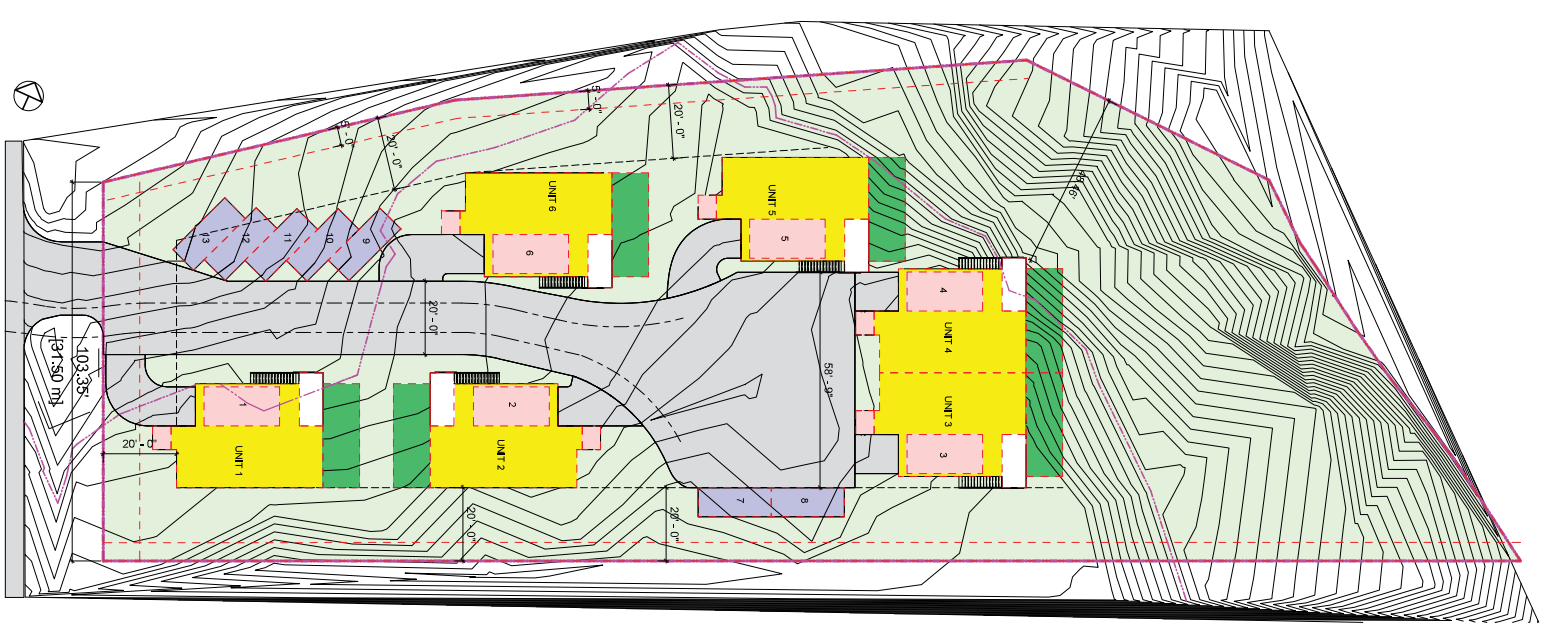
	PERMITTED:			PROPOSED:	
FSR:	21417.92 SF	70%		31.3%	11468.81 SF
			UPPER FLOOR	5705.81 SF	5705.81 SF
	21417.92 SF		MAIN FLOOR	5763.00 SF	5763.00 SF
			BASEMENT		
	0.00 SF				
SITE COVERAGE:	14992.54 SF	40%		6976.39 SF	16.29%
FRONT YARD:	20'			20'	
SIDE YARD:	20'	4.95'		20'	
SIDE YARD:	20'			20'	
REAR YARD:	20'			47.80'	
BUILDING HEIGHT:	36'	11m		36'	

Appendix A



2 TYPICAL MAIN FLOOR PLAN
1/8" = 1'-0"

3 TYPICAL UPPER FLOOR PLAN
1/8" = 1'-0"



REVISIONS		
1	ISSUE FOR REZONING	2022.04.06
2	REVISED FOR REZONING	2023.02.20

PROJECT NORTH

PROJECT: 1061 HELEN ST UCLUELET BC

DRAWING: SITE PLAN

3/64 SCALE: AS NOTE
11x17 SCALE: AS NOTE
ISSUE DATE: 2023.02.20
DRAWN BY: Author

ELITE DESIGN
PREMIUM HOMES
5200-4000 No.3 Rd. RICHMOND BC V6X 0J8 CANADA
T.604 998 4932 E.info@eliteesignfirm.com

SHEET: R1

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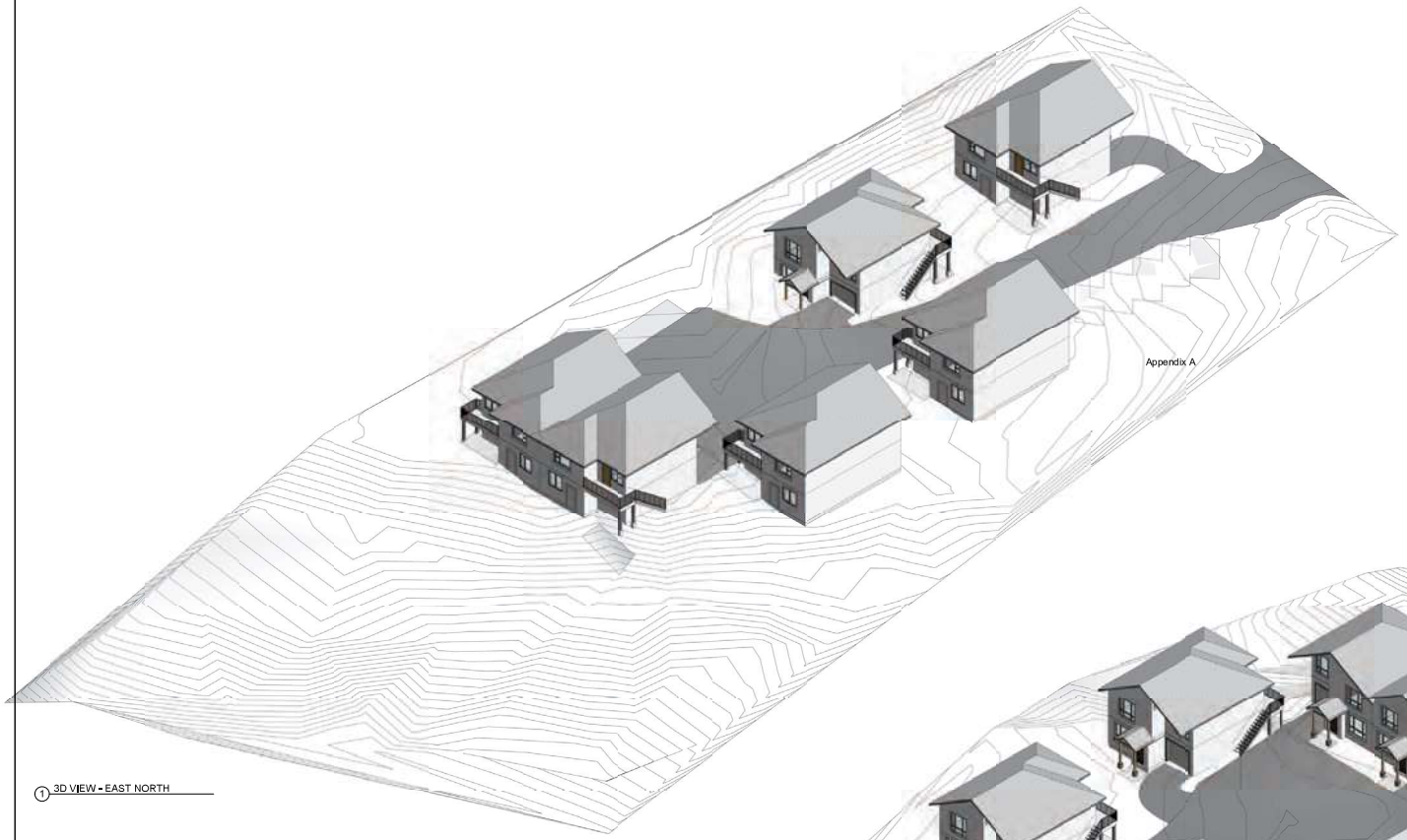
Appendix A



1 3D VIEW - EAST NORTH

3 3D VIEW - WEST SOUTH

REVISIONS

1	ISSUE FOR REZONING	2022.04.06
2	REVISED FOR REZONING	2023.02.20

PROJECT NORTH

PROJECT
1061 HELEN ST
UCLUELET BC

DRAWING
3D VIEWS

SHEET
R2

24x36 SCALE	AS NOTE
11x17 SCALE	AS NOTE
ISSUE DATE	2023.02.20
DRAWN BY	Author

ELITE DESIGN
PREMIUM HOMES
5200-4000 No.3 Rd. RICHMOND BC V6X 0J8 CANADA
T.604 998 4932 E.info@elitedesignfirm.com

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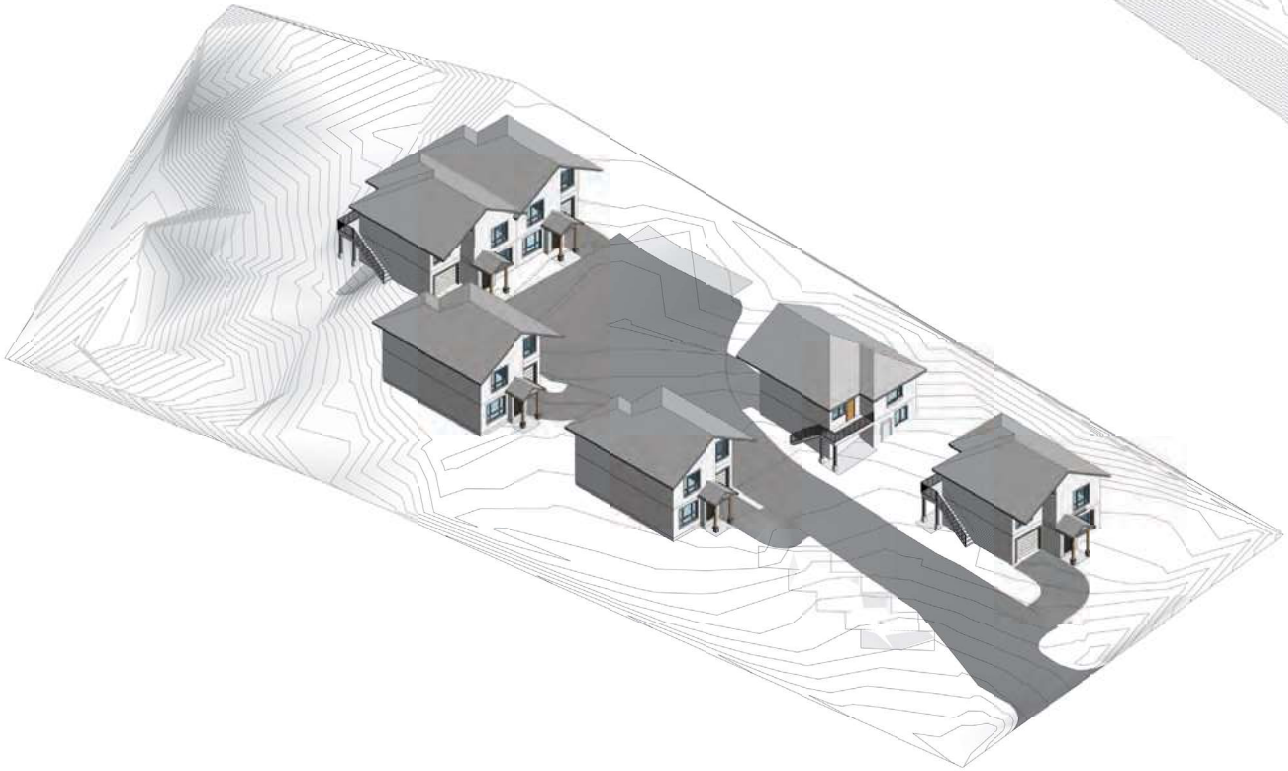
1 3D VIEW - EAST SOUTH

Appendix A

2 3D VIEW - WEST NORTH



REVISIONS

1	ISSUE FOR REZONING	2022.04.06
2	REVISED FOR REZONING	2023.02.20

PROJECT NORTH

PROJECT

1061 HELEN ST
UCLUELET BC

DRAWING

3D VIEWS

36x24 SCALE	AS NOTE
18x12 SCALE	AS NOTE
DWG. DATE	2023.02.20
DRAWN BY	Author

ELITE DESIGN
PREMIUM HOMES

5200-4000 No.3 Rd. RICHMOND BC V6X 0J8 CANADA
T.604 998 4932 E.info@elitedesignfirm.com

SHEET

R3

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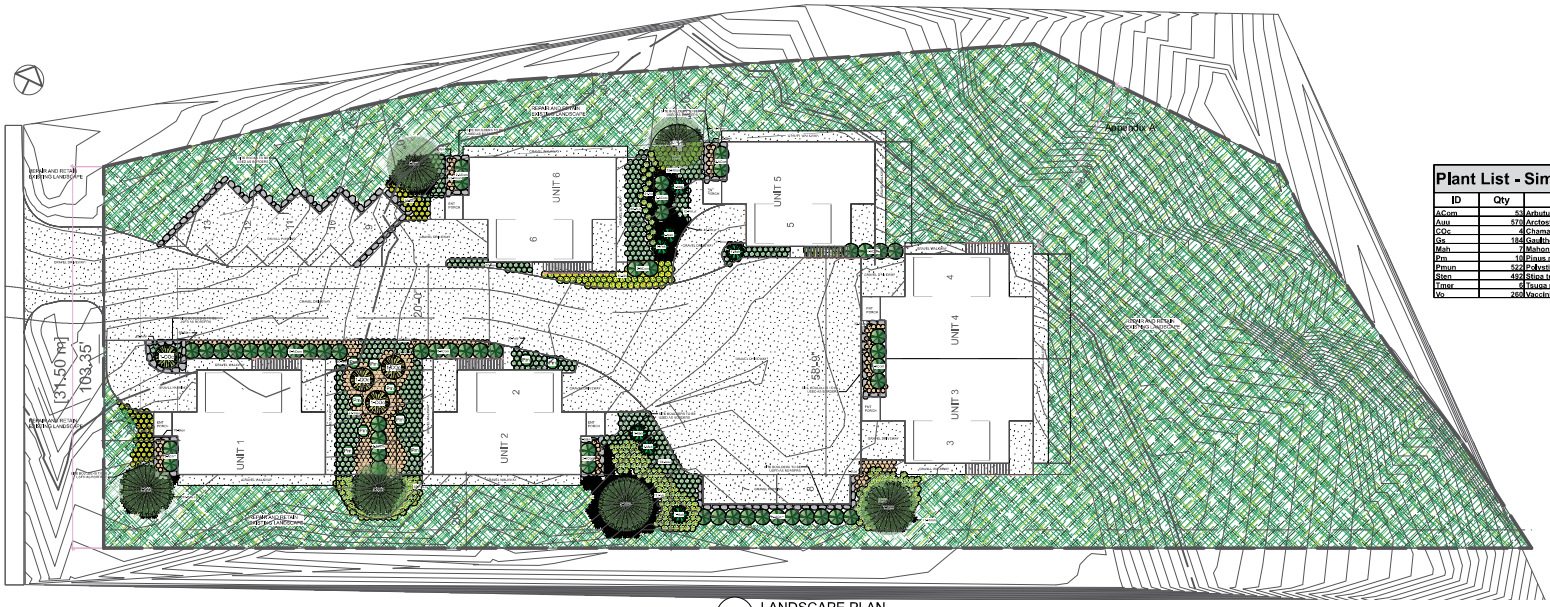


1 LANDSCAPE PLAN
Scale: 1/16" = 1'-0"

Plant List - Simple

ID	Qty	Botanical Name	Common Name	Scheduled Size	Remarks
ACom	53	Arbutus unedo 'Compacta'	Compact Strawberry Bush	# 7 pots	
Auu	570	Arctostaphylos uva ursi	Kinnikinnick	11cm pots	
COc	4	Chamaecyparis obtusa 'Compacta'	Dwarf Cypress Hinoki Cypress	6' B&B	
Gs	184	Gaultheria shallon	Salal	11cm pots	
Mah	7	Mahonia aquifolium	Oregon Grape	# 5 pots	
Pm	10	Pinus mugo 'Slowmound'	Mugo Pine	# 5 pots	
Pmun	522	Polystichum munitum	Sword Fern	# 1 pots	
Sten	492	Stipa tenuissima	Ponytail Grass	# 1 pots	
Tmer	6	Tsuga mertensiana	Mountain Hemlock	6' B&B	
Vo	260	Vaccinium ovatum	Evergreen Huckleberry	# 1 pots	


Tmer - Mountain Hemlock


COc - Dwarf Hinoki Cypress


Pmun - Sword Fern


Sten - Ponytail Grass


Gs - Salal


Pm - Mugo Pine


Auu - Kinnikinnick


ACom - Compact Strawberry Bush


Vo - Evergreen Huckleberry

PROPOSED TREES AND PLANTS

No.	Date	Issue Notes

greenroom garden

Design Firm: GREENROOMGARDEN

Consultant:

Project Title: PROPOSED LANDSCAPE LAYOUT
1061 HELEN STREET
UCLUELET

Sheet Title: LANDSCAPE PLAN

Project Manager:	Project ID:
Drawn By:	Scale: AS NOTED
Reviewed By:	Sheet No.: L1
Date: 2023-12-29	——— of ———
CAD File Name: 1061 Helen Street Ucluelet - Landscape 02.vwx	0

DISTRICT OF UCLUELET

Official Community Plan Amendment Bylaw No. 1337, 2024

A bylaw to amend the District of Ucluelet Official Community Plan

(1061 Helen Road – Land Use designation change).

WHEREAS Section 471 of the Local Government Act identifies the purposes of an Official Community Plan as "a statement of objectives and policies to guide decisions on planning and land use management, within the area covered by the plan, respecting the purposes of local government", and the District has adopted an Official Community Plan;

NOW THEREFORE the Council of the District of Ucluelet, in open meeting assembled, enacts as follows:

1. **Map Amendments**:

   The "District of Ucluelet Official Community Plan Bylaw No. 1306, 2022, as amended, is hereby further amended as follows:

   A. Schedule 'A' Long Range Land Use Plan is hereby further amended by changing the designation of 1061 Helen Road; Lot B, District Lot 543 Native Island, Clayoquot District, Plan VIP78185 (PID 026-159-511), shown shaded on the map attached to this Bylaw as Appendix "A", from Single Family Residential to Multi-Family Residential.

2. **Citation:**

   This bylaw may be cited as "District of Ucluelet Official Community Plan Amendment Bylaw No. 1337, 2024".

READ A FIRST TIME this day of , 2024.

Considered in conjunction with the District of Ucluelet Financial Plan and Waste Management Plan under Section 477 of the *Local Government Act* this day of , 2024.

READ A SECOND TIME this day of , 2024.

PUBLIC HEARING held this day of , 2024.

READ A THIRD TIME this day of , 2024.

ADOPTED this day of , 2024.

CERTIFIED A TRUE AND CORRECT COPY of "Official Community Plan Amendment Bylaw No. 1337, 2024"

Marilyn McEwen
Mayor

Joseph Rotenberg
Corporate Officer

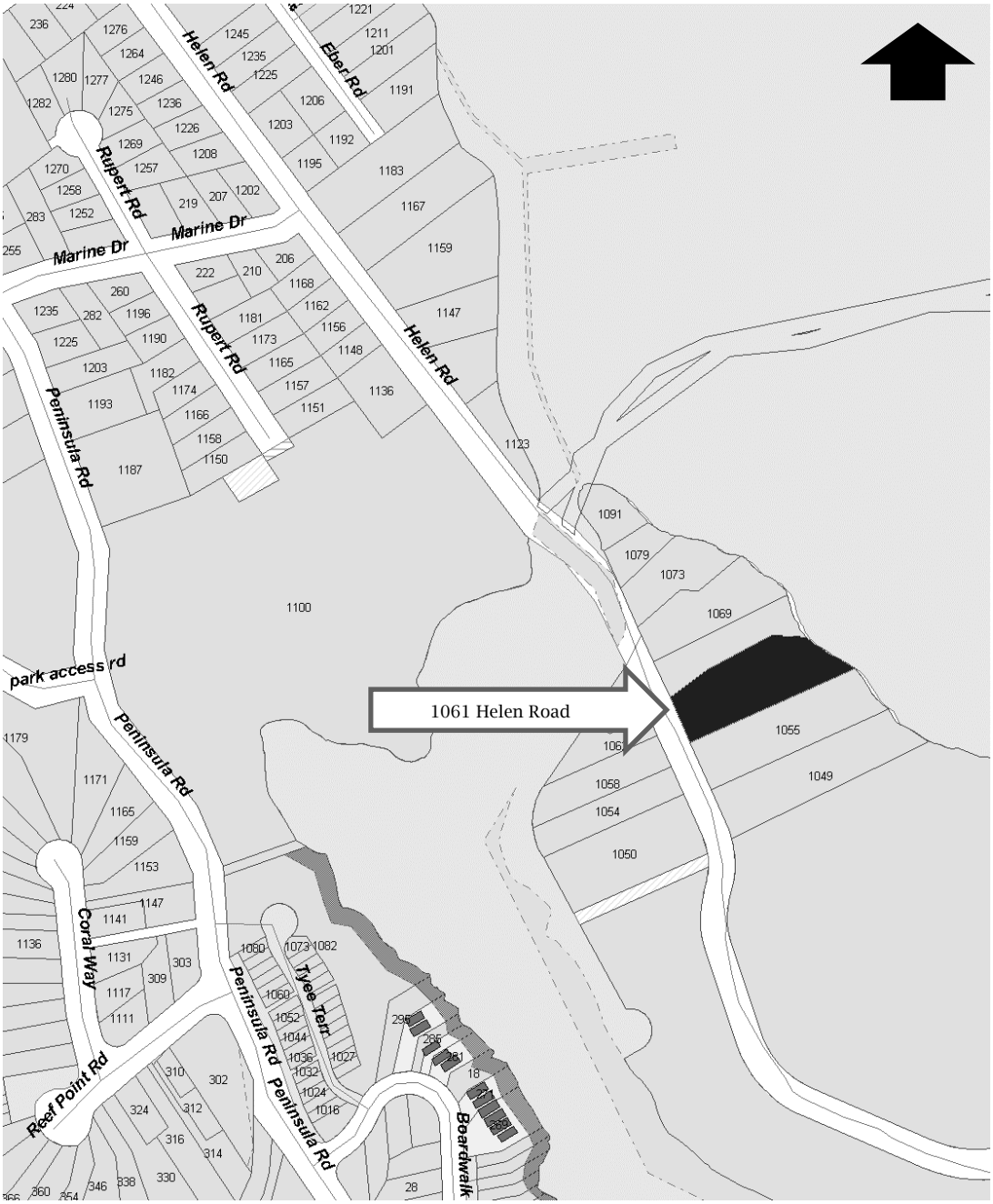
THE CORPORATE SEAL of the District of Ucluelet was hereto affixed in the presence of:

Joseph Rotenberg
Corporate Officer

Appendix 'A'

Official Community Plan Amendment Bylaw No. 1337, 2024

OCP *Schedule 'A' Long Range Land Use Plan*
From: "Single Family Residential"
To: "Multi-Family Residential"



DISTRICT OF UCLUELET

Zoning Amendment Bylaw No. 1322, 2024

A bylaw to amend the "District of Ucluelet Zoning Bylaw No. 1160, 2013".

(1061 Helen Road)

WHEREAS the District of Ucluelet Council by Bylaw No. 1160, 2013, adopted the Zoning Bylaw and now deems it appropriate to amend the Zoning Bylaw;

NOW THEREFORE the Council of the District of Ucluelet, in open meeting assembled, enacts as follows:

1. Text Amendment:

Schedule B of the District of Ucluelet Zoning Bylaw No. 1160, 2013, as amended, is hereby further amended by:

A. Replacing section R-2.1.2(1)(b)(i), as follows:

"(i) Despite the above, Multiple Family Residential is not permitted on Lot 3, Plan VIP76238, District Lot 543, Clayoquot Land District, Native Island [PID 025-815-059] and Lot A, District Lot 543, Native Island, Clayoquot Land District, Plan VIP78185, [PID 026-159-511]"

B. Adding section R-2.1.2(1)(b)(ii) in alphanumeric order, as follows:

"(ii) Despite other sections of this bylaw, Lot B, District Lot 543, Native Island, Clayoquot Land District, Plan VIP78185, [PID 026-159-511; 1061 Helen Road] Multiple Family Residential use is the only allowable principle use and the Multiple Family Residential use may be in a building or group of buildings containing one or more dwelling units, limited to a maximum of six units with a maximum total combined gross floor area of 1200m^2."

2. Citation:

This bylaw may be cited as "District of Ucluelet Zoning Amendment Bylaw No. 1322, 2024".

READ A FIRST TIME this day of **, 2024.**

READ A SECOND TIME this **this** day of **, 2024.**

PUBLIC HEARING this **this** day of **, 2024.**

READ A THIRD TIME this this day of **, 2024.**

ADOPTED this day of **, 2024.**

CERTIFIED CORRECT: "District of Ucluelet Zoning Amendment Bylaw No. 1322, 2024."

Marilyn McEwen
Mayor

Duane Lawrence
Corporate Officer

THE CORPORATE SEAL of the
District of Ucluelet was hereto
affixed in the presence of:

Duane Lawrence
Corporate Officer

DISTRICT OF UCLUELET

DEVELOPMENT PERMIT DP22-13

Pursuant to section 488 of the Local Government Act, R.S.B.C 2015 C.1 as amended:

1. This Development Permit is issued to:

   Haode Investments Ltd (The **"Permittee"**)

2. This Development Permit applies to, and only to, those lands within the District of Ucluelet described below, and the buildings, structures, and other development thereon:

   1061 Helen Road; Lot B, District Lot 543, Native Island, Clayoquot Land District, Plan VIP78185, [PID 026-159-511] (The **"Lands"**)

3. This Permit authorizes the following improvements on the Lands:
   - Six Multiple Family Residential Dwelling Units and associated driveway and landscape works (Schedule 1).
4. The permit holder, as a condition of issuance of this Permit, agrees to comply with the terms and conditions of Schedule 2 which is attached hereto and forms part of this permit.
5. In addition to compliance with the terms and conditions listed in Schedule 2, the permit holder must adhere to all conditions of the Qualified Environmental Professional report in Schedule 3 which is attached hereto and forms part of this permit.
6. Prior to any site disturbance or contractor mobilization, the permit holder must erect fencing or otherwise demarcate the no-disturbance area beyond the 20m shoreline setback and contact the District of Ucluelet to arrange a pre-construction inspection.
7. The work authorized by this Permit may only be carried out in compliance with all federal, provincial, and municipal statutes, regulations, and bylaws. The Owner is responsible for ensuring that the timing of the work and any required permits or notifications by other agencies are obtained as required to comply with all applicable regulations.
8. Notice shall be filed in the Land Title Office under Section 503 of the Local Government Act, and upon such filing, the terms of this Permit or any amendment hereto shall be binding upon all persons who acquire an interest in the land affected by this Permit.
9. The Owner shall substantially commence the development within 24 months of the date of issuance, after which this permit shall be null and void.
10. Upon completion of all proposed works, the Owner shall provide a letter from a QEP to the District of Ucluelet confirming that the work done under permit was completed meeting the conditions listed below.
11. This Permit is NOT a Building Permit.
12. The Municipality's Chief Administrative Officer is hereby authorized to approve minor amendments to the plans provided that such amendments are consistent with the overall character and intent of the original plans.

DISTRICT OF UCLUELET

AUTHORIZING RESOLUTION passed by the Municipal Council on the day of , 2024.

ISSUED the day of , 2024.

_____

Bruce Greig
Director of Community Planning

DISTRICT OF UCLUELET

Schedule 1

(see Appendix A)

DISTRICT OF UCLUELET

Schedule 2

Terms and Conditions

As a condition of the issuance of this Permit, the Permittee representing the Lands hereby to comply with all following Impact Reductions and Mitigation Measures, determined by Qualified Environmental Professional (QEP) as necessary to avoid negative impacts to environmental habitats within and adjacent to the Property. Prior to any site disturbance or contractor mobilization, the permit holder must erect fencing or otherwise demarcate the no-disturbance area beyond the 20m shoreline setback, and contact the District of Ucluelet to arrange a pre-construction inspection.

1. A shoreline setback width of 20 m is being prescribed for the subject property, which is to be measured from the Present Natural Boundary of the shoreline (Figure 3). This vegetated setback encompasses the steeper portions of the backshore in which signs of slope instability were noted (Figures 3 and 4) and will ensure that they remain stable. Additionally, this setback will ensure that all the functions listed in Section 4.1 remain intact. Although no eelgrass was found in the intertidal zone, the mouth of the Ucluelet inlet shown as "Medium" importance for herring spawn in the Department of Fisheries and Oceans' (DFO) Pacific herring (Clupea pallasii) spawn data for Barkley Sound. Populations of herring have not been assigned a conservation status provincially13; however, population health of the West Coast Vancouver Island herring stock is currently rebuilding after historically low population numbers in the early 2000's, and biomass has not been sufficient for the DFO to permit a commercial fishery since 200514.
2. Due to the known importance of the mouth of Ucluelet Inlet to a commercially important species that is undergoing a population recovery, no disturbance must take place within the 20m shoreline setback. As designed, the proposed development does not encroach into the recommended 20 m setback.
3. Due to the signs of slope instability noted within the backshore habitat as described in Section 3.2.3 above, it is important that drainage from the proposed construction of impermeable surfaces outside of the 20 m shoreline setback be designed in such a way so as not to exacerbate any potential instabilities. Rain runoff must not be channelized and must be allowed to infiltrate into soil prior to entering the 20 m shoreline setback. It is recommended that the developer work with an appropriately qualified engineer to design a site-specific drainage plan prior to construction designed to prevent any erosion of slopes within the 20 m shoreline setback.
4. The entire 20 m recommended shoreline setback is well vegetated with a native plant community. No enhancements are necessary to improve the slope stability or ecosystem functions provided by this setback, and therefore a landscaping plan is not recommended as part of this assessment. Invasive species consisting primarily of Scotch broom were noted on the subject property adjacent to Helen Road outside of the MSDPA. This portion of the property will be highly disturbed during construction. It is recommended that during the site clearing phase, any vegetation or soils containing invasive plants be bagged and disposed of at a landfill to prevent further spread.

5. It will be important to implement mitigation measures during the construction on the subject property to protect the sensitive backshore vegetation adjacent to the site.
6. The accidental release of petroleum, oils, hydraulic fluids, lubricants, concrete additives, anti-freeze or other hazardous materials onto land surfaces or into waterbodies is an offence under the Federal Fisheries Act and may result in degradation of habitat quality and could be a threat to human health. Machinery required for the proposed development will likely be limited to a generator to power hand tools, and trucks delivering materials to the site. Environmental protection procedures for handling and storage of fuels and hazardous materials shall include the following items:
    a. A spill kit of appropriate capacity will be on hand at all times heavy machinery or gas-powered tools are in use during construction.
    b. All identified spills will be cleaned up immediately, and contaminated soils and vegetation will be removed for appropriate disposal.
    c. Refueling of equipment is to occur only at designated fuelling stations and located at least 20 m from the shoreline.
    d. All fuel, chemicals, and hazardous materials will be clearly marked.
    e. Pumps and jerry cans are to be placed on poly sheeting and sorbent pads to contain spills.
    f. All equipment maintenance with the potential for accidental spills (e.g., oil changes, lubrications) will be done on a designated area at least 20 m from the shoreline. Tarps should be laid down prior to commencement of work to facilitate clean up.
    g. In the event of a spill, the following guidelines should be followed:
        i. Spills to the receiving environment are to be reported to Emergency Management BC (1-800-663-3456) if they exceed the reportable limits (e.g., 100 liters of fuel or oil).
        ii. Apply sorbent pads and booms as necessary.
        iii. Dispose of all contaminated debris, cleaning materials, and absorbent material by placing in an approved disposal site.
7. Specific measures to control sediment during construction will include:
    a. Maintain/do not disturb vegetation within the prescribed 20 m shoreline setback.
    b. Where there is a potential for silt runoff in the proximity of existing waterbodies, control devices will be installed prior to construction activities commencing.
    c. Filter fabric dams, rock check dams, and silt fencing will be used as needed on a site-specific basis to control erosion. Filtration should be accomplished using filter fabric keyed into substrates and banks and elevated.
    d. using stakes or straw bales. Silt fencing is not an acceptable mitigation technique to control erosion in flowing ditches; however, it is useful for containing slumping areas and for use as baffles to slow water velocities.
    e. Excavation will be stopped during intense rainfall events or whenever surface erosion occurs affecting nearby waterbodies.

f. Soil stockpiles will be placed a minimum of 20 m from any waterbody and in a location where erosion back into the marine environment cannot occur and will not impede any drainage.
g. Soil stockpiles with the potential to erode into waterbodies are to be covered with poly sheeting. Other techniques, such as terracing or surface roughening can greatly reduce surface erosion on steeper slopes.
h. Permanent exposed soil areas and erosion-prone slopes that may potentially erode into waterbodies are to be seeded or covered with geotextile.
i. Clearing will take place immediately prior to excavation and earthworks to minimize the length of time that soils are exposed. Vegetation in adjoining areas will not be disturbed.

8. All trees and native vegetation within the 20 m shoreline setback will need to be retained and protected, unless a tree is deemed hazardous by a certified arborist. Trees provide critical functions in backshore areas by providing shade, nutrient and leaf litter drop, large woody debris recruitment in both the foreshore and marine environments, and bank stability through their complex root networks. They also help retain soil and provide more favourable growing conditions for other understory shrubs and ground cover plants in the backshore area. As previously described, there will be significant clearing of existing vegetation from portions of the subject property; however, there are no plans for any vegetation removal within the 20 m shoreline buffer zone. Specific measures to protect trees during development will include:
    a. A root protection zone for all trees in the 20 m shoreline setback will be established prior to construction commencing. The root protection zone should be established at the edge of the drip line of trees within the 20 m shoreline setback. The root protection zone should be physically delineated and should be off-limits to machinery.
    b. Machine access will be from the southwest side of the property.
    c. Tree protection plans will be communicated to everyone on site prior to commencing construction.
    d. If roots are encountered during construction, they should be first avoided if possible, and if they must be cut, they should be cut cleanly with a saw as opposed to shattered with machinery.
    e. Care should be taken not to break any limbs of trees within the 20 m shoreline setback during construction. If any limbs are accidentally broken, they should be cleanly cut with a saw.
    f. Should any issues arise with regards to potential changes to the impact on trees during development, it is recommended that an arborist be retained to provide guidance on the least impact approach to development around trees.

DISTRICT OF UCLUELET

Schedule 3

(See Appendix F for environmental reports)

GEOTECHNICAL HAZARD ASSESSMENT

1061 Helen Road, Ucluelet, BC
Proposed Residential Development

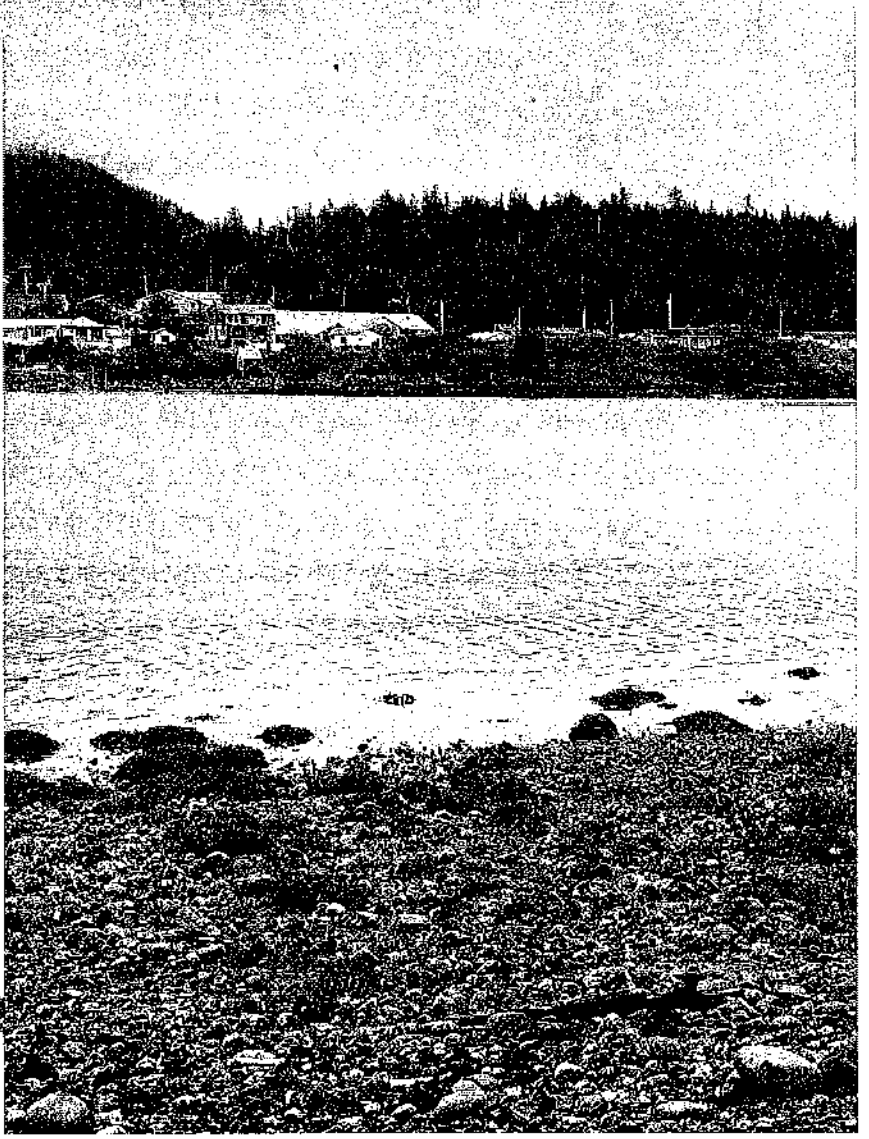
Legal Address:
Lot B District Lot 543, Native Island,
Clayoquot District, Plan VIP78185

PID: 026-159-511

Prepared For:
Haode Investments Ltd.
c/o Elite Premium Home Design Ltd.
#5200-4000 No. 3 Rd.
Richmond, BC
V6X 0J8

Attention:
Ms. Lynn Lee
lynnlee@elitedesignfirm.com

January 8, 2024



File No.: E1445.01r1
Revision No.: 01
Prepared by:
Paul Fraser, B.A., CTech.
Chris Hudec, M.A.Sc., P.Eng.

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

Permit to Practice Number: 1001802

Lewkowich Engineering Associates Ltd.

DISCLAIMER, ACKNOWLEDGMENTS AND LIMITATIONS

1. Lewkowich Engineering Associates Ltd. (LEA) acknowledges that this report, from this point forward referred to as "the Report," may be used by the District of Ucluelet (DoU) as a precondition to the issuance of a development and/or building permit. It is acknowledged that Approving Officers and/or building Officials of the DoU may rely on this Report when making a decision on application for development of the land. It is also acknowledged that this Report and any conditions contained herein 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 DoU.
2. This Report has been prepared in accordance with standard geotechnical engineering practice solely for and at the request of Haode Investments Ltd. c/o Ms. Lynn Lee of Elite Premium Home Design Ltd (EPHD). We have not acted for or as an agent of the DoU 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 and encountered subsurface soil conditions, 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 structure becomes available, the recommendations may be altered or modified in writing by the undersigned.
4. This Report was authored, to the best of our knowledge at the time of issuance, with considerations for local requirements specific to the Authority Having Jurisdiction (AHJ) and their standards for the preparation of such reports, the 2018 British Columbia Building Code (BCBC), and current engineering standards. Updates to municipal bylaws, policies, or requirements of the AHJ, or updates to the BCBC and/or professional practice guidelines may impact the validity of this Report.
5. This Report has been prepared by Mr. Paul Fraser, B.A., CTech, and Mr. Chris Hudec, M.A.Sc., P.Eng. Messrs. Fraser and Hudec are both adequately experienced in geotechnical engineering and hazard assessments and are also members in good standing with their respective associations, Mr. Fraser with the Applied Science Technologists & Technicians of British Columbia (ASTTBC), and Mr. Hudec with the 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, 1061 Helen Road, from this point forward referred to as "the Property," is located on the west coast of Vancouver Island within the jurisdictional boundaries of the DoU, in the southeastern region of Ucluelet, BC. The proposed development for the Property at the time of this Report includes rezoning to allow four (4) Single-Family Residential buildings and one (1) Multiple Family Residential building (duplex), for a total of 6 units, including associated surface parking and driveway areas.
3. A site-specific hazard assessment was conducted to identify potential geotechnical hazards for the subject Property and determine the safe and suitable conditions for the proposed development. The primary geotechnical hazards identified relate to steep slopes, the Property boundary with the Pacific Ocean/Ucluelet Inlet and the associated oceanic flooding due in part to future relative sea level rise (RSLR), as well as consideration for the risk of tsunami inundation.
4. Current EGBC and provincial guidelines relating to rezoning to increase density do not trigger a requirement to build above the Tsunami Flood Reference Plane (TFRP) for the Property. Therefore, the buildable area would be defined by conditions outlined herein, the required Flood Construction Level (FCL) for habitable areas, and a combination of the safe slope setback and applicable foreshore setback from the Future Natural Boundary (FNB).
5. The findings confirm the development is considered safe as proposed, provided the recommendations in this Report are followed.

List of Abbreviations Used in the Report

Abbreviation	Title
AGS	AG Surveys
AHJ	Authority Having Jurisdiction
ASTTBC	Applied Science Technologists & Technicians of British Columbia
BCBC	British Columbia Building Code (2018)
CCRL	Cascadia Coastal Research Ltd.
CSZ	Cascadia Subduction Zone
DoU	District of Ucluelet
DPA	Development Permit Area
ECI	Ebbwater Consulting Inc.
EGBC	Engineers and Geoscientists of British Columbia
EPHD	Elie Premium Home Design Ltd.
FCL	Flood Construction Level
FNB	Future Natural Boundary
GD	Geodetic Datum (CGVD2013)
LEA	Lewkowich Engineering Associates Ltd.
MNFLNRO	Ministry of Forests, Lands, and Natural Resource Operations
OCP	Official Community Plan
PNB	Present Natural Boundary
RA	Regional Adjustment
RSLR	Relative Sea Level Rise
SLS	Service Limit State
TFRP	Tsunami Flood Reference Plane
ULS	Ultimate Limit State

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 General

a. As requested, LEA has carried out a geotechnical assessment of the subject Property with respect to the proposed residential development. This Report provides a summary of our findings and recommendations.

1.2 Background

a. LEA understands the purpose of this assessment is to determine the safe and suitable conditions for rezoning of the Property to support the proposed residential development, including a review of geotechnical hazards that may impact building design and the buildable area of the Property.

b. At the time of this Report, the proposed development consists of constructing five residential buildings (6 units total), and associated parking and driveway areas.

c. The Property is located on the west coast of Vancouver Island, within the southern region of the DoU. See Figure 1.2 below.

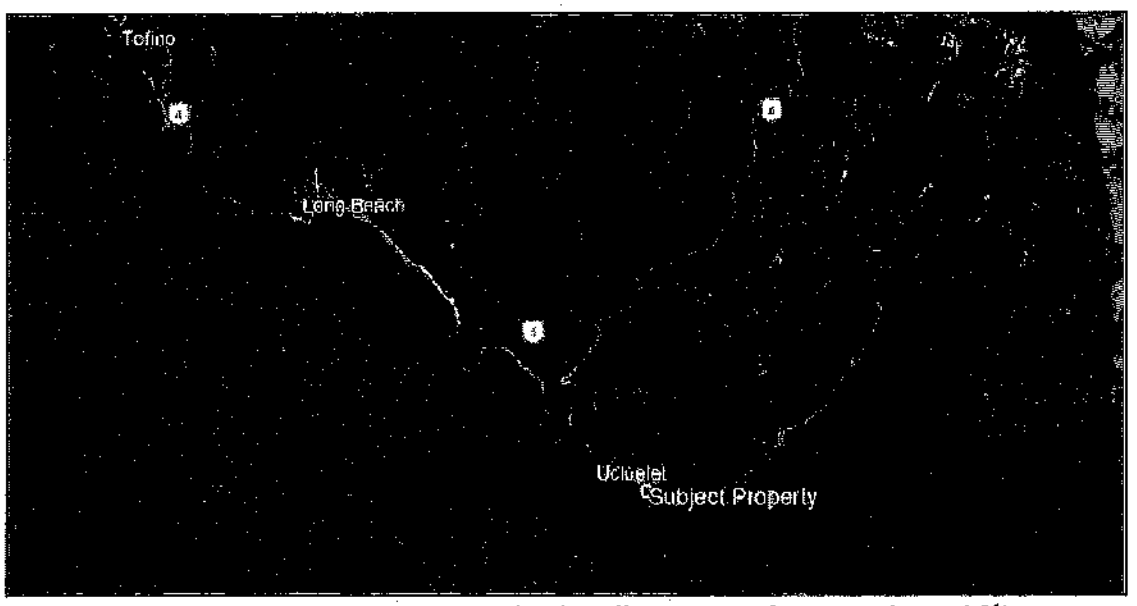


Figure 1.2 – Large Scale Location Plan (Satellite Imaging from Google Earth®[1])

d. A review of the 2022 OCP[2] indicates the Property is located within three DPA's:

   i. DPA VII – Marine Shoreline (shown on the Schedule 'E' map[3]), specifically applied to all lands within 30m, measured horizontally both landward and seaward from the natural boundary of the ocean;

   ii. DPA VIII – Natural Hazard Areas Protection (shown on the Schedule 'G' map[4]), specifically for steep slopes greater than 30°.

e. An assessment report addressing DPA VII shall be prepared by a qualified environmental professional and is not included as part of this assessment.

f. Following EGBC's Professional Practice Guidelines for Legislated Flood Assessments[5], this Report would be categorized as a Class 0 assessment, applicable for Developments and/or Building Permits.

1.3 Assessment Methodology

a. A visual reconnaissance and follow up review of the Property were carried out on July 22, 2022, and January 5, 2024, which included observations of the current site conditions, the foreshore, general topography and drainage features, and future building areas.

b. A desktop review of relevant background information, including available aerial photographs, published geology, topography and floodplain mapping was undertaken, with consideration of the applicable EGBC practice guidelines and the most current and relevant technical documents provided by ECI[6], CCRL[7], and MFLNRO[8]. Please refer to the list of references at the end of this Report.

c. We have also included a review of the Tsunami Risk Tolerance – Interim Policy prepared by the DoU, dated March 29, 2022[9].

d. Our assessment included a review of the attached topographic site plan prepared by AGS, dated September 11, 2021.

e. We have also reviewed the preliminary concept and layout plan prepared by EPHD, dated February 20, 2023.

1.4 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 there is one relevant covenant under Section 215 of the Land Title Act registered against the Property that relates to the comments, conclusions and recommendations in this Report: reference covenant document EV152825 (2003).

c. Covenant EV152825 states:

"...no building shall be constructed, nor mobile home located within thirty (30.0) metres of the natural boundary of the sea. This distance may be reduced provided that buildings are located on natural ground that is four (4.0) metres or more above the natural boundary of the sea. In no case shall this distance be less than fifteen (15.0) metres from the naturol boundary of the sea."

and;

"Hereafter, no areo used for habitotion, business or storage of goods damageable by floodwaters shall be

located within any buildings at an elevation such that the underside of the floor system thereof is less than four (4.0) metres above the natural boundary of the sea."

This covenant is based on limited information from the 1964 tsunami event in Alaska.

2.0 SITE CONDITIONS

2.1 Physical Setting

a. The Property is identified with the following civic and legal address:

   i. 1061 Helen Road, Ucluelet, BC.

   ii. Lot B District Lot 543, Native Island, Clayoquot District, Plan VIP78185

   i. PID: 026-159-511

b. The Property is located within the southeastern region of Ucluelet on Hyphocus Island, east of Peninsula Road on the east side of Helen Road, immediately adjacent to the Pacific Ocean/Ucluelet Inlet to the east. The Property location is shown in Figure 2.1.

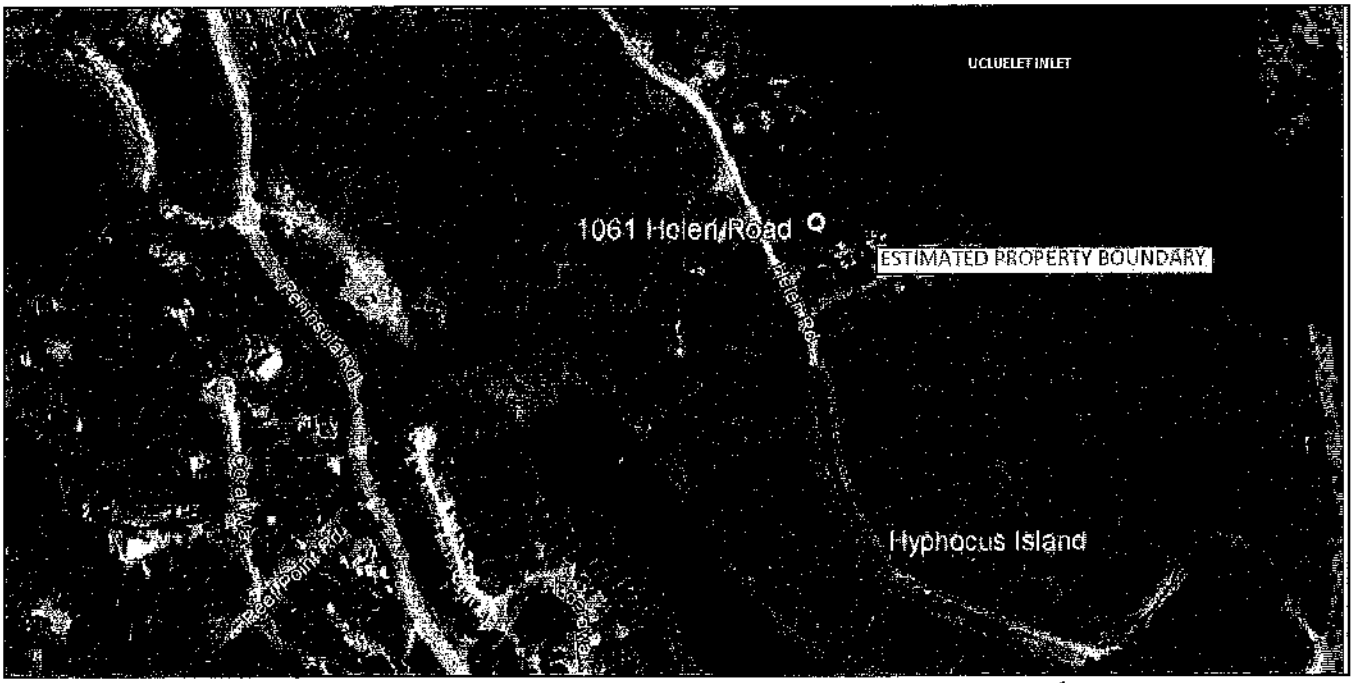


Figure 2.1 – Small Scale Location Plan (Satellite Imaging from Google Earth®[1])

c. The Property is currently designated as a 'Medium Density Residential (R-2) zone and is bound to the north by other R-2 properties; to the south by 'Guest House' properties; to the west by Helen Road; and to the east by the Pacific Ocean/Ucluelet Inlet[10].

2.2 Terrain and Features

a. The subject parcel is currently undeveloped and covered with moderate to dense west coast vegetation consisting of typical brush and undergrowth, with mature and immature trees. Based on the undulating terrain and presence of pistol-butt trees indicating slow surficial creep, the site, or portions thereof, may have previously been logged and/or used as a dump site.

b. In general, the terrain consists of minor undulations from the road frontage to a moderate slope above the foreshore of the Ucluelet Inlet, with an overall inclination of less than 2 Horizontal to 1 Vertical (2H:1V or 27°). We expect isolated or localized steep slopes >30° may be present below existing vegetation throughout the east-facing slope. Total relief is estimated to be 7.0m±, with a high point up to 12.0m± GD. The majority of existing grades through the parcel center and proposed building areas are above 10.0m± GD. Typical terrain conditions are shown below in Figures 2.2.1 and 2.2.2.

Figure 2.2.1 – Typical Terrain Conditions (View Looking South)

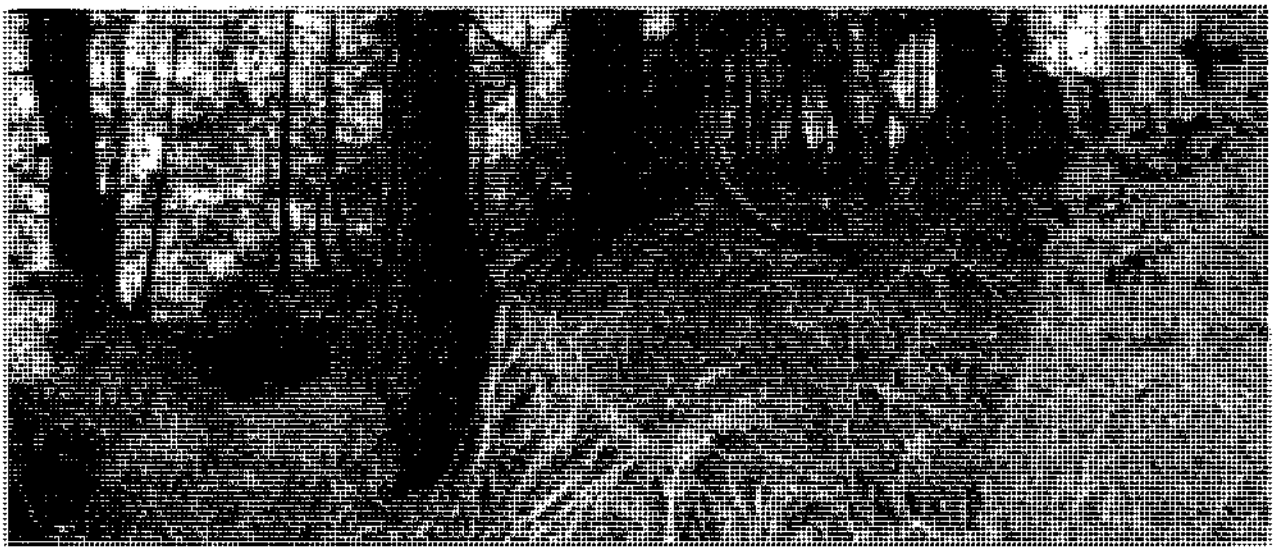


Figure 2.2.2 – Typical Terrain Conditions (View Looking North)

2.3 Regional Geology

a. Surficial geology for the area is noted as three main classifcations[11]:
   i. Hankin Formation (60%) – typically colluvium, generally comprised of gravelly, sandy loam. The soils are characterized as being well drained.
   ii. Kennedy Lake Formation (20%) – typically marine deposits of clays and gleyed soils with significantly impeded drainage.
   iii. Ucluelet Formation (20%)– typically fluvial deposits consisting of very gravelly sandy loam soils that are moderately well drained.
   iv. Terrain is defined as gently to strongly rolling (5%-30%).
b. Bedrock geology for the area is classified as undivided volcanic rocks part of the Pacific Rim Complex, and date back to the Triassic to Cretaceous period[12].

2.4 Soil Conditions

a. LEA inspected the soil conditions at various locations across the subject parcel by way of hand probing using a T-bar.
b. In general, the soils are expected to consist of approximately 450mm to 600mm of organic silt and forest debris (roots, wood, brush) overlying dense sand, silt, gravel (glacial till or similar), and/or shallow bedrock.
c. LEA noted bedrock exposures at various locations throughout the subject parcel. We expect bedrock to be shallow (<1.0m±) throughout the Property; however, areas of previous import fill materials may also be present.

d. Depths are referenced to the existing ground surface at the time of our field investigation. Soil classification terminology is based on the Modified Unified classification system. The relative proportions of the major and minor soil constituents are indicated by the use of appropriate Group Names as provided in ASTM D2487 Figures 1a, 1b, and 2. Other descriptive terms generally follow conventions of the Canadian Foundation Engineering Manual.

2.5 Surface and Groundwater Conditions

a. No surface, ponded water, or evidence of abnormal groundwater conditions was observed during our review of the Property.

b. Groundwater flows may fluctuate seasonally with cycles of precipitation. Groundwater conditions at other times and locations may differ from those observed during our assessment. It is expected groundwater levels will be close to the ground surface during the height of the rainy season.

2.6 Slope Review

a. As part of our assessment, LEA made observations of the foreshore slope along the east extent of the Property.

b. Based on our review of the attached topographic site plan prepared by AGS, the overall slope is inclined at less than 2H:1V or 27°. We expect isolated steep slope areas may be present below the existing vegetation that may not become apparent until the construction phase. The general slope conditions are shown below in Figure 2.6.1.

Figure 2.6.1 – Typical Slope Conditions (View Looking North)

c. We expect the slope is comprised of shallow, surficial soils overlying homogenous, volcanic bedrock with minor to moderate fracturing and jointing (see foreshore review below).

2.7 Foreshore Conditions

a. The foreshore can be characterized as a low-lying tidal zone consisting of cobbles and gravelly sand deposits through the upper tidal zone with irregular bedrock exposures along the natural boundary. Vegetation along the upper foreshore consists of overhanging mature trees, and typical dense brush. LEA noted several large trees that have been undermined and sloughed down to the upper foreshore (see Figures 2.7.1 to 2.7.3 below).

b. Based on our review of the AGS topographic site plan, the PNB location is defined as per Plan VIP76238, with elevations varying from 2.0m GD to 2.6m GD with an average estimated elevation of 2.2m GD.

Figure 2.7.1 – Typical Foreshore Conditions (View Looking South)

Figure 2.7.2 – Typical Foreshore Conditions (View Looking Southest)

Figure 2.7.2 – Typical Foreshore Conditions (View Looking Southest)

2.8 District of Ucluelet Tsunami Risk Tolerance Review

a. LEA understands the DoU has established a new policy to manage flood risk while considering community interests within the jurisdictional boundaries of the DoU. The purpose of the policy is to guide decisions on the following:

   i. amendments to the Zoning bylaw or OCP;

   ii. applications for subdivision of the land; and,

   iii. location of critical community infrastructure and facilities.

b. In recent years, most coastal jurisdictions on Vancouver Island have commissioned flood risk assessments, and on the west coast they have included tsunami risk assessments. While west coast communities have implemented Tsunami Warning systems to alert residents of approaching tsunamis, current EGBC and Provincial guidelines do not require the construction of new buildings on existing lots to meet the TFRP. Further, rezoning of a property to increase density does not trigger this requirement.

3.0 DISCUSSIONS AND RECOMMENDATIONS

3.1 Natural Hazards

a. Based on the field reconnaissance and a desktop review of available information, it is the opinion of LEA that steep slopes, oceanic flooding due in part to future SLR, as well as tsunami inundation are the potential geotechnical hazards for the Property.

3.2 Covenant Discussions

a. The information provided in covenant document EV152825 (2003) relates to coastal setbacks and FCLs for the Property based on limited information from the 1964 tsunami event in Alaska. The language in these documents is outdated and does not align with current best practices.

b. It is the opinion of LEA that the buildable area for the Property should be defined by the required FCL for habitable areas, and a combination of the safe slope setback and applicable coastal setback recommended in this Report as per EBGC guidelines. Therefore, at the discretion of the DoU, this Report may be appended to the land title to replace the existing covenant (Document No. EV152825).

3.3 Tsunami Hazard

a. Tsunami waves may be created by earthquakes or landslides that rapidly displace a large mass of water. While the severity and frequency of tsunamis are difficult to predict, there is geological evidence to indicate large tsunamis originating from both distant and nearby sources have historically impacted the west coast of Vancouver Island. Therefore, coastal communities along BC's west coast are considered at high risk of flood hazard and inundation caused by tsunamis due to the tectonically unstable Pacific Rim.

b. Tsunami wave heights and inundation can vary significantly due to source location, alignment and shape of the coastline, offshore bathymetry and inland topography, as well as weather and water levels at the time of the event. At present, there is insufficient historical information to formulate a magnitude-frequency relation for locations on the BC coast.

c. The Property is directly bordering the Pacific Ocean/Ucluelet Inlet and in the designated "Open Coast" coastal region of BC, therefore the associated flood risk due to tsunami inundation would be considered high. However, current provincial guidelines state that tsunami setbacks and FCL elevations are only required for new lots created through the subdivision approval process. Therefore, there are no design or mitigation measures provided in this Report relative to potential tsunami impacts at the subject Property. Best-practices for construction within a defined tsunami zone are to follow procedures outlined by the provincial and local authorities.

d. We understand the DoU has implemented a Tsunami Warning System and evacuation plan for the

community. If a Tsunami Warning is issued for the area, evacuation procedures provided by local and provincial government agencies should be followed.

3.4 Flood Construction Level & Tsunami Flood Reference Plane

a. As per the 2022 DoU OCP "Coastal Storm Flood Planning Support Map 4", the recommended Coastal FCL for the Zone 14 area of Ucluelet is 5.1m GD[13]. This FCL relates to the design storm event and would be easily achievable on the subject Property.

b. Detailed modelling of tsunami flood hazard in the region was conducted by ECI and CCRL and included simulated tsunami run-up elevations for 24 flood hazard scenarios resulting from a CSZ megathrust earthquake[14]. The study included interpolation of results between representative transects across 48 characteristic shoreline reaches in the region. The transects run perpendicular to the shore and are used to simulate the effect of an event for each reach. Transect 7, located immediately east of the Property was determined to be the nearest representation of the subject Property shoreline with a resulting TFRP of 10.5m GD (Table 7, Pg 49/95)[7]. Based on our review of the regional flood hazard study the TFRP for the subject Property is 10.5m GD.

c. As per our review of the AGS topographic survey, we acknowledge the TFRP is generally congruent with (or lower than) the proposed building locations on the Property. LEA considers this FCL to be reasonable and practicable for the subject Property, considering the proposal to rezone for higher density. This FCL, in conjunction with the associated coastal setback detailed below, defines the allowable buildable area on the site. Please refer to Sections 3.5 and 3.7 for further details outlining the buildable area of the Property.

d. The recommended FCL is based on the best available information provided at a regional scale, prepared by ECI and CCRL, that has been applied to the Property within the interpreted limitations of this Class 0 flood hazard assessment.

3.5 Coastal Setback

a. As per provincial guidelines, for areas outside the Strait of Georgia and subject to significant tsunami hazard, building setbacks must be a minimum of 30.0m from the estimated FNB of the sea at year 2100[8].

b. The FNB can be reasonably estimated by summing the associated coastal flood components, namely PNB + SLR + Regional Adjustment (RA) for Isostatic Rebound. The FNB in 100 years is estimated to have an elevation equal to PNB + 0.74m (i.e. PNB + 1.00m SLR - 0.26m RA) by this methodology.

c. We therefore recommend a 30.0m setback from the FNB of the ocean. This coastal setback shall be established and confirmed on-site by a qualified land surveyor.

d. Based on our field observations and review of the topographic site plan prepared by AGS, we estimate the

FNB elevation will vary from approximately 2.74m to 3.34m GD, generally consistent with the exposed bedrock foreshore slope. Figure 3.5.1 illustrates the estimated FNB and setback locations.

e. Due to the non-erodible nature of the bedrock foreshore, we do not foresee potential for regression of the natural boundary.

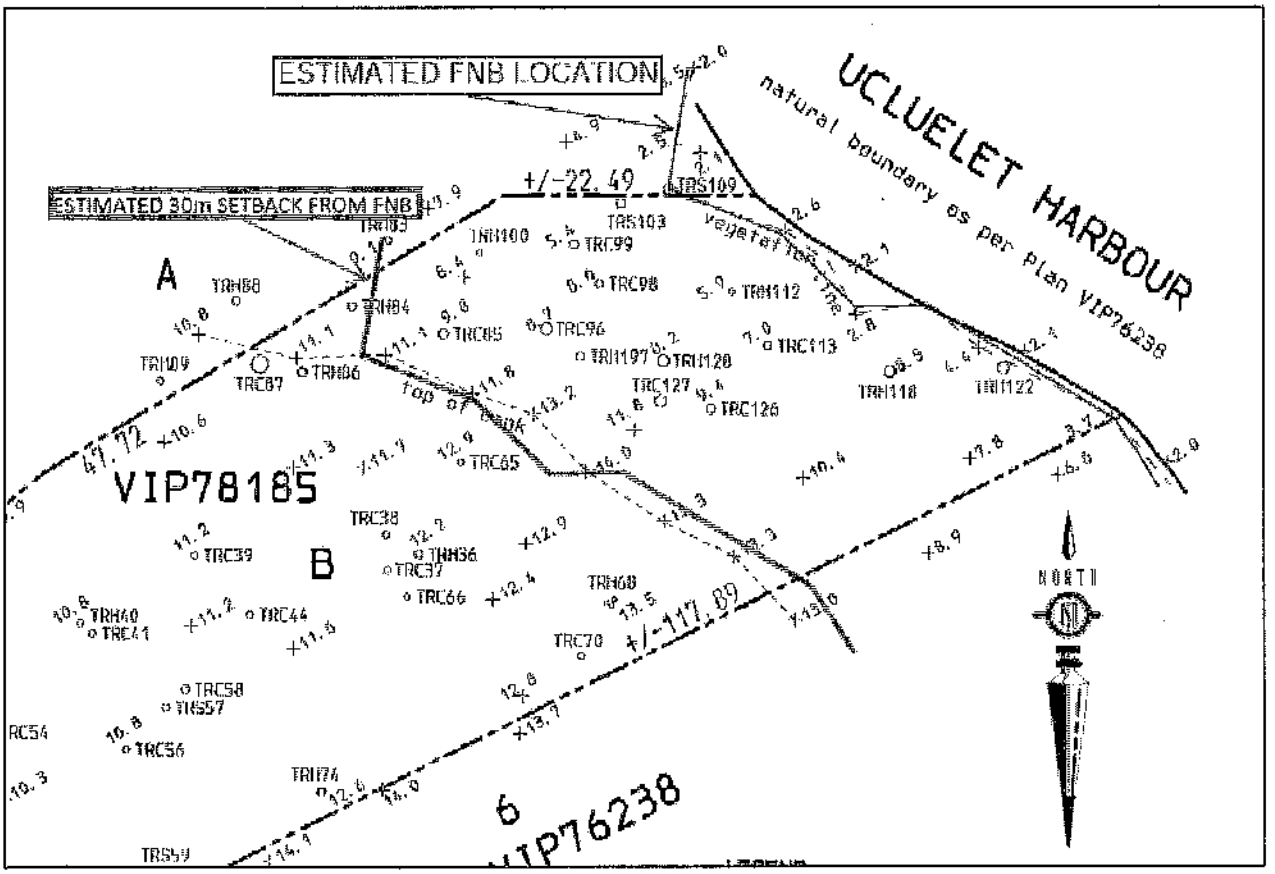


Figure 3.5.1 – Estimated FNB and Setback Locations (LEA Mark-up of AGS Survey)

3.6 Floodwater and Inundation

a. The recommended TFRP/FCL and setback applies to any Habitable Area; defined as any room or space within a building or structure which can be used for human occupancy, commercial sales, or storage of goods, possessions, or equipment (including furnaces) which would be subject to damage if flooded.

b. The TFRP/FCL establishes the minimum elevation of the underside of a wooden floor system or top of concrete slab for any Habitable Area. Provided any construction within the Property satisfies the minimum recommended FCL and design recommendations provided in this Report, we do not anticipate any damage to structural components of the buildings as a result of floodwater. Following best construction practices, areas below the FCL should not be used for the installation of furnaces, major electrical switchgear, or other fixed equipment susceptible to damage by floodwater. Ductwork is permissible because it can be

cleaned and dried. Areas below the FCL should not be "finished" with anything that can be damaged by water.

c. During construction, all footing and floor elevations shall be confirmed by qualified survey personnel to ensure the finished floor grade is at or above the recommended TFRP elevation of 10.5m GD.

3.7 Slope Setback Discussions

a. Based on our review of the attached topographic survey and observations made in the field, the overall slope is estimated to be 2H:1V and may include isolated steep sections >30° that may not become apparent until construction. Exposed bedrock was observed at several locations throughout the slope. We expect the slope would be comprised of shallow bedrock and/or glacially consolidated till deposits; therefore, LEA considers the global stability of the slope to be stable.

b. Once final building locations are determined, LEA should be consulted to review slope conditions in proximity to the buildings; specifically, the proposed duplex building (Units 3 & 4). Recommendations may include relocating the building, stepped foundations, anchoring to bedrock, or manipulation of the bearing materials as based on site conditions.

3.8 Foundation Design and Construction

a. Prior to construction, the building areas should be stripped to remove all unsuitable materials to provide an undisturbed natural soil subgrade for the footing support. Unsuitable materials include any non-mineral material such as vegetation, topsoil, peat, fill, or other materials containing organic matter, as well as any soft, loose, or disturbed soils.

b. The Geotechnical Engineer is to confirm the removal of unsuitable materials and approve the exposed competent inorganic subgrade. Recommendations for the placement and compaction of structural fill may be provided depending on bearing conditions.

c. Foundation loads should be supported on natural undisturbed material approved for use as a bearing stratum by our office or structural fill and may be designed using the following values:

   i. For foundations constructed on structural fill, as outlined in Section 4.2 of this Report an SLS bearing pressure of 150 kPa, and a ULS bearing pressure of 225 kPa may be used for design purposes.

   ii. For foundations constructed on competent bedrock or glacial till, an SLS bearing pressure of 250 kPa, and a ULS bearing pressure of 335 kPa may be used for design purposes.

c. Exterior footings should be provided with a minimum 0.45m depth of ground cover for frost protection purposes.

d. LEA may provide further recommendations for founding directly on bedrock (i.e. installation of rock anchors), based on the conditions encountered during construction and any requirements provided by the Structural Engineer. Generally, where bedrock can be levelled by way of rock-breaking, anchors are not required unless there are specific uplift requirements from the Structural Engineer.

e. Prior to placement of concrete footings, any bearing soils that have been softened, loosened, or otherwise disturbed during construction should be removed, or else compacted following our recommendations for structural fill. Compaction will only be feasible if the soil has suitable moisture content and if there is access to heavy compaction equipment.

f. Settlements should be within the ranges considered "Normal and Tolerable" for typical wood frame residential housing. These ranges are usually taken as being 20mm to 25mm total, and 10mm to 15mm differential between typical column spacing.

g. The Geotechnical Engineer should evaluate the bearing soils at the time of construction to confirm that footings are based on appropriate and properly prepared founding material.

3.9 Seismic Criteria

a. No compressible or liquefiable soils were encountered during the limited field review conducted for this Report.

b. Based on the 2018 BCBC, Division B, Part 4, Table 4.1.8.4.A, "Site Classification for Seismic Site Response," the expected soils and strata would be "Site Class B" (Rock).

3.10 Foundation Drainage - Future Residential Structures

a. Conventional requirements of the 2018 BCBC pertaining to building drainage are considered suitable at this site. Once final plans and tentative elevations are determined, the Geotechnical Engineer should be consulted to provide further dewatering data.

3.11 On-Site Infiltration and Stormwater Disposal

a. As part of the geotechnical investigation, field observations of the subgrade soil conditions with respect to the on-site infiltration and disposal of stormwater were carried out.

b. Subgrade soil conditions are expected to consist of shallow bedrock and/or glacially consolidated till.

c. Based on the expected subgrade conditions, it is the opinion of LEA that site conditions are not conducive to the installation of an on-site stormwater infiltration medium. Collected water may be conveyed via solid pipe down to the foreshore. A stabilized outlet would be required to prevent scour erosion at the outfall.

4.0 DESIGN AND CONSTRUCTION PHASE

4.1 General Excavation – Future Building Sites

a. Based on the encountered conditions we expect rock breaking by way of an excavator-mounted rock hammer, or blasting, may be required to create a level or terraced building area more conducive to footing construction. If blasting is required to manipulate the existing terrain, measures are required to ensure that any "over-blast" materials are removed from areas of structural support. Over-blast materials are defined as any rock that is disturbed because of blasting. Any over-blast materials from blasting should be removed to intact, homogenous bedrock and assessed by the Geotechnical Engineer.

b. To promote a suitable bond with concrete, all bedrock should be pressure-washed and cleaned to remove loose debris from within footing areas.

c. Groundwater ingressing into any excavations should be controlled with a perimeter ditch located just outside of the building areas, connected to positive drainage.

d. The Geotechnical Engineer is to confirm the removal of unsuitable materials and approve the exposed competent inorganic subgrade prior to fill placement and/or foundation construction.

4.2 Structural Fill

a. Where fill is required to raise areas that will support buildings, slabs, or pavements, structural fill should be used. The Geotechnical Engineer should first approve the exposed subgrade in fill areas, to confirm the removal of all unsuitable materials.

b. Structural fill should be inorganic sand and gravel. If structural fill placement is to be carried out in the wet season, material with a fines content limited to 5% passing the 75µm sieve should be used, as such a material will not be overly sensitive to moisture, allowing compaction during rainy periods of weather.

c. Structural fill should be compacted to a minimum of 95% of Modified Proctor maximum dry density (ASTM D1557) in foundation and floor slab areas, as well as in paved roadway and parking areas.

d. Structural fills under foundations, roadways, and pavements should include the zone defined by a plane extending down and outward a minimum 0.5m from the outer edge of the foundation at an angle of 45 degrees from horizontal to ensure adequate subjacent support. This support zone is shown below in Figure 4.2.

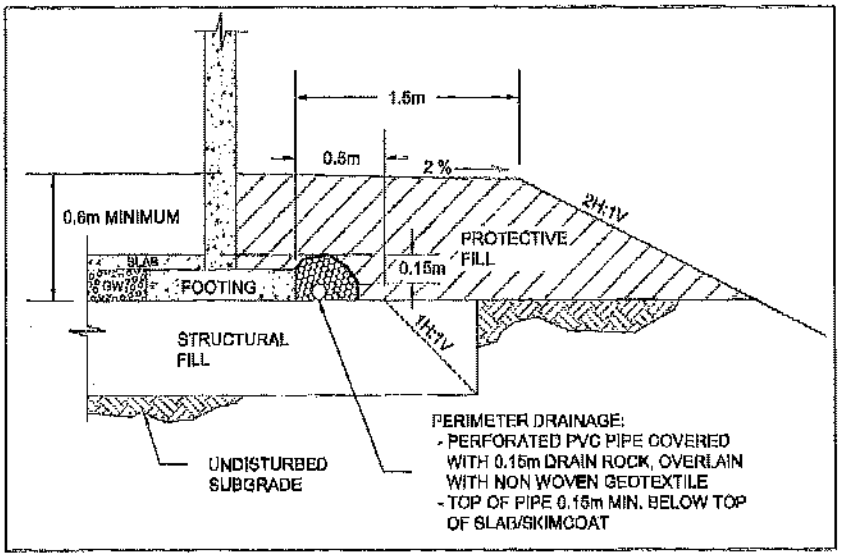


Figure 4.2 – Typical Section, Structural Fill

e. Compaction of fill should include moisture conditioning as needed to bring the soils to the optimum moisture content and compacted using vibratory compaction equipment in lift thicknesses appropriate for the size and type of compaction equipment used.

f. A general guideline for maximum lift thickness is no more than 100mm for light hand equipment such as a "jumping-jack," 200mm for a small roller and 300mm for a large roller or heavy (>500 kg) vibratory plate compactor or a backhoe mounted hoe-pac or a large excavator mounted hoe-pac, as measured loose.

g. It should be emphasized that the long-term performance of buildings, slabs, and pavements is highly dependent on the correct placement and compaction of underlying structural fills. Consequently, we recommend that structural fills be observed and approved by the Geotechnical Engineer. This would include approval of the proposed fill materials and performing a suitable program of compaction testing or visual monitoring during construction.

4.3 Pavement Design – Private Works

a. Any organic or deleterious material should be removed from beneath designated roadway, driveway, or parking areas prior to subgrade preparation. If fill is required to bring the subgrade up to the desired elevation, structural fill should be used.

b. The subgrade should be proof rolled after final compaction and any areas showing visible deflections should be inspected and repaired. The Geotechnical Engineer shall review the parking and driveway subgrade conditions during excavation.

c. The parking area subgrade and pavement should be sloped to provide adequate drainage as per the design and direction of the Civil Consultant.

d. An estimated soaked California Bearing Ratio of 30% and a 20-year design life have been used in the calculating pavement designs. See Tables 4.3.1 and 4.3.2 below.

Table 3.6.1 – Pavement Design Recommendations for Light Traffic/Low Volume Areas

Areas Subject to Cars and Small Trucks Estimated Equivalent Single-Axle Load: 2×10^4	
Asphaltic Concrete Pavement	50mm
19mm Well-Graded Granular Base Course	100mm
75mm Select Granular Subbase (SGSB)	250mm

Table 3.6.2 – Pavement Design Recommendations for Heavy Traffic/High Volume Areas

Areas Subject to Large Trucks Estimated Equivalent Single-Axle Load: 2×10^5	
Asphaltic Concrete Pavement	75mm
19mm Well-Graded Granular Base Course	150mm
75mm Select Granular Subbase (SGSB)	300mm

e. It is recommended that a reinforced concrete slab be utilized where garbage dumpsters are located. The slab should be large enough to contain the disposal unit and front tires of the garbage truck during disposal operations.

f. The above recommendations for general stripping, granular and pavement structure are in accordance with current best-practices. If the recommendations provided here prove cost-prohibitive or restrictive, alternative options may be considered through a balance of reduced preparation efforts, with a corresponding reduction in pavement design life.

5.0 CONCLUSIONS

5.1 Local Government Conformance Statement

a. LEA confirms that the recommendations made in this Report conform to the guidelines and objectives expressed under DoU OCP 2022[2], as well as applicable guidelines and best practices current to the date of this Report.

b. All construction/development shall be carried out in conformance with 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.

c. Based on our review of the relevant publications and site-specific field assessment, it is the opinion of LEA that steep slopes, oceanic flooding due in part to future SLR, as well as tsunami inundation, are the potential geotechnical hazards for the Property.

d. Provided the recommendations in this Report are followed, we confirm that from a geotechnical point of view the site is considered safe and suitable for the proposed residential development, with the probability of a geotechnical failure resulting in property damage of less than:

   i. 2% in 50 year for geotechnical hazards due to seismic events, including slope stability;
   ii. 1 in 200-year return for flooding of marine areas while accounting for 100-years of SLR, excluding tsunami hazards, and
   iii. 10% in 50 years for all other geotechnical hazards.

e. Due to the Property location adjacent to the Pacific Ocean, the associated tsunami risk is considered to be high. As the magnitude-frequency relation for tsunami-related flooding is unknown, we recommend following evacuation procedures provided by local and provincial government agencies for the area.

f. Please refer to the attached EGBC - Appendix I: Flood Assurance Statement and EGBC Appendix D: Landslide Assessment Assurance Statement for additional information.

5.2 Geotechnical and Quality Assurance Statement

a. The DoU may request a Geotechnical Engineer to provide professional assurance services during the course of construction. Geotechnical Assurance services include review of the geotechnical components of the plans and supporting documents, and responsibility for field reviews of these components during construction.

6.0 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.

Paul Fraser, B.A., CTech
Senior Technician

Chris Hudec, M.A.Sc., P.Eng.
Senior Project Engineer

7.0 ATTACHMENTS

1. AG Surveys, Site Plan, dated July 4, 2022.
2. Elite Premium Home Design Ltd., Concept Plans, dated February 20, 2023.
3. EGBC Appendix I: Flood Assurance Statement.
4. EGBC Appendix D: Landslide Assessment Assurance Statement.

8.0 REFERENCES

1. Google Earth Pro, Accessed January 2024, Image date May 12, 2023.
2. District of Ucluelet, "Official Community Plan Bylaw No. 1306", dated 2022.
3. District of Ucluelet map titled "Official Community Plan, Schedule E, Environmental Development Permit Areas" Dated February 17, 2021.
4. District of Ucluelet map titled "Official Community Plan, Schedule G, Development Permit Areas for Hazardous Conditions," Dated February 2, 2021.
5. 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.
6. Ebbwater Consulting Inc. report titled "District of Ucluelet Coastal Flood Mapping – Final Report", Project Number P154, dated June 26, 2020.
7. Ebbwater Consulting Inc. report Appendix A - "Coastal Flood Hazard Analysis: The District of Ucluelet, BC", report prepared by Cascadia Coast Research Ltd., Revision 2, dated June 19, 2020.
8. BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development report titled "Flood Hazard Area Land Use Management Guidelines," Amended January 1, 2018
9. District of Ucluelet document titled "Tsunami Risk Tolerance – Interim Policy", Policy Number 8-5280-1, dated March 29, 2022.
10. District of Ucluelet map titled "Zoning Bylaw No.1160, 2013 – Consolidated Schedule A – Zoning Map of the District of Ucluelet," revised April 8, 2021.
11. Soils of South Vancouver Island, British Columbia, Soil Survey Report No. 44, Sheet 2.
12. Province of British Columbia, iMapBC, Accessed January 2024, https://maps.gov.bc.ca/ess/hm/imap4m/
13. District of Ucluelet, "Official Community Plan Map 4 – Coastal Storm Flood Planning Support Map 3/5," Dated June 26, 2020.
14. Ebbwater Consulting Inc. document titled "District of Ucluelet Coastal Flood Mapping – Appendix C: Coastal Flood Hazard Map Atlas – Map Series 4/4: Tsunami Flood Planning Support", dated June 26, 2020.

Site Plan of:

Lot B, District Lot 543 Native Island, Clayoquot District, Plan VIP78185

Parcel Identifier: 026-159-511

Civic address: 1061 Helen Street

SCALE - 1 : 600

10 0 10 20 30

All distances are in metres and decimals thereof

(plot on 8.5" x 11" sheet)

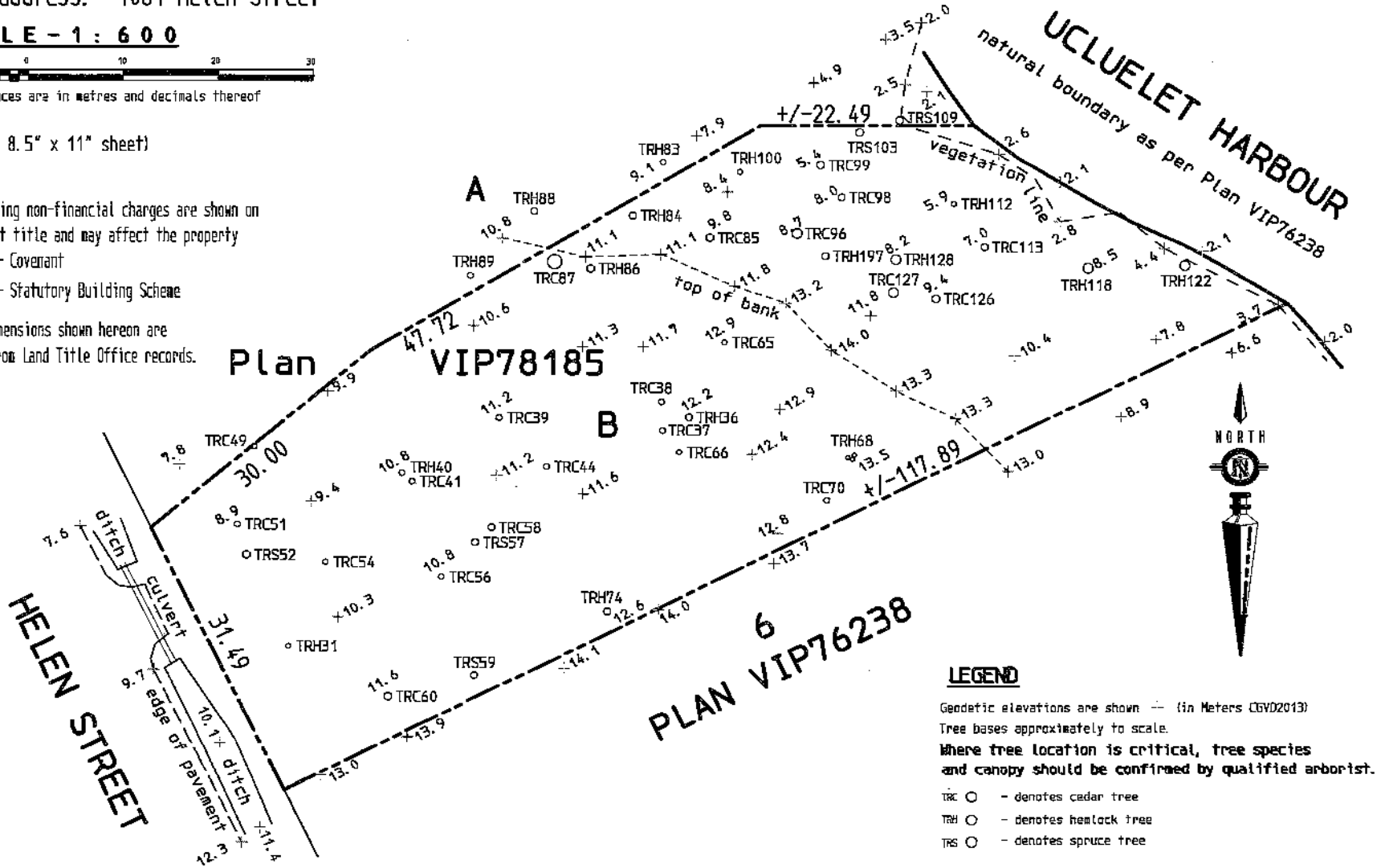
The following non-financial charges are shown on the current title and may affect the property

EV152825 - Covenant

EV152826 - Statutory Building Scheme

Parcel dimensions shown hereon are derived from Land Title Office records.

FILE: 221-Helen
DWG/DATE: 2021-09-11
AG Surveys 545 - 110 Marine Drive Ucluelet, BC V0R 3A0 phone (250) 266-4536



LEGEND

Geodetic elevations are shown — (in Meters CGVD2013)

Tree bases approximately to scale.

Where tree location is critical, tree species and canopy should be confirmed by qualified arborist.

TRC ○ - denotes cedar tree

TRH ○ - denotes hemlock tree

TRS ○ - denotes spruce tree

Appendix E

Appendix E

1061 HELEN ST UCLUELET BC

SHEET LIST:

R1 SITE PLAN
R2 3D VIEWS
R3 3D VIEWS

PROJECT CONTACTS:

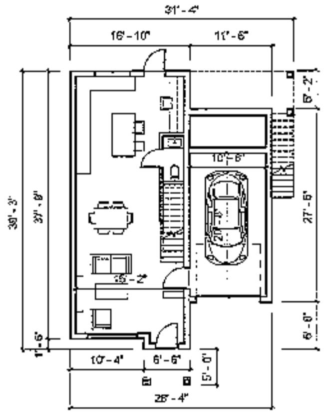
SURVEYOR:	OWNER:	DESIGNER:	STRUCTURAL ENGINEER:
AS SURVEYS 645 - 110 MARINE DRIVE, UCLUELET, B.C. V0R 3A0 TEL: 250.284.4683 Email: [illegible]	– TEL:	ELITE DESIGN	GBS ENGINEERING GROUP LTD, 14329 HAWKSTREAM DR, SURREY, B.C. V3W 0N5 TEL:604.589.8990 Email: [illegible]

PROJECT SUMMARY:

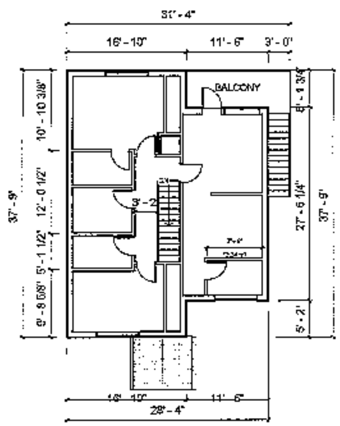
SITE COVERAGE SUMMARY:		
LOT AREA		42835.84 SF
ALLOWABLE SITE COVERAGE-40.00%		14992.54 SF
COVERED AREA	322.89 SF	2.15%
MAIN HOUSE AREA	6053.50 SF	14.13%
PROPOSED SITE COVERAGE:	6376.39 SF	16.29%

ZONING DISTRICT: R2
PROPOSAL: SINGLE FAMILY
CIVIC ADDRESS: 1061 HELEN ST UCLUELET BC
LEGAL DESCRIPTION: LOT B, District Lot 543 Native Island, Clayoquot District, Plan VIP78185
LOT AREA: 42835.84 SF

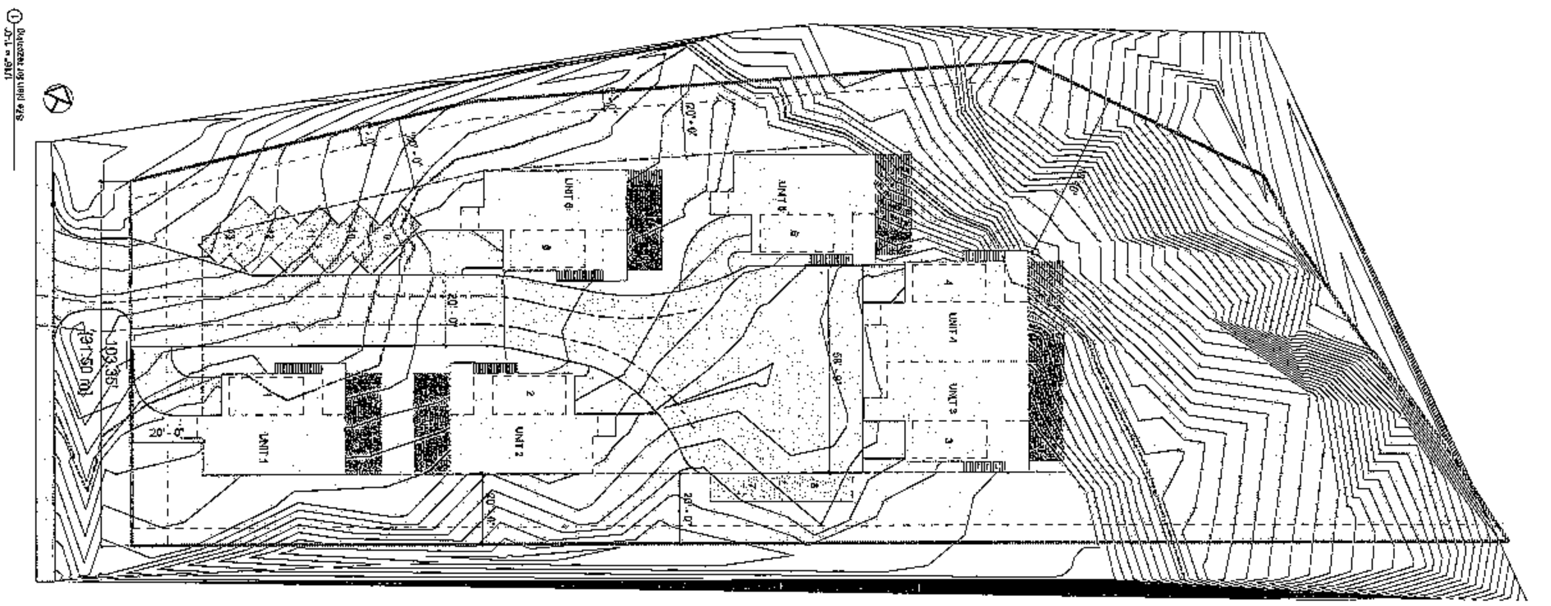
	PERMITTED:			PROPOSED:	
FSR:	21417.92 SF	70%		81.3%	11458.81 SF
	21417.92 SF		UPPER FLOOR	5705.81 SF	5706.81 SF
			MAIN FLOOR	5753.00 SF	5752.00 SF
	0.00 SF		BASEMENT		
SITE COVERAGE:	14992.54 SF	40%		6976.39 SF	
FRONT YARD:	20'			20'	
SIDE YARD:	20'	4.96'		20'	
SIDE YARD:	20'			20'	
REAR YARD:	20'			47.80'	
BUILDING HEIGHT:	36'	11m		35'	



② TYPICAL MAIN FLOOR PLAN
1/8" = 1'-0"



③ TYPICAL UPPER FLOOR PLAN
1/8" = 1'-0"



① Site plan for rezoning
1/16" = 1'-0"

REVISION		
1	ISSUE FOR REZONING	2022.08.08
2	REVISED FOR REZONING	2023.02.20

PROJECT NORTH

1061 HELEN ST
UCLUELET BC

SITE PLAN

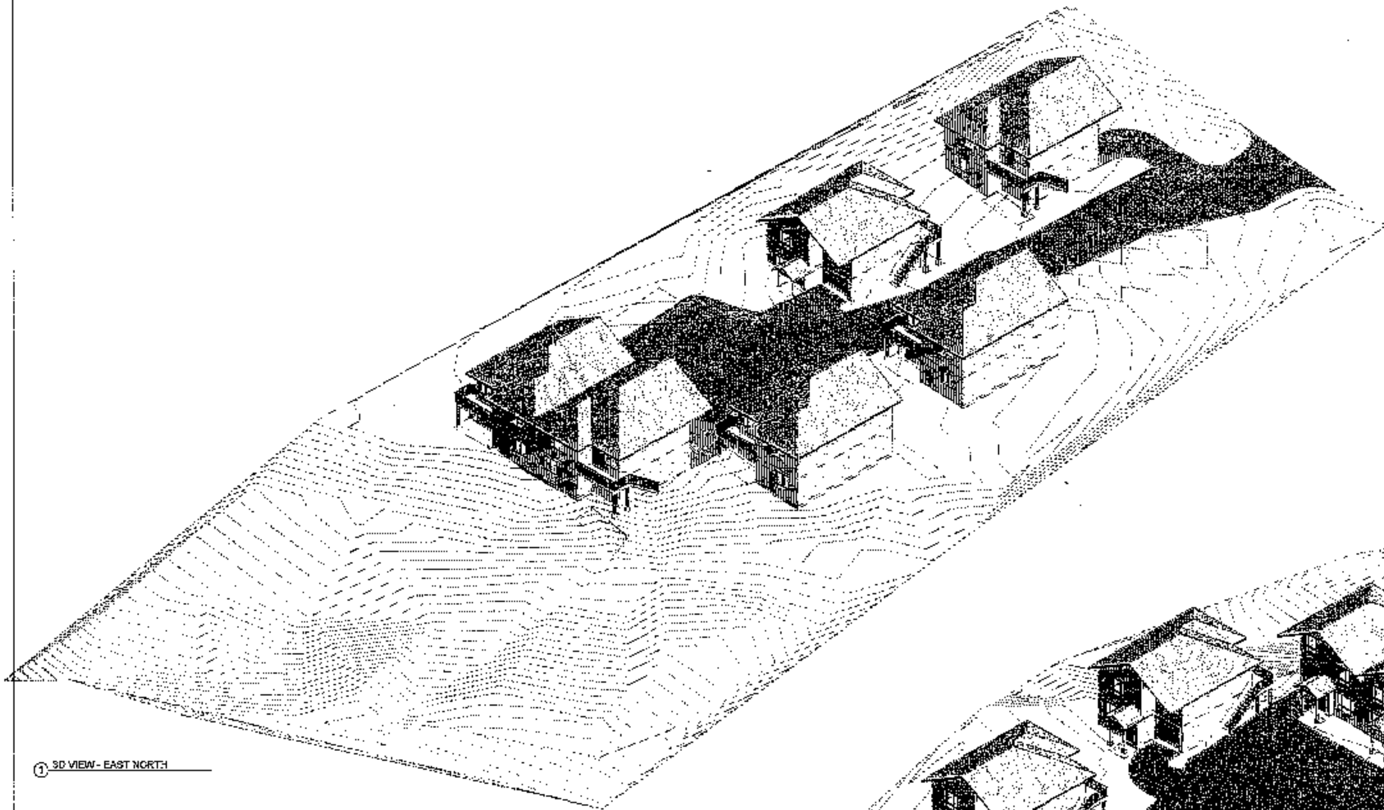
AS NOTE
AS NOTE
2023.02.20
Author

ELITE DESIGN
PREMIUM HOMES

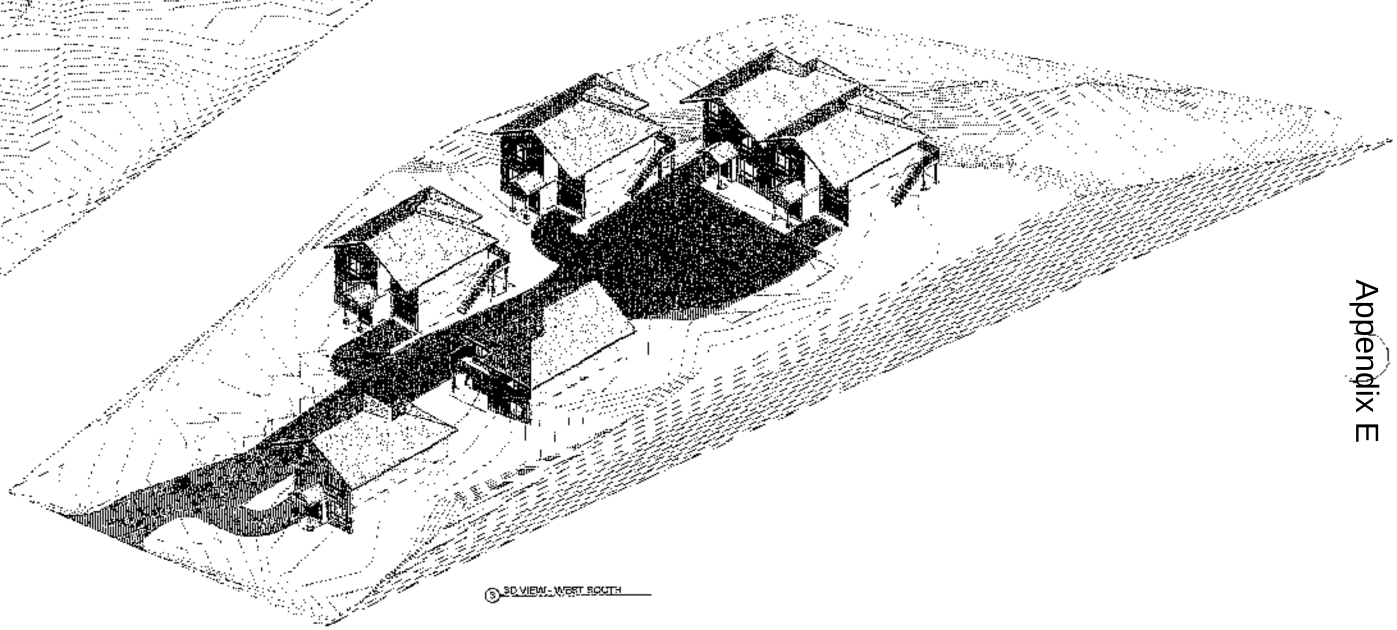
R1

2023-02-20 2:50:57 PM

Appendix E



1 3D VIEW - EAST NORTH



3 3D VIEW - WEST SOUTH

1	ISSUE FOR REZONING	2023.04.06
2	REVISED FOR REZONING	2023.07.20

PROJECT NORTH

1061 HELEN ST
UCLUELET BC

3D VIEWS

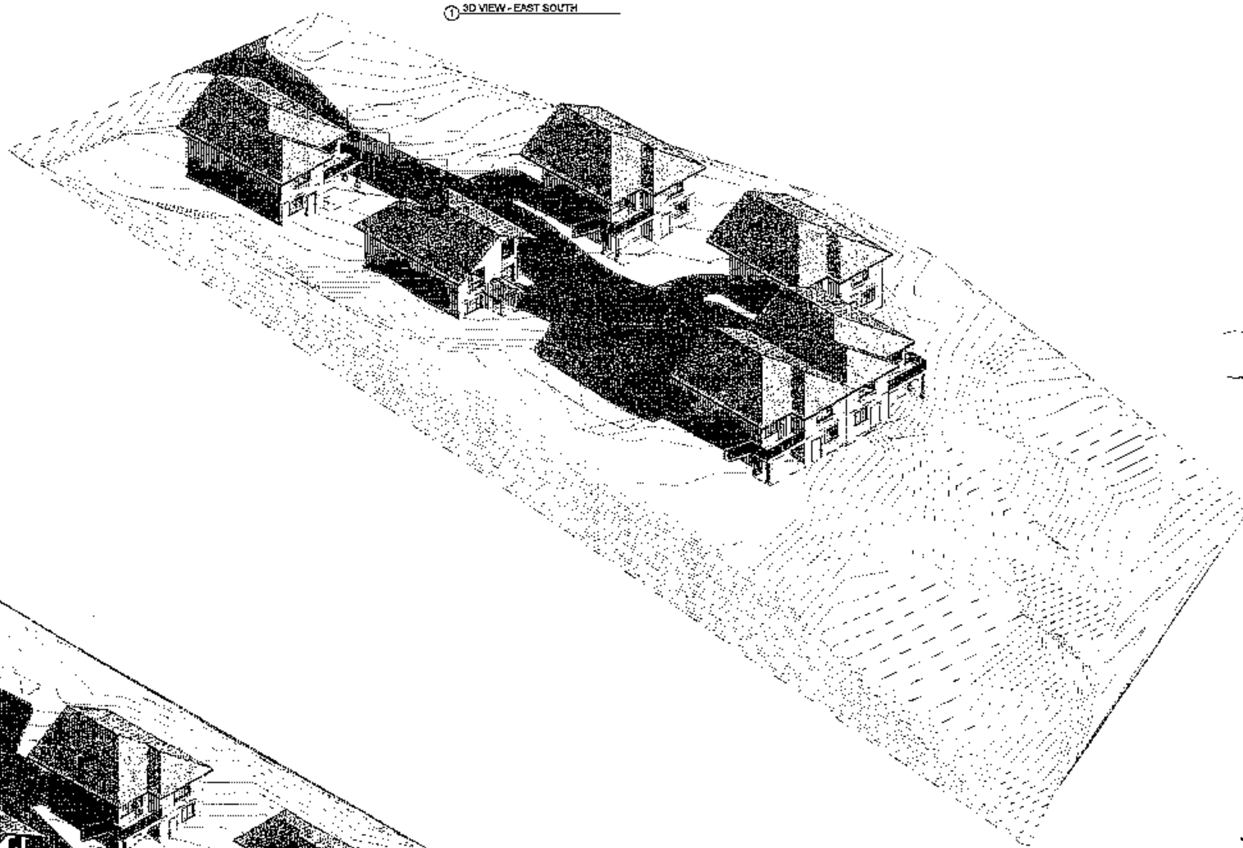
AS NOTE
AS NOTE
Author

ELITE DESIGN
PREMIUM HOMES

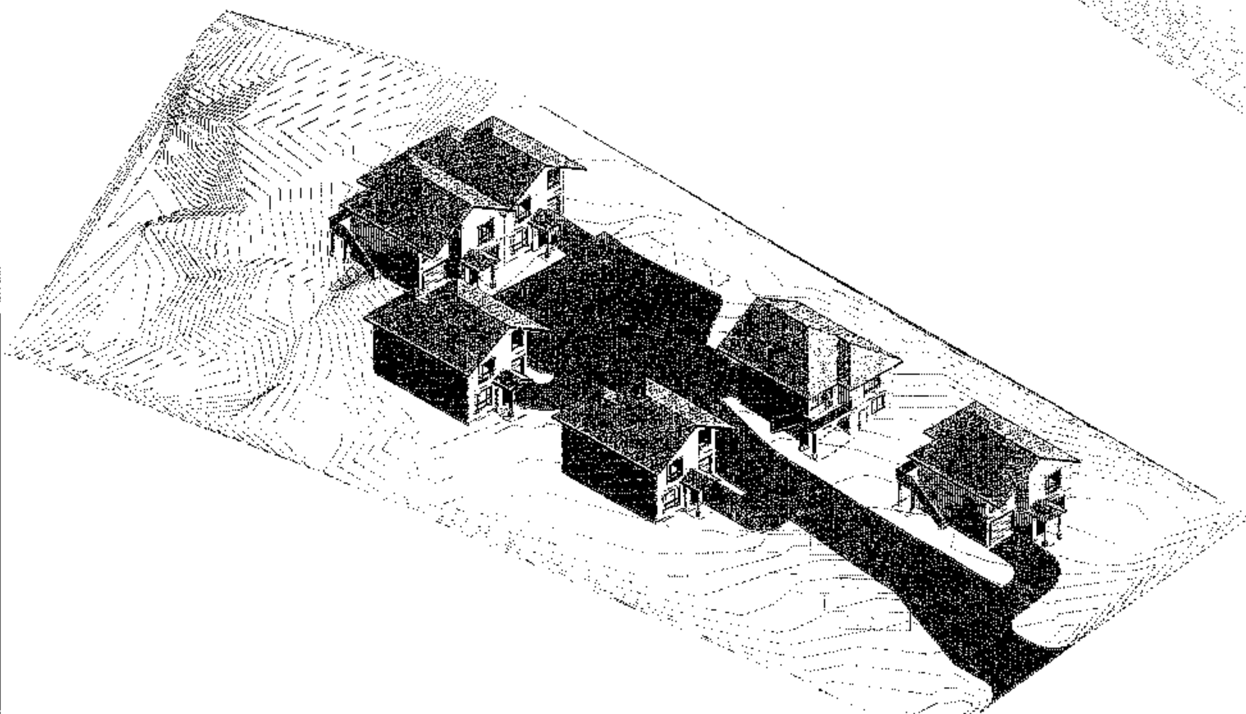
R2

Appendix E

① 3D VIEW - EAST SOUTH



② 3D VIEW - WEST NORTH



1	ISSUE FOR REZONING	2022.04.05
2	REVISED FOR REZONING	2023.02.20

PROJECT NORTH

1061 HELEN ST
UCLUELET BC

3D VIEWS

AS NOTE
AS NOTE
2023.02.20
Author

ELITE DESIGN
PREMIUM HOMES

R3

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: September 26, 2022 LEA File# E1445

District of Ucluelet

200 Main Street, Ucluelet, BC V0R 3A0

Jurisdiction and address

With reference to (CHECK ONE):

- ☐ *Land Title Act* (Section 86) – Subdivision Approval
- ☑ *Local Government Act* (Part 14, 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 B District Lot 543, Native Island, Clayoquot District, Plan VIP78185; 1061 Helen 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 of 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* (Part 14, Division 7), my Flood Assessment Report will "assist the local government in determining what conditions or requirements it will impose under subsection (2) of this section [Section 491 (4)]".

✓ 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".

FLOOD ASSURANCE STATEMENT

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

September 26, 2022
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

2022-09-26

(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)

LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

Notes: This statement is to be read and completed in conjunction with the Engineers and Geoscientists BC *Professional Practice Guidelines – Landslide Assessments in British Columbia* ("the guidelines") and the current *BC Building Code* (*BCBC*), and is to be provided for Landslide Assessments (not floods or flood controls), particularly those produced for the purposes of the *Land Title Act*, *Community Charter*, or *Local Government Act*. Some jurisdictions (e.g., the Fraser Valley Regional District or the Cowichan Valley Regional District) have developed more comprehensive assurance statements in collaboration with Engineers and Geoscientists BC. Where those exist, the Qualified Professional is to fill out the local version only. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority (or Client) Date: January 10, 202 File# E1445

District of Ucluelet

200 Main Street, Ucluelet, BC V0R 3A0

Jurisdiction/name and address

With reference to (CHECK ONE):

- ☐ A. *Land Title Act* (Section 86) – Subdivision Approval
- ☑ B. *Local Government Act* (Sections 919.1 and 920) – Development Permit
- ☑ C. Community Charter (Section 56) – Building Permit
- ☐ D. Non-legislated assessment

For the following property (the "Property"):

Lot B District Lot 543, Native Island, Clayoquot District, Plan VIP78185; 1061 Helen Road

Civic address of the Property

The undersigned hereby gives assurance that they are a Qualified Professional and a professional engineer or professional geoscientist who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, authenticated, and dated, and thereby certified, the attached Landslide Assessment Report on the Property in accordance with the guidelines. That report must be read in conjunction this statement.

In preparing that report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

- ☑ 1. Collected and reviewed appropriate background information
- ☑ 2. Reviewed the proposed Residential Development or other development on the Property
- ☑ 3. Conducted field work on and, if required, beyond the Property
- ☑ 4. Reported on the results of the field work on and, if required, beyond the Property
- ☑ 5. Considered any changed conditions on and, if required, beyond the Property
- 6. For a Landslide Hazard analysis or Landslide Risk analysis, I have:
  - ☑ 6.1 reviewed and characterized, if appropriate, any Landslide that may affect the Property
  - ☑ 6.2 estimated the Landslide Hazard
  - ☑ 6.3 identified existing and anticipated future Elements at Risk on and, if required, beyond the Property
  - ☑ 6.4 estimated the potential Consequences to those Elements at Risk
- 7. Where the Approving Authority has adopted a Level of Landslide Safety, I have:
  - ___ 7.1 compared the Level of Landslide Safety adopted by the Approving Authority with the findings of my investigation
  - ___ 7.2 made a finding on the Level of Landslide Safety on the Property based on the comparison
  - ___ 7.3 made recommendations to reduce Landslide Hazards and/or Landslide Risks

LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

8. Where the Approving Authority has **not** adopted a Level of Landslide Safety, or where the Landslide Assessment is not produced in response to a legislated requirement, I have:
   - ☑ 8.1 described the method of Landslide Hazard analysis or Landslide Risk analysis used
   - ☑ 8.2 referred to an appropriate and identified provincial, national, or international guideline for Level of Landslide Safety
   - ☑ 8.3 compared those guidelines (per item 8.2) with the findings of my investigation
   - ☑ 8.4 made a finding on the Level of Landslide Safety on the Property based on the comparison
   - ☑ 8.5 made recommendations to reduce Landslide Hazards and/or Landslide Risks
- ☑ 9. Reported on the requirements for future inspections of the Property and recommended who should conduct those inspections

Based on my comparison between:

[CHECK ONE]

- ☐ the findings from the investigation and the adopted Level of Landslide Safety (item 7.2 above)
- ☑ the appropriate and identified provincial, national, or international guideline for Level of Landslide Safety (item 8.4 above)

Where the Landslide Assessment is not produced in response to a legislated requirement, I hereby give my assurance that, based on the conditions[1] contained in the attached Landslide Assessment Report:

A. SUBDIVISION APPROVAL

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

[CHECK ONE]

- ☐ with one or more recommended additional registered Covenants
- ☐ without an additional registered Covenant(s)

B. DEVELOPMENT PERMIT

☑ For a development permit, as required by the *Local Government Act* (Sections 488 and 491), my report will "assist the local government in determining what conditions or requirements it will impose under subsection (2) of [Section 491]"

[CHECK ONE]

- ☑ with one or more recommended additional registered Covenants
- ☐ without an additional registered Covenant(s)

C. BUILDING 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 additional registered Covenants
- ☐ without any additional registered Covenant(s)

---

[1] When seismic slope stability assessments are involved, Level of Landslide Safety is considered to be a "life safety" criteria, as described in Commentary JJJ of the *National Building Code of Canada (NBC) 2015,* Structural Commentaries (User's Guide – NBC 2015: part 4 of division B). This states:

"The primary objective of seismic design is to provide an acceptable level of safety for building occupants and the general public as the building responds to strong ground motion; in other words, to minimize loss of life. This implies that, although there will likely be extensive structural and non-structural damage, during the DGM (design ground motion), there is a reasonable degree of confidence that the building will not collapse, nor will its attachments break off and fall on people near the building. This performance level is termed 'extensive damage' because, although the structure may be heavily damaged and may have lost a substantial amount of its initial strength and stiffness, it retains some margin of resistance against collapse."

LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

Chris Hudec
Name (print)

January 10, 2024
Date

1900 Boxwood Road
Address

Nanaimo, BC V9S 5Y2

(250) 756-0355
Telephone

chudec@lewkowich.com
Email

(Affix PROFESSIONAL SEAL and signature here)

The Qualified Professional, as a registrant on the roster of a registrant firm, must complete the following:

I am a member of the firm Lewkowich Engineering Associates Ltd.
(Print name of firm)

with Permit to Practice Number 1001802
(Print permit to practice number)

and I sign this letter on behalf of the firm.

current ENVIRONMENTAL
558 England Ave
Courtenay, BC V9N 2N3
p: 250.871.1944
w: currentenvironmental.ca

To:	Lynn Lee, Property Developer	Date:	January 22, 2024
From:	Jamie Godfrey, Technologist Rupert Wong, R.P. Bio.	Pages:	26
Cc:	District of Ucluelet Planning	Project:	1529 (Revision 1)

RE: REVISED ASSESSMENT REPORT – 1061 Helen Road, Ucluelet, BC.

This letter report is intended to provide the District of Ucluelet (DOU) a revised project scope for a proposed multi-family home development on the subject property at 1061 Helen Road. In addition, this report summarizes the biophysical state of the subject property. There is a Marine Shoreline Development Permit Area (MSDPA) on the subject property relating to the marine shoreline of Ucluelet Inlet (Figure 1). The DOU Bylaw No. 1306[1] requires that an assessment report be prepared by a Qualified Environmental Professional (QEP) prior to development occurring within the 30 m MSDPA. The property owners will be undertaking the construction of a new resort condominium within the 30 m MSDPA on their property. As such, this report satisfies the requirements of the DOU Bylaw 1306 for an assessment report.

This report is divided into the following categories:

[1] District Of Ucluelet. (2022). *Bylaw No. 1306, 2022: A bylaw to adopt "District of Ucluelet Official Community Plan 2022."* https://ucluelet.ca/community/planning-building-bylaw/community-planning-and-zoning/official-community-plan

1 INTRODUCTION

The subject property is a 0.4-hectare property located on the northeastern shore of Hyphocus Island and affronts the marine environment of Ucluelet Inlet. The civic address of the property is 1061 Helen Road, and the PID is 026-159-511. The subject property is zoned R-2 – Medium Density Residential, which is "intended for low to medium density residential uses in a variety of housing types"; however, it is surrounded by properties under a variety of different zoning designations including R – 1 (Single Family Residential), RU (Rural Residential), and GH (Guest House). The subject property is currently undeveloped and well vegetated, while the neighboring lots to the north and south have been partially developed for home construction. As the eastern edge of the subject property is defined by the marine shoreline of Ucluelet Inlet, Ucluelet's Marine Shoreline DPA (MSDPA) covers the eastern 30 m of the subject property. The property does not fall within Ucluelet's Terrestrial Ecosystems DPA (TEDPA).

The objectives of this assessment report are to:

1. Delineate and describe the shoreline habitat on the subject property;
2. Provide advice and recommendations on appropriate siting of development on the subject property;
3. Identify sensitive habitats and species on the subject property that require protection;
4. Provide mitigation measures to protect the shoreline and any other sensitive habitats and species during development; and
5. Prescribe habitat enhancements and invasive species removals where applicable.

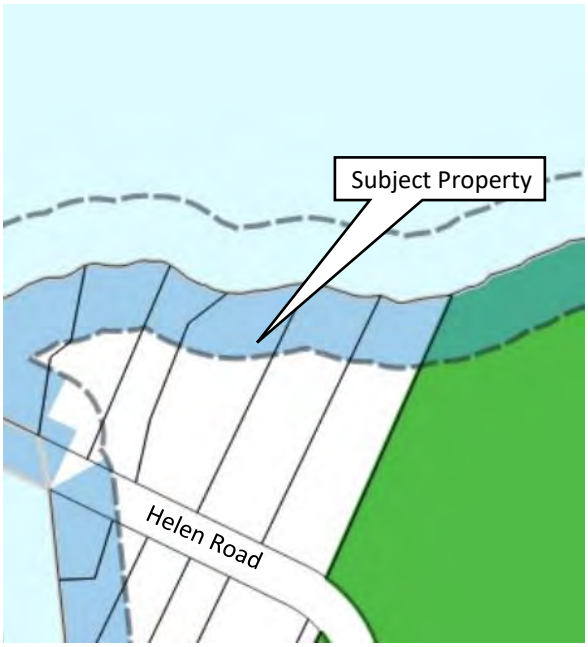


Figure 1. Location of the subject property and the 30 m Marine Shoreline Development Permit Area (Grey dashed lines).

1.1 PROPOSED DEVELOPMENT

The subject property is currently undeveloped and completely vegetated (Photo 1). Proposed work on the subject property includes the construction of a townhouse complex (Figures 2 and 3). The proposed development will have six units with associated driveway access and parking, stormwater infrastructure, and landscaping (Figures 2 and 3). Lot coverage for the proposed development will be 6976.39 square feet which represents approximately 16.29% of an allowable 40%. These calculations include the proposed condominium and exterior "covered areas," but do not include other hardened surfaces such as driveways or walkways on the property. Development of the subject property will require tree removals, grubbing, and grading of land within the development footprint prior to construction.

current ENVIRONMENTAL
558 England Ave
Courtenay, BC V9N 2N3
p: 250.871.1944
w: currentenvironmental.ca

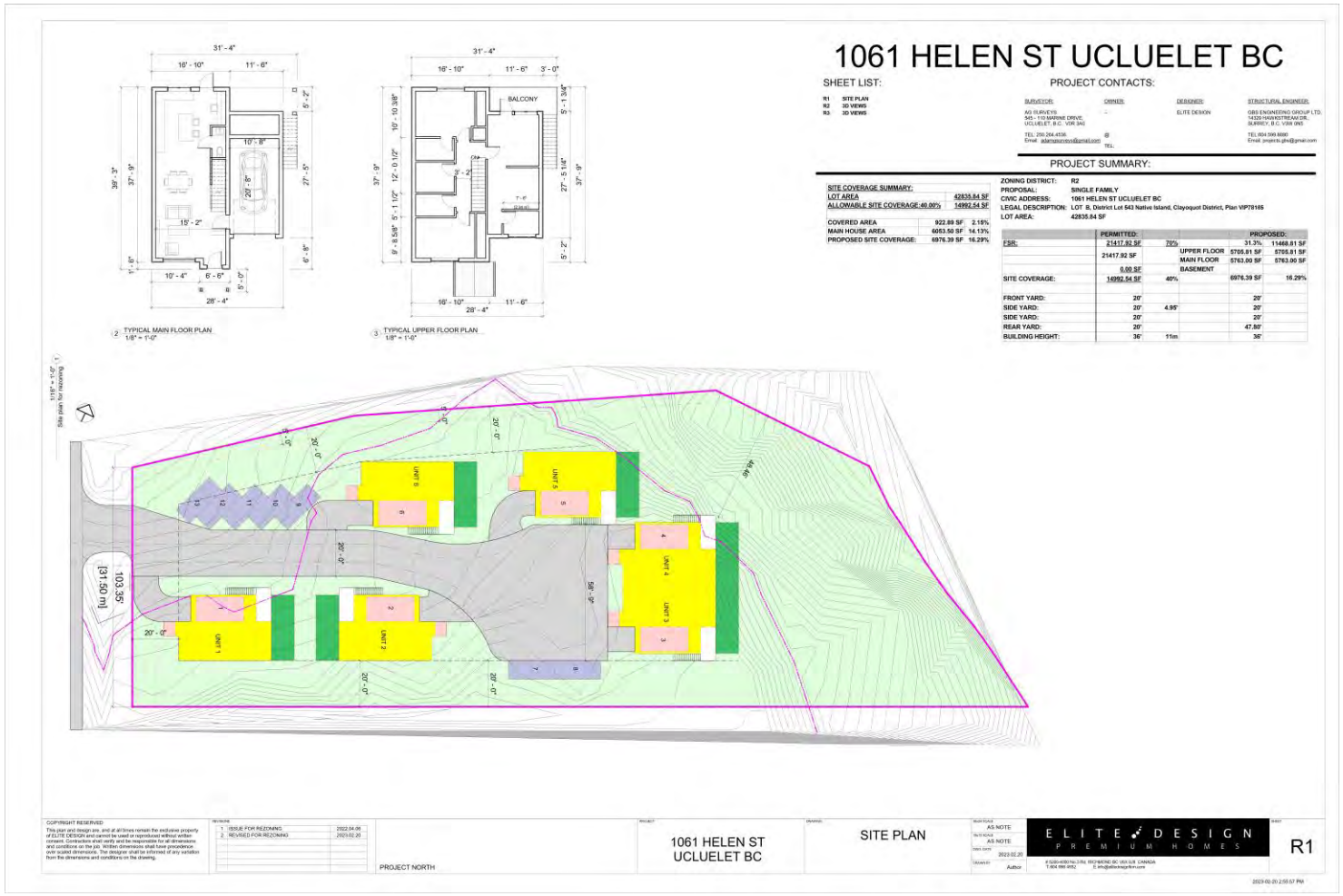


Figure 2. Revised site plan (Jan. 2024) for the proposed construction at 1061 Helen Road. The pink dashed line approximates top-of-bank.

Figure 3: 3D model of the proposed townhouse development at 1061 Helen Road.

current ENVIRONMENTAL
558 England Ave
Courtenay, BC V9N 2N3
p: 250.871.1944
w: currentenvironmental.ca

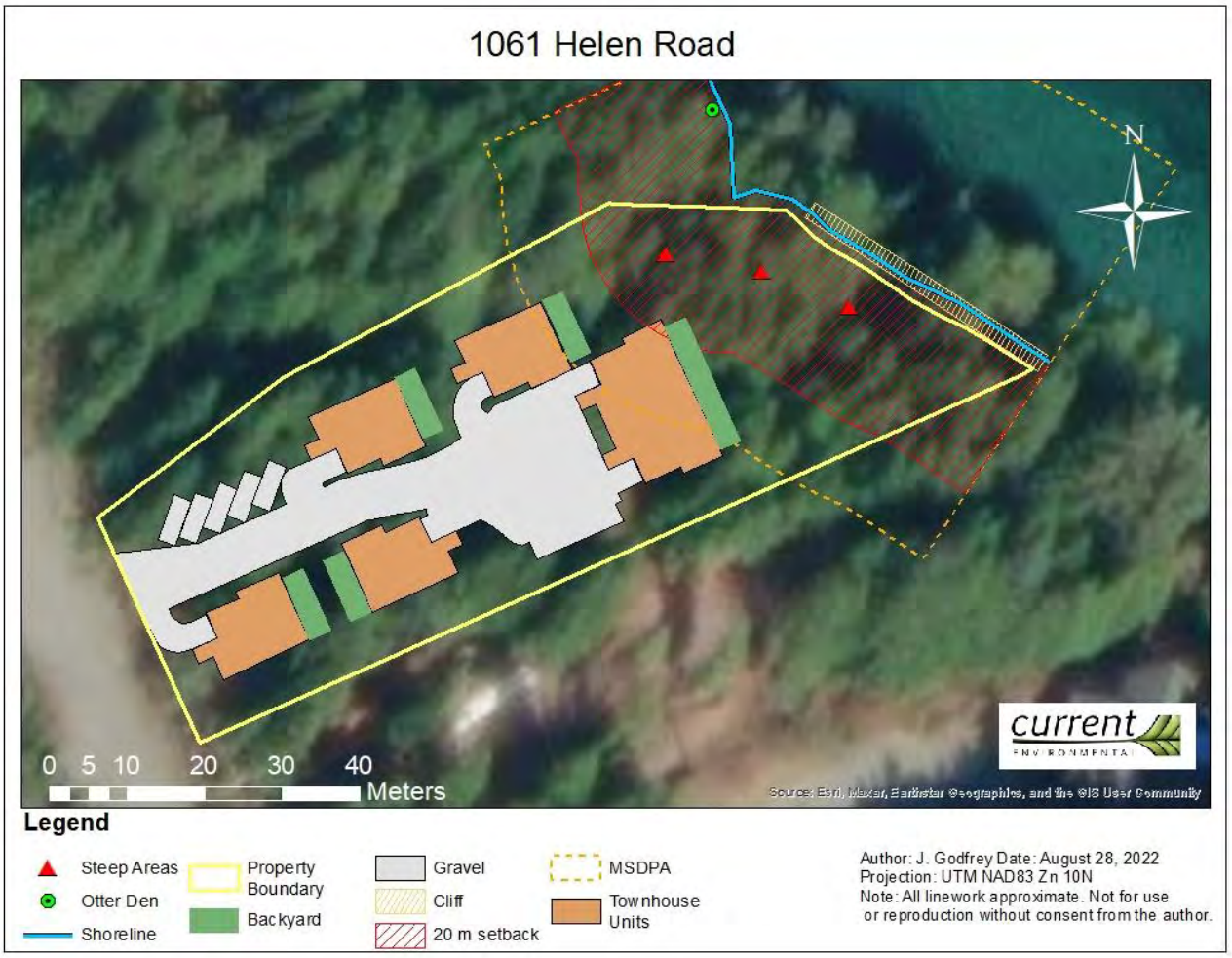


Figure 4: Location of the proposed development in relation to the 30 m MSDPA and 20 m Shoreline setback

2 METHODOLOGY

2.1 BACKGROUND REVIEW

Background information on Environmentally Sensitive Areas (ESAs) located within or in proximity to the subject property was obtained using the following sources:

1) Conservation Data Center (CDC)
2) District of Ucluelet Mapping (UkeeMap)
3) Wildlife Tree Stewardship atlas (WiTS)
4) Great Blue Heron Atlas
5) Species at Risk Act (SARA) database
6) Aerial photographs

2.2 FIELD ASSESSMENT

A ground-level assessment of aquatic/terrestrial habitats and species was conducted on July 28, 2022. The entire property was walked to ensure that all Environmentally Sensitive Areas (ESAs) were mapped; however, the assessment focused on the marine shoreline and the proposed development in the 30 m MSDPA. The following sections provide additional detail on specific inventory methods.

2.2.1 Marine Shoreline

The site survey was timed to coincide with a mid to low tide, to observe the intertidal areas adjacent to the subject property. Backshore vegetation was documented, and observations were made on the current functions of the backshore habitat on the marine shoreline. Sampling for fish/egg presence was not completed as part of this assessment. Methodologies to complete the marine shoreline assessment were based primarily on those outlined in *Develop with Care – Environmental Guidelines for Urban and Rural Land Development in British Columbia*[2].

For the purposes of this assessment, the habitat inventory affecting the subject property has been limited to the upper intertidal zone (from the mid-tide range to the high-water mark), the supralittoral zone (otherwise known as the splash zone which would only receive water/sediment during storm events), and the backshore zone (extending from the supralittoral zone to outer edge of the 30 m wide MSDPA for the marine shoreline.

2.2.2 Watercourses and Wetlands

The subject property was walked to ensure there were no other watercourses or wetlands on or near the property requiring protection from development. Criteria for delineating watercourses was based on the *BC Riparian Areas Protection Regulation (RAPR)*[3]. Under the RAPR, the Stream Boundary is defined as the "visible high water mark of a stream where the presence and action of the water are so common and usual, and so long continued in all ordinary years, as to mark on the soil of the bed of the stream a character distinct from that of its banks, in vegetation, as well as in the nature of the soil itself, and includes the active floodplain." Vegetation indicators were used as guidance to determine the presence or absence of wetlands on the subject property, as described in *Wetlands of British Columbia*[4].

2.2.3 Terrestrial Habitats and Species

Survey methods for terrestrial elements or ESAs were directed in part by those outlined in *Develop with Care – Environmental Guidelines for Urban and Rural Land Development in British Columbia*[2] and the *Field Manual for Describing*

[2] BC Ministry of Environment. (2014). *Develop With Care: Environmental Guidelines for Urban and Rural Land Development.* <https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/best-management-practices/develop-with-care/dwc-section-4.pdf>
[3] BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development. (2019). *Riparian Areas Protection Regulation: Technical Assessment Manual.* <https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/fish-fish-habitat/riparian-areas-regulations/rapr_assessment_methods_manual_for_web_11.pdf>
[4] MacKenzie, W.H, and J. R. Moran. (2014). *Wetlands of British Columbia, A Guide to Identification. BC Ministry of Forests*.

Terrestrial Ecosystems[5]. Vegetation on the subject property was identified with the assistance of *Plants of Coastal British Columbia and E-Flora BC: Electronic Atlas of the Flora of BC.*[6]

2.2.4 Species and Ecosystems at Risk

An office-based assessment of Species at Risk occurrences on the subject property was completed using the *CDC BC Species and Ecosystems Explorer*[7], the *Federal Species at Risk Public Registry*[8], the *Wildlife Tree Stewardship Atlas*[9] and the *Great Blue Heron Atlas*[10]. The on-site assessment of Species at Risk was completed concurrent with the other inventory efforts mentioned above and was based primarily on methods outlined in *Develop with Care – Environmental Guidelines for Urban and Rural Land Development in British Columbia*[2].

3 RESULTS

The following sub-sections describe the findings of the background review and site visit conducted on July 28th, 2022. Discussion on how these findings influence the proposed development are provided in the Discussion/ Recommendations section of the report (Section 4).

3.1 GENERAL DESCRIPTION OF THE SUBJECT PROPERTY

The subject property is a 0.4-hectare property located on the northeast portion of Hyphocus Island. The property affronts the marine shoreline near the mouth of the Ucluelet Inlet on its southwest shore. The civic address of the property is 1061 Helen Road (PID: 026-159-511) and it lies southeast of the town center in a neighborhood of mixed residential zoning. The property itself is one of three on Hyphocus Island zoned R-2 - Medium Density Residential. The lot is roughly rectangular with the long edges running approximately northeast – southwest. The property widens slightly toward the northeast where it meets the shoreline, which angles to the southeast (Figures 2 and 4). The topography of the lot is roughly flat in the 2/3 closest to Helen Road, and slopes steeply towards the ocean within the 30 m MSDPA (Figure 3).

The property is currently vegetated with second growth forest and has no existing development. Tree cover on the property is dominated by western redcedar (*Thuja plicata*) and western hemlock (*Tsuga heterpohylla*), with Sitka spruce (*Picea sitchensis*) present in small amounts. Shrubs on the subject property are sparse and consist of a mix of salal (*Gaultheria shallon*), red huckleberry (*Vaccinium parvifolium*), evergreen huckleberry (*Vaccinium ovatum*), false azalea (*Rhododendron menziesii*) and salmonberry (*Rubus spectabilis*). The herb layer is also sparse and includes deer fern (*Blechnum spicant*), sword fern (*Polystichum munitum*), and 3-leaved foamflower (*Tiarella trifoliata*) (Photos 1 and 2). The plants of the subject property closely match the CWHvh1 05 – CwSs-Sword fern site series which is a common plant community on Vancouver Island's west coast.

There were no significant populations of invasive species found on the subject property other than in full sun immediately adjacent to Helen Road where a population of Scotch broom (*Cytisus scoparius*) was noted (Photo 3).

---

[5] BC Ministry of Environment. (2010). *Field Manual for Describing Terrestrial Ecosystems, 2nd Edition.* <https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/conservation-data-centre/field_manual_describing_terrestrial_ecosystems_2nd.pdf>

[6] University of British Columbia. (2020). *E-Flora BC: Electronic Atlas of the Flora of BC.* <https://ibis.geog.ubc.ca/biodiversity/eflora/index.shtml>

[7] BC Ministry of Environment. (2020). *CDC imap and Ecosystems Explorer*. <http://maps.gov.bc.ca/ess/hm/cdc/>

[8] Government of Canada. (2020). *Species at Risk Public Registry*. <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>

[9] Community Mapping Network. (2020). *Wildlife Tree Stewardship Atlas (WiTS).* <https://cmnmaps.ca/wits/>

[10] Community Mapping Network. (2020). *Great Blue Heron Atlas.* <https://cmnmaps.ca/GBHE/>

3.2 MARINE SHORELINE

3.2.1 Physical Shoreline Characteristics

The shoreline of the subject property is oriented to the northeast and protected from the dominant winds in Ucluelet, as well as from the large swells that affect the western coasts of the area. No artificial armouring was seen during the July 28 site visit at the subject property; however, a natural rock cliff delineates the intertidal zone from much of the backshore habitat (Figure 4, Photo 4). At the north end of this rock wall the backshore is much more gently sloped and forms a small beach, from which a footpath leads away from the ocean (Photo 5). General beach characteristics are quite homogenous along the shoreline in both directions and will be described in detail in Section 3.2.2 (Photos 6 and 7).

3.2.2 Subtidal Habitat

The marine habitat immediately offshore of the subject property is within the main marine traffic route in and out of the harbor of Ucluelet – Ucluelet Inlet. It has a "hard-flat" benthic class; a low tidal speed (0.046-0.111m/s); and an average depth of approximately 15m[11]. There are no mapped eelgrass or kelp beds offshore of the subject property.

3.2.3 Supralittoral and Intertidal Habitat

As mentioned in Section 3.2.1 above, much of the backshore habitat of the subject property is delineated from the intertidal zone by a rock cliff. The cliff is approximately 1.2 m tall, with the uppermost portions being covered in moss, and the bottom 0.6 m colonized by acorn barnacles (*Belanus glandula*) (Photo 8).

Beyond the cliff, the 30 m MSDPA of the intertidal habitat is relatively homogenous. Limbs from the trees growing at the edge of the backshore habitat grow over the beach and shade the first 5.5 m (Photo 9). The slope of the beach is uniform throughout the entire 30 m MSDPA at approximately 5°. Two distinct zones were noted with a break at approximately 22.6 m from the high tide line (Photo 10) Sediments in the upper intertidal zone from 0 to 22.6 m consisted of poorly sorted mineral sediments ranging in size from medium sands to boulders, with the dominant size classes being medium sands to pebbles (Photo 11). Between 22.6 and 30 m sediments were noticeably more well sorted, and grain sizes were concentrated more between pebbles and cobbles (Photo 12). The proportion of shell fragments also increased below 22 m.

Rockweed (*Fucus distichus*) is common from 0 to 22.6 m while sea lettuce (*Ulva lactuca*) occurs in lesser amounts from 22.6 to 30 m. Molluscs including butter clam (*Saxidomus gigantea*), Pacific oyster (*Crassostrea gigas*), acorn barnacle, and periwinkle snails (*Littorina sp.*) are common throughout the intertidal zone (Photo 12).

[11]BC Marine Conservation Atlas. 2024. *BCMCA: Marine Atlas of Pacific Canada*. https://www.cmnbc.ca/atlasgallery/bc-marine-conservation-analysis-atlas/

3.2.4 Backshore Habitat

Topography of the backshore is sloped towards the ocean (Figure 2, Photo 2) with an average overall slope of approximately 27° in the 30 m MSDPA. The slope is currently well vegetated with a stand of second growth coastal forest similar to that described in Section 3.1; however, the sparse herb layer described there becomes well developed and dominated by sword ferns in steeper areas (Photo 2). Trees on the slope range in size from 0.1 m to 0.8 m DBH and grow in soils up to 70 cm deep.

No specific evidence of wildlife use or presence in the backshore of the subject property was noted on the July 28th site visit; however, a river otter den was found on the backshore of the adjacent property to the north (Photo 13, Figure 4). Backshore on the subject property has moderate habitat value in the form of large trees for perching and feeding habitat for birds and arboreal mammals, hollows in fallen or rotting trees that offer denning sites for a range of species, and thick, well shaded cover adjacent to a marine shoreline rich in food resources (Photos 9).

Some signs of slope instability were noted on backshore slopes including "J" shaped trees indicative of soil creep, and soil slumping in some localized steep areas (Photo 14). Due to the presence of large tree stumps indicating a history of logging on the property, it is possible that a loss of soil cohesion resulting from historic logging activities may be the cause of the instability (Photo 15). In any case, it is important that vegetation be retained on the slope to ensure that the structural benefits of an intact root system within the soil are maintained.

3.3 WATERCOURSES AND WETLANDS

There are no ditches, streams, or wetlands on the subject property. Although the property slopes steeply towards the ocean, no distinct watercourse channels were observed. This is likely due to the small elevation of the slope resulting in relatively low catchment of rain; thick soils allowing for significant infiltration; and the thick vegetation coverage absorbing large amounts of rainfall.

3.4 TERRESTRIAL HABITATS AND SPECIES

As previously described, the lot is well vegetated with a plant community common on near shore habitats of Vancouver Island's west coast. The presence of large stumps on the property indicates a history of logging, and the regenerating forest contains trees with a range of sizes up to a diameter at breast height (DBH) of approximately 0.8 m. Second growth forests retain less value than old growth forests for wildlife; however, evidence of valuable habitat characteristics were seen on the subject property. Deer were seen on the property outside of the 30 m MSDPA, and a river otter den was found near the shoreline on the adjacent property to the north. Additionally, potential nesting sites for cavity nesting or denning species were seen including rotten stumps and cover formed by fallen trees.

No bird nests or nesting trees were observed on the subject property during the July 28th survey.

Overall, the wildlife value of the subject property is considered moderate, and the recommended 15 m MSDPA will preserve a shoreline wildlife corridor on the property.

3.5 SPECIES AND ECOSYSTEMS AT RISK

The nearest recorded bald eagle nest (BAEA-108-320) is approximately 850 m from the subject property (Figure 5), and there are no great blue heron nests within one kilometer of the subject property. The proposed development will not pose a risk to any known bald eagle or blue heron nests.

According to the Department of Fisheries and Oceans mapping data, there is critical habitat within 1km of the subject property for both northern and southern resident killer whales; however, this is associated with the waters on the offshore side of the Ucluelet peninsula. There are 13 other species at risk that may be found in the marine waters adjacent to the property[12]. Four are highly mobile marine mammal species that may occasionally enter Ucluelet Inlet but would be unlikely to remain for any length of time; and four are species that inhabit depths below 100m. Of the remaining five, both basking shark and leatherback turtle are extremely rare in British Columbia waters. Based on preferred habitat characteristics, northern abalone, tope, and yelloweye rockfish may inhabit subtidal waters offshore of the subject property.

The subject property is within 500 m of known populations of the California wax-myrtle (*Morella californica*) and site conditions are within the habitable range for the species; however, no individuals were found on the property during the site visit on July 28, 2022. The California wax-myrtle is a provincially blue-listed plant but due to its physical separation from the subject property, the proposed construction does not pose a risk to nearby populations of this species.

Figure 5. The nearest known bald eagle nest showing a 300 m buffer in relation to the subject property.

[12] Department of Fisheries and Oceans Canada. 2024. *Aquatic Species at Risk Map.* DFO. https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

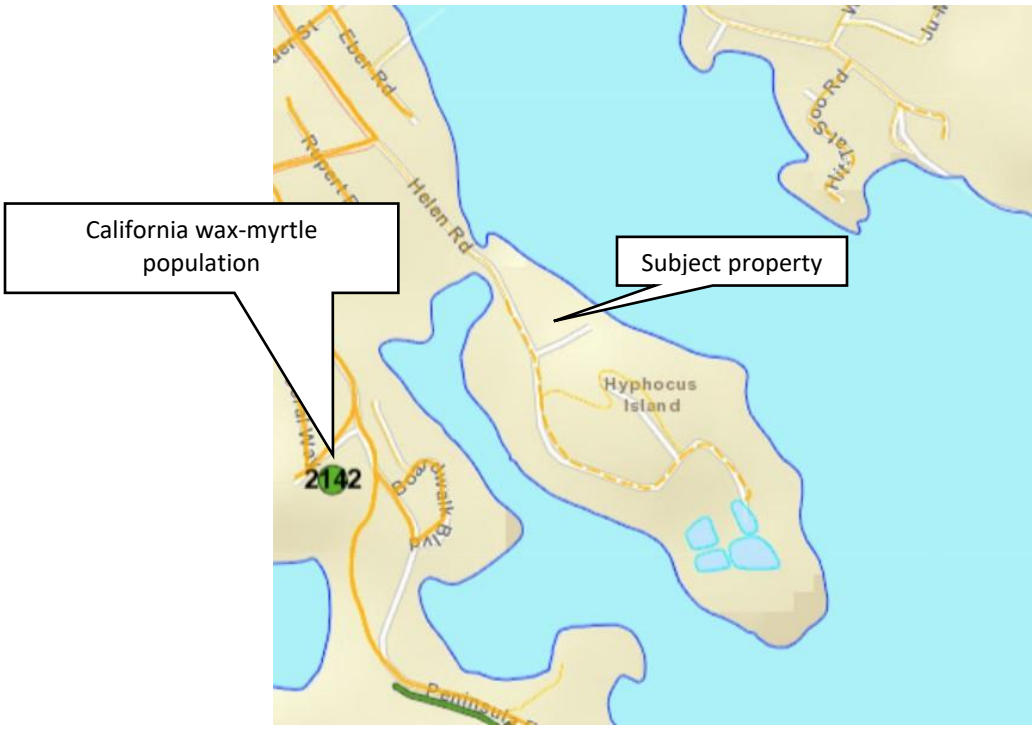


Figure 6: Nearby populations of the California wax-myrtle (Green) in relation to the subject property.

4 DISCUSSION/RECOMMENDATIONS

ESAs that require protection during the design and construction of the new dwelling are the marine shoreline and its associated backshore habitat including the trees on the steep slope. The following sections provide guidance on protecting these ESAs

4.1 IMPORTANCE OF BACKSHORE HABITAT

Backshore vegetation plays several critical roles in maintaining ecological function along the subject shoreline:

1) **Shoreline stabilization:** Vegetation stabilizes and traps shoreline substrates and helps dissipate wave energy to maintain natural process functions along marine shorelines.

2) **Pollutant removal:** Backshore vegetation filters pollutants from surface flows originating on terrestrial lands. In the case of residential developments, this typically relates to driveway and roof runoff.

3) **Perching sites for birds of prey:** Although there are no old growth trees on the subject property, the lack of continuous forest coverage on surrounding lots means that even smaller trees may provide important perching sites. Furthermore, retention of existing trees will allow for forest succession and future provision of potential nesting sites.

4) **Shade and microclimate:** Backshore vegetation plays a key role in moderating temperatures and maintaining moisture of substrates in the high intertidal zone. This role is particularly evident in the upper 5.5 m of the intertidal zone shaded by tree limbs.

5) **Food production:** Shoreline vegetation provides habitat for a wide variety of invertebrate species that form a significant portion of the prey base for marine wildlife – particularly forage fish and salmonids.

6) **Organic matter and large woody debris recruitment:** Properly functioning backshore vegetation provides a continuous supply of organic matter to the shoreline system in the form of logs, smaller wood, and leaf litter. This material drives primary food production, provides microhabitats for numerous invertebrate species, helps maintain and regulate moist microhabitats, and dissipates wave energy.

4.2 SHORELINE SETBACK AREA

A shoreline setback width of 15 m is being prescribed for the subject property, which is to be measured horizontally from the Present Natural Boundary of the shoreline (Figure 3). This vegetated setback encompasses the steeper portions of the backshore in which signs of slope instability were noted (Figures 3 and 4) and will ensure that they remain stable. Additionally, this setback will ensure that all the functions listed in Section 4.1 remain intact.

No disturbance can take place within the 15 m shoreline setback. It is recommended that shoreline access through the 15m shoreline setback not be developed.

As designed, the proposed development does not encroach into the recommended 15 m setback (Figure 4).

4.3 STEEP SLOPES

The property has undergone a geotechnical hazard assessment by Lewkowich Engineering Associates Ltd.[13], which paid particular attention to the sloped portion of the property between the proposed development and the marine shoreline, including the 15m shoreline setback. The overall gradient of the sloped eastern portion of the property was measured at 27°, with isolated sections at 30°. The geotechnical report recommends a 30.0 m setback from the Future Natural Boundary (FNB), which approximates the current top of bank on the subject property (Figure 2).

The proposed location of units 3 and 4 as shown in Figures 2-4 is immediately adjacent to the top of bank setback as proposed in the geotechnical assessment of the property, and final location must be confirmed by a qualified land surveyor prior to construction.

4.4 DRAINAGE

The geotechnical assessment completed by LEA for the subject property has concluded that the soil coverage on the eastern sloped portion of the property is insufficiently stable for stormwater infiltration[14]. Instead of infiltration, it has been recommended that stormwater outflow be conveyed via solid pipe to the intertidal zone. This conveyance method will ensure that flashy flow originating from stormwater runoff of newly constructed impermeable surfaces will not erode soils from the slope; however, it comes with an increased risk of erosion and sedimentation at the outlet of the pipe (Figure 7). It is therefore recommended that all stormwater outflow from the property be outlet to an exfiltration gallery or rock apron. An exfiltration gallery consists of a rectangular or circular excavation lined with geotextile fabric and filled

[13] Paul Fraser, and Chris Hudec. 2024. *Geotechnical Hazard Assessment: 1061 Helen Road , Ucluelet B.C., Proposed Residential Development. File No. E1445.01r1.* Lewkowich Engineering Associates Ltd.

with clean, granular stone or other void forming material (Appendix A). Construction of such a feature requires sufficient soil depth and low enough slope gradient for machine access. A potential candidate location is at the northeast corner of the subject property. A rock apron consists of a prism of riprap positioned immediately downstream of the stormwater outflow (Figure 8). It serves to spread flow and reduce velocity, thereby reducing scour of parent materials.

Either an exfiltration gallery or a rock apron would be suitable stormwater outflow solutions to reduce beach erosion and sedimentation of the marine environment; however, they must be designed by a qualified hydrotechnical engineer.

Another potential risk posed to the marine environment by the proposed development is conveyance of deleterious substances roadways and parking areas. To reduce this risk it is recommended that all stormwater catch basins be furnished with Armtec SDD3 Oil Grit Seperators (or equivalent).

Solid pipe conveyance of stormwater to the intertidal environment as proposed in the geotechnical assessment is acceptable if appropriate hydrocarbon containment measures are installed at stormwater intakes; and that the stormwater outflow has measures in place to eliminate erosion of the intertidal zone and sedimentation of subtidal marine habitats.

Figure 7. Uncontrolled stormwater outflow causing beach erosion.

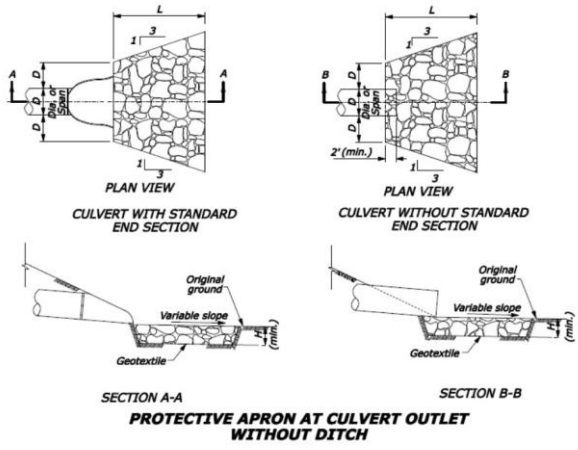


Figure 8. Example design of a rock apron at a stormwater outflow.

4.5 VEGETATION RESTORATION AND INVASIVE SPECIES REMOVALS

The entire 20 m recommended shoreline setback is well vegetated with a native plant community. No enhancements are necessary to improve the slope stability or ecosystem functions provided by this setback, and therefore a landscaping plan is not recommended as part of this assessment.

Invasive species consisting primarily of Scotch broom were noted on the subject property adjacent to Helen Road outside of the MSDPA. This portion of the property will be highly disturbed during construction. It is recommended that during the site clearing phase, any vegetation or soils containing invasive plants be bagged and disposed of at a landfill to prevent further spread.

4.6 MITIGATION MEASURES DURING CONSTRUCTION

It will be important to implement mitigation measures during the construction on the subject property to protect the sensitive backshore vegetation adjacent to the site. Mitigation measures during construction are provided in Appendix B.

5 CONCLUSION

Based on the results on this assessment, proposed development on the subject property can proceed without causing a net impact to the adjacent shoreline habitat for the following reasons:

1) There will be no construction, ground disturbance, or removal of trees or vegetation within the 15 m shoreline setback area on the subject property.

2) No disturbance will occur to the 15m shoreline setback area.

3) A drainage plan is designed to prevent:

    a. Introduction of hydrocarbons to the marine environment;
    b. Erosion of the intertidal zone;
    c. Sedimentation of the marine environment.

4) As per Section 4.6 and Appendix B, any potential adverse effects during construction can be mitigated to result in no, negligible or minor harmful effects on aquatic resources. If mitigation measures are not implemented as intended harmful alterations may result.

6 CLOSURE

We trust this assessment has satisfied the requirement to determine the potential effects of the proposed development on the adjacent marine habitat at 1061 Helen Road.

Please contact the undersigned with any questions or concerns.

Sincerely,

Jamie Godfrey, Technologist and Rupert Wong, R.P. Bio.

Current Environmental Ltd.

PHOTOS

Photo 1. Representative photo of vegetation found in the western, flatter portions of the subject property.

Photo 2. Representative photo of vegetation seen within the sloped 30 m MSDPA in the eastern portion of the subject property.

Photo 3. Western property boundary where the subject property meets Helen Road. Populations of Scotch broom were found in sun exposed areas of this property boundary.

Photo 4: Rock cliff delineating the intertidal zone from the backshore habitat at 1061 Helen Road.

Photo 5: Backshore of the northern edge of the subject property north of the rock cliff. Photo shows the edge of the backshore habitat and a beach access trail from the forested portion of the subject property.

Photo 6. Representative photograph of the shoreline of adjacent properties to the northwest.

Photo 7. Representative photograph of the shoreline of adjacent properties to the southeast.

Photo 8. Representative photograph of the cliff separating the backshore of 1061 Helen Road from the intertidal zone.

Photo 9. Backshore habitat of 1061 Helen Road as seen from the intertidal zone. Note the tree branches overhanging the uppermost intertidal zone.

Photo 10: Transition between poorly sorted beach sediments and more well sorted sediments seen at approximately 22.6 m from the high tide line in front of 1061 Helen Road.

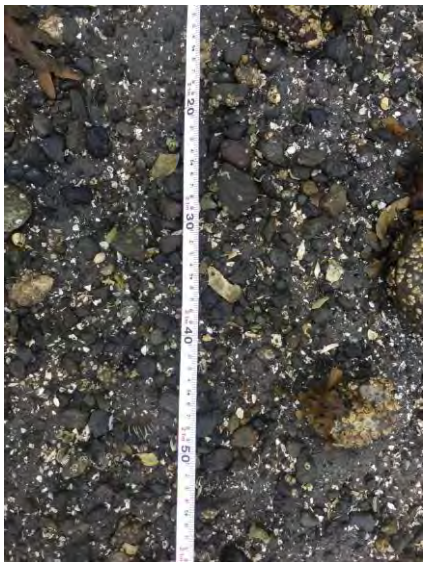


Photo 11. Representative photograph of sediments in the 0 – 22 m range of the intertidal zone adjacent to 1061 Helen Road. Grain sizes in this portion of the intertidal zone were poorly sorted with a wide range of sizes.

Photo 12. Representative photograph of sediments in the 22 - 30 m range of the intertidal zone adjacent to 1061 Helen Road. Grain sizes in this portion of the intertidal zone were more well sorted with less fine material and more shell fragments.

Photo 13: Entrance to otter den and scat found in the backshore of the neighboring property to the northwest of 1061 Helen Road.

Photo 14: "J" shaped tree growth found in steep areas of the backshore of 1061 Helen Road that can be indicative of soil creep.

Photo 15: An example of a large stump found above a steep area in the backshore of 1061 Helen Road.

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APPENDIX A: ROCK EXFILTRATION GALLERY EXAMPLE

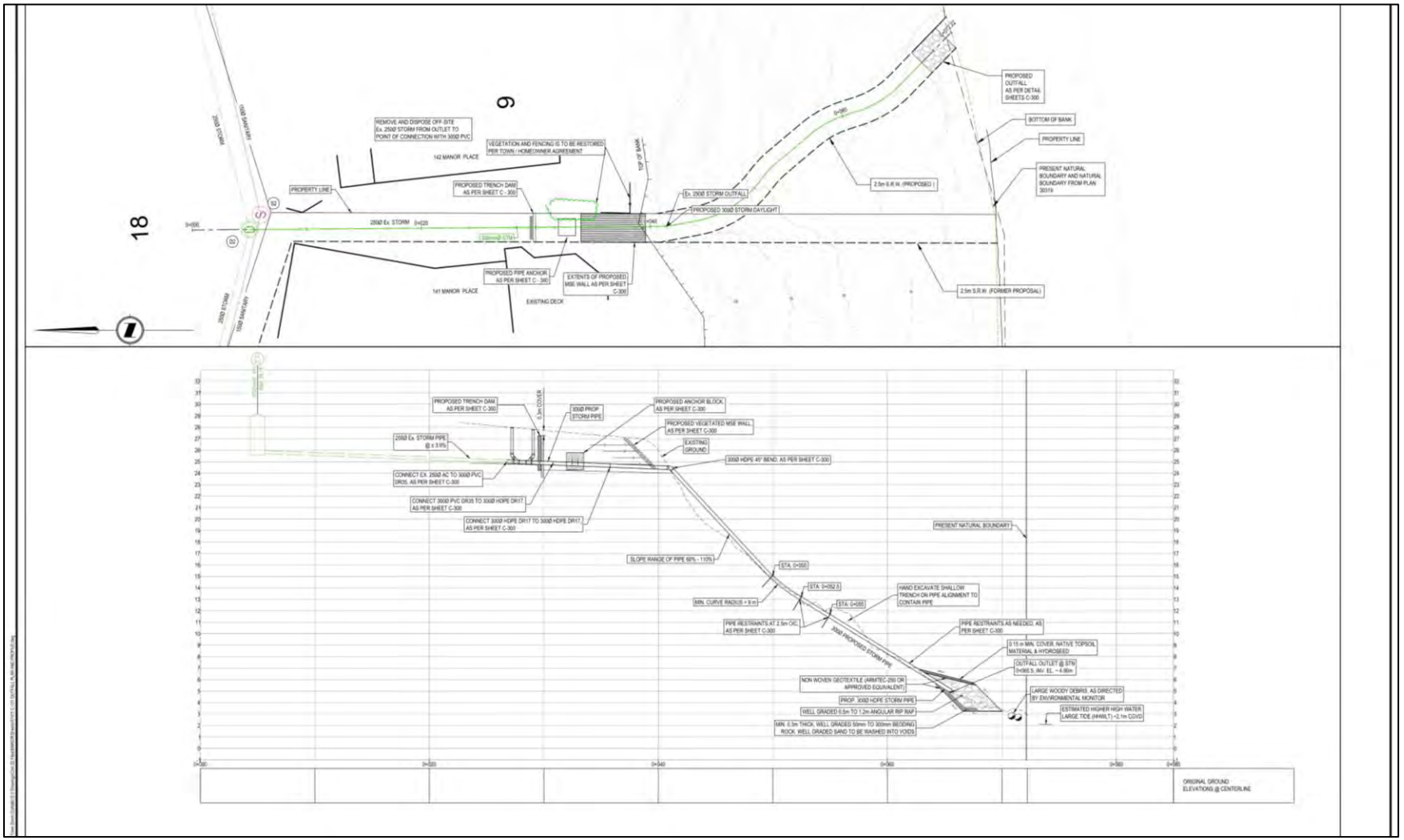

Figure 9. Typical design of stormwater pipe running down a steep slope and discharging through a rock exfiltration gallery.

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APPENDIX B: MITIGATION MEASURES DURING CONSTRUCTION

Fuels and Hazardous Materials:

The accidental release of petroleum, oils, hydraulic fluids, lubricants, concrete additives, anti-freeze, or other hazardous materials onto land surfaces or into waterbodies is an offence under the Federal *Fisheries Act* and may result in degradation of habitat quality and could be a threat to human health. Machinery required for the proposed development will include heavy equipment and truck traffic.

Environmental protection procedures for handling and storage of fuels and hazardous materials shall include the following items:

1) A spill kit of appropriate capacity will be on hand at all times heavy machinery or gas-powered tools are in use during construction.

2) All identified spills will be cleaned up immediately, and contaminated soils and vegetation will be removed for appropriate disposal.

3) Refueling of equipment is to occur only at designated fuelling stations and located at least 20 m from the shoreline.

4) All fuel, chemicals, and hazardous materials will be clearly marked.

5) Pumps and jerry cans are to be placed on poly sheeting and sorbent pads to contain spills.

6) All equipment maintenance with the potential for accidental spills (e.g., oil changes, lubrications) will be done on a designated area at least 20 m from the shoreline. Tarps should be laid down prior to commencement of work to facilitate clean up.

7) In the event of a spill, the following guidelines should be followed:

    a. Spills to the receiving environment are to be reported to Emergency Management BC (1-800-663-3456) if they exceed the reportable limits (e.g., 100 liters of fuel or oil).
    b. Apply sorbent pads and booms as necessary.
    c. Dispose of all contaminated debris, cleaning materials, and absorbent material by placing in an approved disposal site.

Sediment and Erosion Control:

Specific measures to control sediment during construction will include:

1) Maintain/do not disturb vegetation within the prescribed 20 m shoreline setback.

2) Where there is a potential for silt runoff in the proximity of existing waterbodies, control devices will be installed prior to construction activities commencing.

3) Filter fabric dams, rock check dams, and silt fencing will be used as needed on a site-specific basis to control erosion. Filtration should be accomplished using filter fabric keyed into substrates and banks and elevated using stakes or straw bales. Silt fencing is not an acceptable mitigation technique to control erosion in flowing ditches; however, it is useful for containing slumping areas and for use as baffles to slow water velocities.

4) Excavation will be stopped during intense rainfall events or whenever surface erosion occurs affecting nearby waterbodies.

5) Soil stockpiles will be placed a minimum of 20 m from any waterbody and in a location where erosion back into the marine environment cannot occur and will not impede any drainage.

6) Soil stockpiles with the potential to erode into waterbodies are to be covered with poly sheeting. Other techniques, such as terracing or surface roughening can greatly reduce surface erosion on steeper slopes.

7) Permanent exposed soil areas and erosion-prone slopes that may potentially erode into waterbodies are to be seeded or covered with geotextile.

8) Clearing will take place immediately prior to excavation and earthworks to minimize the length of time that soils are exposed. Vegetation in adjoining areas will not be disturbed.

Tree Protection:

All trees and native vegetation within the 20 m shoreline setback will need to be retained and protected unless a tree is deemed hazardous by a certified arborist. Trees provide critical functions in backshore areas by providing shade, nutrient and leaf litter drop, large woody debris recruitment in both the foreshore and marine environments, and bank stability through their complex root networks. They also help retain soil and provide more favourable growing conditions for other understory shrubs and ground cover plants in the backshore area.

As previously described, there will be significant clearing of existing vegetation from portions of the subject property; however, there are no plans for any vegetation removal within the 20 m shoreline buffer zone. Specific measures to protect trees during development will include:

1) A root protection zone for all trees in the 20 m shoreline setback will be established prior to construction commencing. The root protection zone should be established at the edge of the drip line of trees within the 20 m shoreline setback. The root protection zone should be physically delineated and should be off-limits to machinery.

2) Machine access will be from the southwest side of the property.

3) Tree protection plans will be communicated to everyone on site prior to commencing construction.

4) If roots are encountered during construction, they should be first avoided if possible, and if they must be cut, they should be cut cleanly with a saw as opposed to shattered with machinery.

5) Care should be taken not to break any limbs of trees within the 20 m shoreline setback during construction. If any limbs are accidentally broken, they should be cleanly cut with a saw.

6) Should any issues arise with regards to potential changes to the impact on trees during development, it is recommended that an arborist be retained to provide guidance on the least impact approach to development around trees.

The Corporation of the District of Ucluelet

MUNICIPAL POLICY MANUAL

	POLICY NUMBER: **8-5280-2**
REFERENCE: Tsunami Risk Tolerance - Interim Policy	**ADOPTED BY:** Council
CROSS-REFERENCE: OCP Policies 2.34, 2.50	**SUPERSEDES:** 8-5280-1
AMENDED DATE: N/A	
DEPARTMENT: Planning / Engineering / Emergency Services	**EFFECTIVE DATE:** March 1, 2024

Policy Statement

The purpose of this interim policy is to clarify the District's tolerance for risk when making decisions that may affect persons, property, environments and cultural features, considering the remote but potentially catastrophic consequences of flooding caused by Tsunami – at a time when our understanding of risks is expanding, climate change is altering oceans and Provincial policy and guidelines are evolving.

Scope

This policy applies to decisions on locating critical municipal assets, investments in infrastructure, rezonings, and the subdivision of land.

Justification

A. Current policy adopted in the municipal Official Community Plan (OCP) bylaw:

"It is District policy that it is in the public interest for new subdivisions and developments to be planned to avoid areas of potential flood risk."

Policy 2.34 establish and undertake the work, as necessary, to refine Flood Construction Levels (FCLs) to ensure new development and infrastructure avoids the impacts of rising sea levels.
Policy 2.50 conduct flood risk mapping for sea level rise and use the results to communicate and manage risks.
Policy 3.9 Improve tsunami evacuation route signage for prone areas, directing people to the closest high ground area.

B. Current Provincial guidance:

The west coast of Vancouver Island, identified as Zone C by the provincial Ministry of Public Safety and Solicitor General, is a high-risk seismic zone, known to be vulnerable to flooding in the event of a tsunami.

The amended *Flood Hazard Area Land Use Management Guidelines* state that a subdivision application in a tsunami prone area must include a report by a suitably qualified Professional Engineer, experienced in coastal engineering who must formulate safe building conditions for each proposed lot. The guidelines go on to state that flood construction level (FCL) requirements should be established on a site-specific basis and take into account tsunami hazards, and that reductions to these requirements should only be considered where the building can be built to the Tsunami FCL on bedrock.

The Province's brief on modernizing BC's emergency management legislation notes that risk reduction starts with making sound decisions about where and how to build. The Province proposes to require local authorities to give greater consideration of current and future risk for new development approvals in hazardous areas.

C. Justification for new policy:

This area of local policy for flood risk management hinges on the District's tolerance for risk, weighed against the balance of community interests. The destructive nature of tsunamis as well as their relative infrequency means that they do not naturally fit within the definition of FCL provided in the Provincial Guidelines. Following the "as low as reasonably practicable" (ALARP) approach to managing risks requires that decisions be made based on Ucluelet's tolerance for risk and consideration of what is reasonable and practicable in the community context.

Policy:

This policy is to guide decisions on:

- amendments to the Zoning bylaw or Official Community Plan bylaw;
- applications for subdivision of land; and.
- location of critical community infrastructure and facilities.

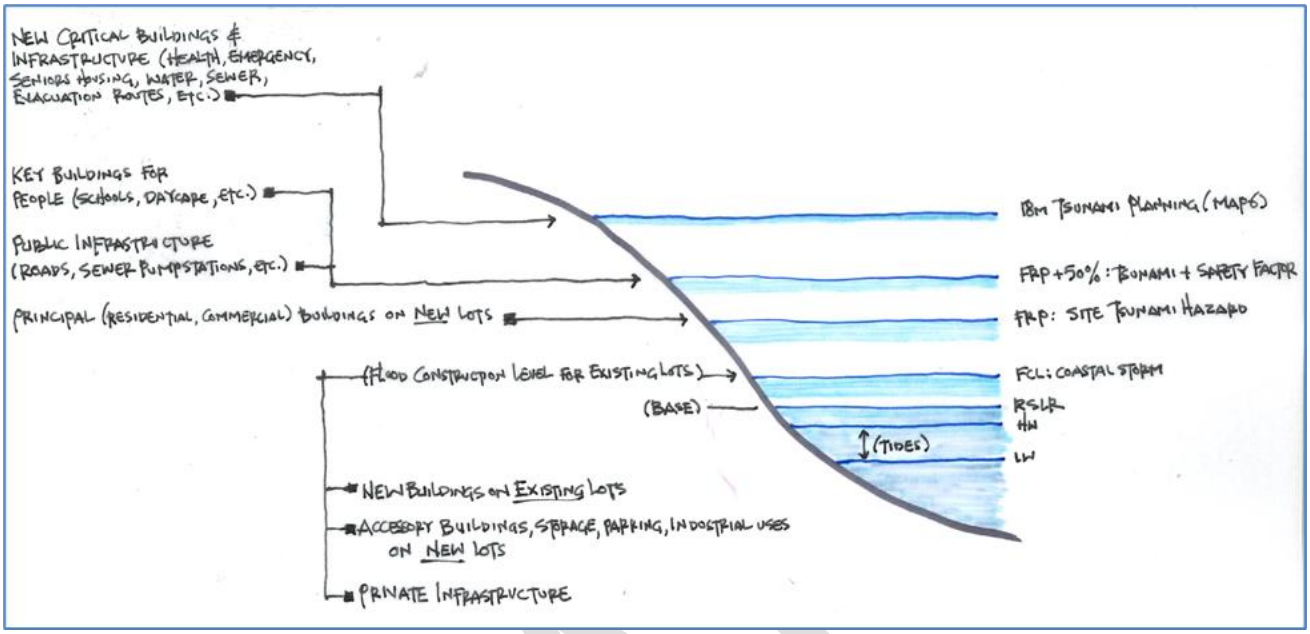
The following table and diagram indicate acceptable minimum vertical elevations for specified uses, structures and/or infrastructure relative to identified flood hazards.

Table 1: minimum acceptable elevations for different uses relative to modelled flood levels.

Proposed facility or use	Minimum elevation	Reference
New critical infrastructure (e.g. health care, emergency, seniors' housing, core water infrastructure, core sewage treatment infrastructure, evacuation routes, etc.)	18m tsunami planning elevation	OCP Map 6
Key buildings for assemblies of people (schools, daycare facilities, etc.)	Tsunami Flood Reference Plane + 50%	Site-specific analysis by suitably qualified Professional Engineer experienced in coastal engineering
Public Infrastructure (e.g., roads, sewer pump stations, etc.)	Tsunami Flood Reference Plane +50%	Site-specific analysis by suitably qualified Professional Engineer experienced in coastal engineering
New residential and commercial buildings on new lots	Tsunami Flood Reference Plane	Site-specific analysis by suitably qualified Professional Engineer experienced in coastal engineering
A change in use that would increase density and/or infrastructure on existing lots	**Tsunami Flood Reference Plane**	**Site-specific analysis by suitably qualified Professional Engineer experienced in coastal engineering**
A change in use that would not increase density and or infrastructure on existing lots	**Coastal Storm FCL**	**OCP Map 4**
New buildings on existing lots	Coastal Storm FCL	OCP Map 4
Accessory buildings, storage, parking, industrial uses on new lots	Coastal Storm FCL	OCP Map 4
Private infrastructure	Coastal Storm FCL	OCP Map 4

(Added March 2024)

Figure 1: minimum elevations for different uses relative to modelled flood levels.



Approval of Building Sites or Structures within areas identified as being subject to Tsunami hazard

Any subdivision approval of new lots where building sites would overlap areas identified as being subject to potential tsunami hazard will be subject to the following:

- a report by a qualified professional engineer experienced in coastal engineering who must determine the tsunami flood reference plane for the site and formulate safe building conditions for each lot, per the current *BC Flood Hazard Area Land Use Management Guidelines*;
- certification by a qualified professional engineer that the building site can be safely constructed for the intended use with habitable spaces and electrical / mechanical systems located above the applicable minimum elevations set out in Table 1;
- the report by the qualified professional engineer must reference current structural standards for tsunami loads and effects including, as a minimum, ASCE/SEI 7-16, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* or subsequent best practices and standards;
- the report by the qualified professional engineer must address the anchoring of foundations to bedrock; and,
- a restrictive covenant registered on title of the property:
    - restricting the use of the land to meet the conditions specified in the professional's report enabling the land to be used safely for its intended use;
    - containing conditions respecting reimbursement by the owner for any expenses that may be incurred by the municipality as a result of a breach of a covenant; and,
    - indemnifying the District of Ucluelet and the Province of British Columbia from any liability or claim for property damages, injury or loss of life resulting from flooding.

Limit of authority

Nothing in this policy supersedes Provincial or Federal enactments or regulations, or professional standards and the duty of care performed by Professional Engineers in exercising their professional judgement.

Review and update

This policy shall be reviewed and considered for update or repeal when any of the following occur:

- new flood hazard mapping for Ucluelet is completed and adopted; or,
- the Province of British Columbia adopts new acts, regulations or guidelines for mitigating community risks from tsunami flood hazards.

Marilyn McEwen
Mayor

Duane Lawrence
Chief Administrative Officer