

DATE: May 4, 2018

FILE: 3060-20 / DP 14A 17

TO: Chair and Directors
Electoral Areas Services Committee

Supported by James Warren
Acting Chief Administrative Officer

FROM: James Warren
Acting Chief Administrative Officer

J. Warren

RE: **AMENDMENT - Aquatic and Riparian Habitat, Blue Heron Nest and Steep Slopes Development Permit (DP 14A 17)**
Baynes Sound – Denman/Hornby Islands (Electoral Area A)
7652 Ships Point Road (Adams)
Lot 14, District Lot 26, Newcastle District, Plan 17305, PID 003-923-011

Purpose

To provide information about a request for reconsideration of a Comox Valley Regional District (CVRD) officer's decision to refuse an amendment to Aquatic and Riparian Habitat, Steep Slopes and Blue Heron Nest Development Permit (DP) DP 14A 17 to include a beach access staircase.

Executive Summary

- The waterfront property is located in the Ships Point Area. There is a steep slope near the natural boundary of the Georgia Strait, which limits access to the foreshore area.
- The applicants applied for an amendment to DP 14A 17 to include a wooden beach access staircase on their property.
- The applicants submitted a geotechnical report, heron's nest assessment and biophysical assessment to support their application. While the professional reports suggest the staircase could be built with minimal impact on the environment and slope, the Blue Heron Nest and Steep Slopes Development Permit Area (DPA) guidelines state that no building or structures shall be located within 15 metres of Georgia Strait. As such, the amendment to the DP was denied by a CVRD officer on April 5, 2018 (Appendix A).
- The applicants have requested the decision of the CVRD officer be reconsidered by the board as per Bylaw No. 2365, being the "Development Permit Delegation Bylaw, No. 2365, 2001".

Prepared by:

Concurrence:

B. Labute

A. Mullaly

Brienne Labute
Planner

Alana Mullaly, MCIP, RPP
Acting General Manager of Planning
and Building Services Branch

Stakeholder Distribution (Upon Agenda Publication)

Applicants	✓
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Background/Current Situation

The subject property was issued an Aquatic and Riparian Habitat, Blue Heron Nest and Steep Slopes DP on November 27, 2017 for the residential development of the lot including removal of existing buildings, land clearing and construction of a dwelling, driveway, septic and drainage trench. The applicants applied for an amendment to DP 14A 17 to include a wooden beach access staircase in the proposal. To support the application, the applicants submitted a geotechnical report, heron's nest assessment and biophysical assessment.

The Official Community Plan (OCP), being the “Rural Comox Valley Official Community Plan, Bylaw No. 337, 2014” provides guidelines for the various DPAs. The blue heron nest DP guidelines state, “*No site alteration or structures are permitted within 15 metres of the natural boundary of Georgia Strait*”. Similarly, the steep slopes DP guidelines state, “*Other than shoreline protection devices, no buildings, structures, driveways, paving, irrigation and water systems, swimming pools, hot tubs, spas and retaining walls shall be permitted within 15 metres of the natural boundary of Georgia Strait*”. These guidelines does not provide for any discretionary authority; whereas, the aquatic and riparian habitat DP guidelines incorporate some subjectivity stating “*No buildings, structures or retaining walls should be constructed within 30 metres of the present natural boundary of the sea, stream or watercourse unless mitigative measures are proposed that will result in the same or greater protection of a 30 metre buffer*”. The proposal for a beach access staircase is consistent with the aquatic and riparian habitat DP guidelines, but is not consistent with the steep slopes and blue heron nest DP guidelines.

While the professional reports suggest the staircase could be built with minimal impact on the environment and slope (Appendix A), the OCP states: “*Where land is in more than one development permit area, all of the applicable development permit area requirements must be met unless otherwise exempted elsewhere in this bylaw.*” For this reason, the amendment to the DP was denied by the CVRD officer. For more information on CVRD officer's decision, please find enclosed a copy of the staff report dated April 5, 2018 (Appendix A).

Policy Analysis

Sections 488 to 491 of the *Local Government Act* (RSBC, 2015, c. 1) (LGA) authorizes a local government to manage different types of development that occur in specific areas. The LGA allows a local government to designate DPAs and to establish guidelines within its Official Community Plans to protect the natural environment and protect development from hazardous conditions among other goals. Pursuant to Part 4, Section 80, 82 and 84 of Bylaw No. 337, development within 30 metres of the present natural boundary of a watercourse, within 60 metres of a heron nest and within 7.5 metres of a steep slope requires an Aquatic and Riparian Habitat, Blue Heron Nest and Steep Slopes DP prior to the commencement of site works.

Options

The board may, following completion of its reconsideration, do one or more of the following:

- a) confirm all or part of the delegate's decision;
- b) set aside all or part of the delegate's decision;
- c) amend the delegate's decision or make a new decision.

Should the board chose to approve the amendment to DP 14A 17 and allow a beach access staircase, they may wish to direct staff to prepare an amended development permit and authorize the Corporate Legislative Officer to execute the permit.

Financial Factors

None related to the reconsideration.

Legal Factors

In Development Permit Delegation Bylaw No. 2365, the board delegates to the CVRD officer the power to issue development permits for Aquatic and Riparian Habitat, Blue Heron Nest and Steep Slopes DPAs. Bylaw No. 2365 also outlines the reconsideration process in which the applicant can have a decision of the CVRD officer reconsidered by the board.

Regional Growth Strategy Implications

None related to the reconsideration.

Intergovernmental Factors

Not relevant.

Interdepartmental Involvement

Not relevant.

Citizen/Public Relations

Public notification is not required for an Aquatic and Riparian Habitat, Blue Heron Nest or Steep Slopes DP application; therefore, notification is not required for the reconsideration.

Attachments: Appendix A – “Staff Report, dated April 5, 2018”



Staff Report

DATE: April 5, 2018 **FILE:** 3060-20/DP 14A 17

TO: Alana Mullaly, MCIP, RPP
Acting General Manager of Planning and Development Services Branch

FROM: Brianne Labute
Planner

RE: **AMENDMENT - Aquatic and Riparian Habitat, Blue Heron Nest and Steep Slopes Development Permit (DP 14A 17)**
Baynes Sound – Denman/Hornby Islands (Electoral Area A)
7652 Ships Point Road (Adams)
Lot 14, District Lot 26, Newcastle District, Plan 17305, PID 003-923-011

Purpose

To consider an amendment to Aquatic and Riparian Habitat, Blue Heron Nest and Steep Slopes Development Permit (DP 14A 17) to include the installation of a beach access staircase within 30 metres of the present natural boundary (PNB) of the Georgia Strait, within 60 metres of a heron colony and within 7.5 metres of a steep slope.

Executive Summary

- DP 14A 17 was issued on November 27, 2017 to allow for the residential development of the lot including removal of existing buildings, land clearing and construction of a dwelling, driveway, septic and drainage trench within 30 metres of the PNB of the Georgia Strait, within 60 metres of a heron colony and within 7.5 metres of a steep slope.
- The applicants have applied for an amendment to DP 14A 17 to include a wooden beach access staircase in the proposal.
- The applicant submitted a geotechnical report, heron's nest assessment and biophysical assessment. While the professional reports suggest the staircase could be built with minimal impact on the environment and slope, the development permit (DP) guidelines state that no building or structures shall be located within 15 metres of Georgia Strait. As such, it is recommended the application is refused.

Recommendation from planning staff to the General Manager of Planning and Development Services Branch:

THAT the General Manager of the Planning and Development Services Branch refuse the proposed amendment to Aquatic and Riparian Habitat, Blue Heron Nest and Steeps Slopes Development Permit DP 14A 17 (Adams) to include the construction of a beach access staircase for the property described as Lot 14, District Lot 26, Newcastle District, Plan 17305 (7652 Ships Point Road).

Respectfully submitted:

B. Labute

Brianne Labute
Planner

Concurrence:

A. Mullaly

Alana Mullaly, M.Pl., MCIP, RPP
Manager of Planning Services

Background/Current Situation

The subject property (Figures 1 and 2) was issued an Aquatic and Riparian Habitat, Blue Heron Nest and Steep Slopes DP on November 27, 2017 for the residential development of the lot including removal of existing buildings, land clearing and construction of a dwelling, driveway, septic and drainage trench. The applicants would like to amend DP 14A 17 to include a beach access staircase in the development proposal. The staircase will be made of light materials such as old growth cedar to limit the weight on the slope. The design includes a hinged drop set of stairs from the final landing that can be raised when not in use (Figure 3). A survey of the property indicates there is adequate space for a staircase without encroaching onto public property. No tree removal would be required to construct the staircase.

Official Community Plan Analysis

The subject property is designated Rural Settlement Area in the Official Community Plan (OCP), being the “Rural Comox Valley Official Community Plan Bylaw No. 337, 2014”. Implemented through the use of DPs, the OCP contains specific policies to protect the natural environment, ecosystems and biological diversity. The three development permit areas (DPAs) are outlined below.

Aquatic and Riparian Habitat Development Permit Area

The objectives of this DPA are to protect the natural environment, ecosystems and biological diversity and to protect development from hazardous natural conditions associated with watercourses and riparian areas. The applicants submitted an updated Biophysical Assessments prepared by Ian Moul, R.P Bio, QEP, dated January 9, 2018 plus a Follow Up Impact Analysis dated March 1, 2018 to address any environmental impacts from the proposed staircase (Appendix A). The development permit guidelines state that *“No buildings, structures or retaining walls should be constructed within 30 metres of the present natural boundary of the sea, stream or watercourse unless mitigative measures are proposed that will result in the same or greater protection of a 30 metre buffer”*. The Qualified Environmental Professional (QEP) notes that the staircase design is expected to have no impact on natural coastal processes or eel grass and fish spawning habitat as it is sited outside of the beach surface influenced by the marine tides. The total surface area of the staircase that touches the slope is approximately 2m² (eight concrete posts supporting two landings and a small concrete pad at the top of the slope). For comparison, to construct a trail with a safe slope (less than 10 per cent) the required surface area would be approximately 25m², 12 times the amount of space required for a staircase and there would be a higher risk of erosion. The slope is well vegetated and the QEP recommends that any vegetation removed for the staircase footings be replanted. All other vegetation is to be maintained. The plant mix may shift slightly due to additional shading from the staircase, but there will be sufficient light to allow undisturbed vegetation to grow on the bank. The proposed amendment is consistent with the guidelines in the Aquatic and Riparian Habitat DPA.

Blue Heron Nest Development Permit Area

The heron nest DP guidelines require a biophysical assessment to identify the breeding season and recommend how to manage and mitigate any impacts of the proposed activity. The applicants

submitted a Biophysical Assessment prepared by Ian Moul, R.P Bio, QEP, dated January 9, 2018 (Appendix B). The assessment notes that the construction of the staircase can only occur outside of the heron breeding season. The breeding season is from February 15 to either May 1 (if it is confirmed the herons are not using the nests) or until the end of the nesting season (typically July, but as late as September). The timing of the end of the breeding season will need to be determined by a QEP prior to any development activities commencing.

While a majority of the guidelines in this development permit area focus on protecting the heron colony, there is also a guideline that states “*No site alteration or structures are permitted within 15 metres of the natural boundary of Georgia Strait*”. The proposal is unable to meet this guideline.

Steep Slopes Development Permit Area

The steep slopes DP requires the submission of a Geotechnical Assessment to assess the proposed activities impacts on the stability of the slope. The applicants submitted an addendum to the Geotechnical Assessment prepared by Johannes Fischer, P.Eng. and Chris Heduc, P.Eng. of Lewkowich Engineering Associates, dated January 16, 2018 (Appendix C). The Geotechnical Assessment reviewed the staircase design drawings prepared by Peter Christenson of Shoreline Designs and had no objections from a geotechnical perspective. A series of recommendations were made in relation to the footings and sediment control during construction. The DP guidelines focus on protecting the stability of the slope and protecting development from hazardous conditions and there is also a DP guideline that states: “*Other than shoreline protection devices, no buildings, structures, driveways, paving, irrigation and water systems, swimming pools, hot tubs, spas and retaining walls shall be permitted within 15 metres of the natural boundary of Georgia Strait*”. The proposal is unable to meet this guideline.

Zoning Bylaw Analysis

The property is zoned R-RU in Bylaw No, 2781, being “Comox Valley Zoning Bylaw, No. 2781, 2005”. The rear yard setback for accessory structures is 1 metre.

Conclusion

The OCP states: “*Where land is in more than one development permit area, all of the applicable development permit area requirements must be met unless otherwise exempted elsewhere in this bylaw.*” The Steep Slopes DPA and the Heron Nest Tree DPA state that no structures shall be permitted within 15 metres of the Georgia Strait. As such, it is recommended that the application be refused.

Policy Analysis

Sections 488 to 491 of the *Local Government Act* (RSBC, 2015, c. 1) (LGA) authorizes a local government to manage different types of development that occur in specific areas. The LGA allows a local government to designate DPAs and to establish guidelines within its OCPs to protect the natural environment and protect development from hazardous conditions among other goals. Pursuant to Part 4, Section 80, 82 and 84 of Bylaw No. 337, development within 30 metres of the PNB of a watercourse, within 60 metres of a heron nest and within 7.5 metres of a steep slope requires an Aquatic and Riparian Habitat, Blue Heron Nest and Steep Slopes DP prior to the commencement of site works.

Options

It is recommended that the General Manager of the Planning and Development Services Branch refuse the amended version of DP 14A 17 as it does not meet all technical requirements of the DP guidelines within the OCP.

Financial Factors

Applicable fees have been collected for this application under Bylaw No. 328 being the “Comox Valley Regional District Planning Procedures and Fees Bylaw No. 328, 2014”.

Legal Factors

This report and the recommendations contained herein are in compliance with the LGA and Comox Valley Regional District bylaws. DPs are permitted in certain circumstances under Sections 488 to 491 of the LGA.

Regional Growth Strategy Implications

The Regional Growth Strategy (RGS), Bylaw No. 120, being the “Comox Valley Regional District Regional Growth Strategy Bylaw No. 120, 2010”, designates the subject property as Rural Settlement Area. Objective 2-B of the RGS aims to “*Frame environmental protection and policies around the principles of precaution, connectivity and restoration.*” The principle of precaution requires documentation about the proposed development and impacts on the environment; it may prompt a limit to proposed actions. The applicants have provided Biophysical Assessments with a series of precautionary measures to ensure the protection of the natural environment including the heron colony.

Intergovernmental Factors

There are no intergovernmental or regional implications.

Interdepartmental Involvement

The proposed DP amendment was circulated to applicable Comox Valley Regional District staff for their comment and no concerns were identified.

Citizen/Public Relations

Public notification is not required for an Aquatic and Riparian Habitat, Blue Heron Nest or Steep Slopes DP application.

Approved: <input type="checkbox"/>	
Denied: <input checked="" type="checkbox"/> Reason: Under delegated authority, permit amendment must be refused as proposal does not meet all of the guidelines of the Steep Slopes DPA or the Heron Nest DPA.	
April 5, 2018	<i>A. Mullaly</i>
Date	Alana Mullaly, MCIP, RPP Acting General Manager of Planning and Development Services Branch

Attachments: Appendix A - "Amended Biophysical Assessment for Marine Shore, dated January 9, 2018" and "Follow Up Impact Assessment, dated March 1, 2018"
Appendix B - "Amended Biophysical Assessment for Heron Colony, dated January 9, 2018"
Appendix C - "Addendum to Geotechnical Assessment, dated January 16, 2018"

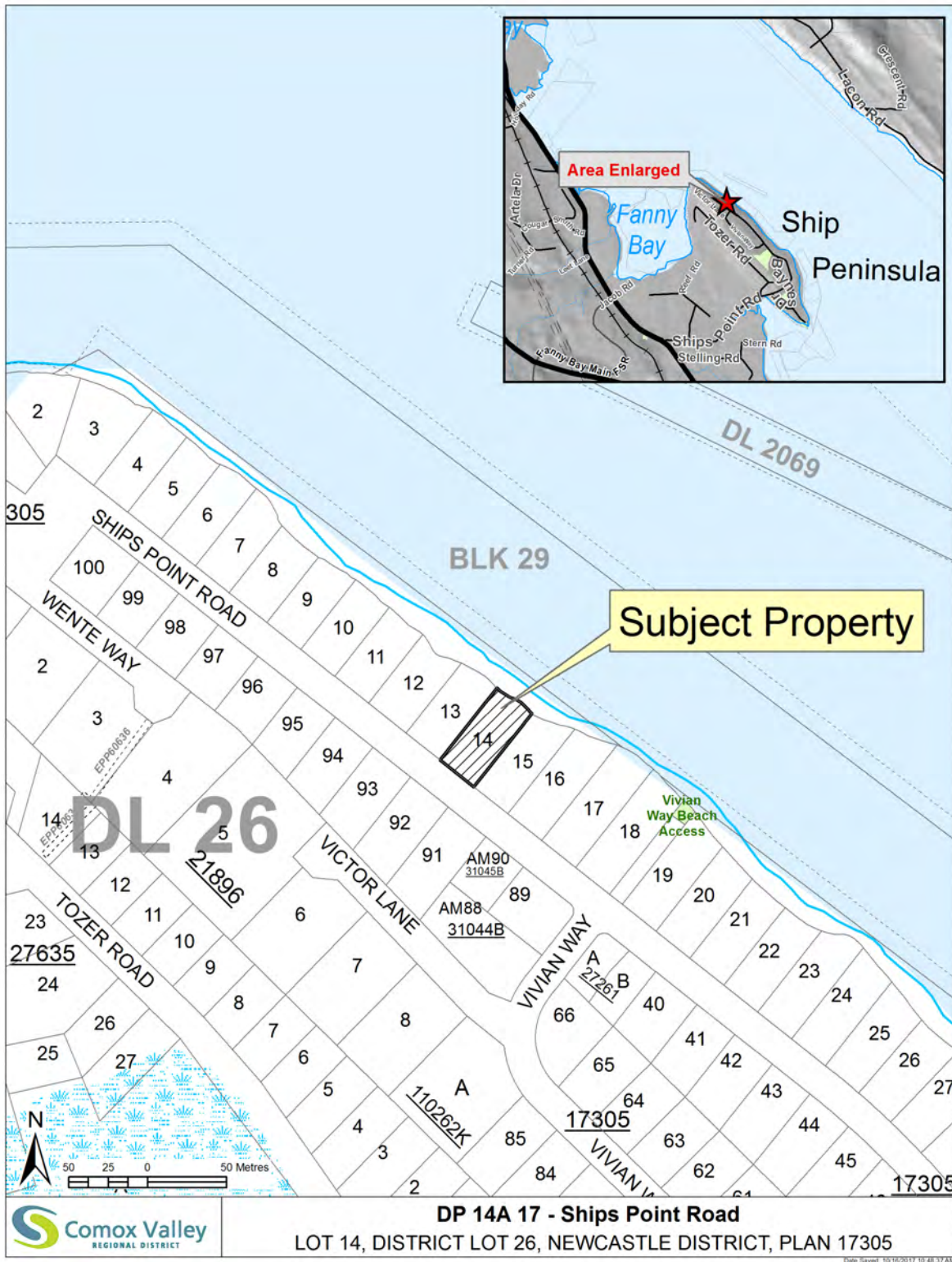


Figure 1: Subject Property Map



Figure 2: Aerial Photo

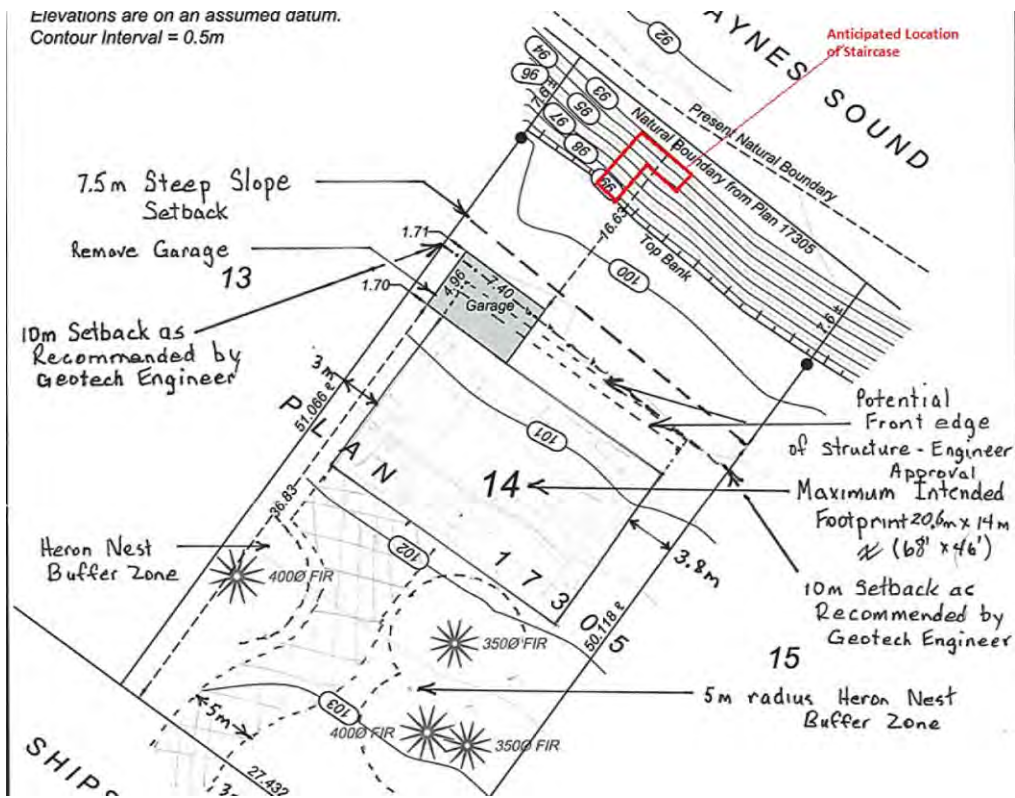
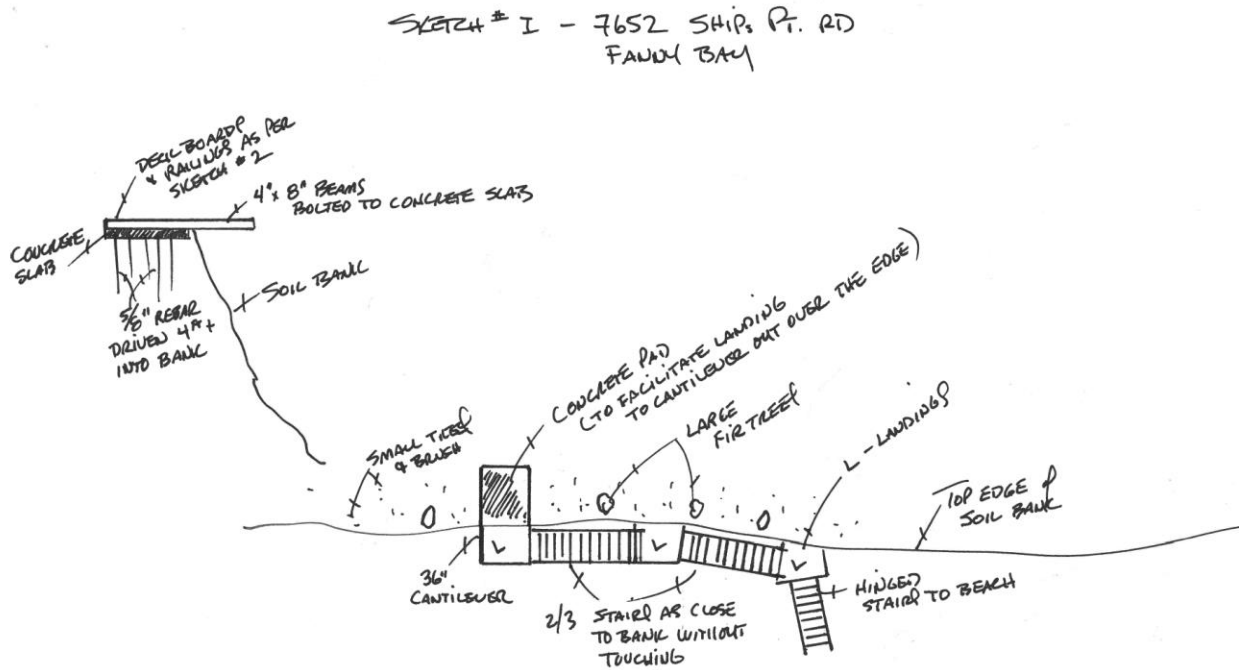


Figure 3: Staircase Design and Approximate Location

Ian Moul ^{RPBio.}
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imoul@shaw.ca

Comox Valley Regional District – Planning Services Department
600 Comox Road, Courtenay, BC,
V9N 3P6

13 September 2017 – Revised 9 January 2018

Planning Staff,

Bio-physical Assessment for Proposed Construction
near the Marine Shore along Ship's Point Road
Lot 14, Plan 17305, Comox District, PID: 003-923-011

Introduction

The purpose of this report is to document potential environmental impact and proposed mitigation measures with regards to residential construction next to the marine shore of Baynes Sound. The objective is to preserve, protect, restore or enhance both terrestrial and aquatic natural features within 30 metres measured from the present natural boundary of the sea, or top of slope where a steep slope is located immediately adjacent to the sea.

Report on the condition of the property

The property was visited on 29 August 2017. The property fronts on 27m of marine shore (Map 1). The marine shore consists of a shallow bay of sand and cobbles (Photograph 1) between a shallow natural point to the south (Photograph 2) and a grouping of large boulders to the north (Photograph 3). The boulders were likely placed at some time in the past to act a beach groyne. While I am not qualified to report as a geotechnical engineer, my understating of landscape processes suggest the geo-physical structure of the shoreline is functioning such that sediments are being deposited and not eroded. There is no apparent need for shoreline armoring.

Inland of the marine shore is a sloping vegetated bank at an angle of approximately 45°, extending approximately 7.5m inland (Photograph 4). Vegetation growth at the base of the slope indicate shoreline stability (vegetation has not eroded in recent years). There was no evidence of the bank being unstable; no clumps of soil or vegetation were seen at the base of the slope. Douglas fir along the top of the bank, estimated age 30 to 40 years, growing straight up and down also suggests bank stability. The tree on the right hand side of Photograph 5, growing directly at the crest of the slope, shows a slight bend near its base from its first few years for growth indicating the top of the bank has not moved since that time.

Extending from the top of the bank inland for approximately 12m is relatively level ground cleared of understory vegetation (Photograph 6). This area has a garage and a small shed that were part of the lot to the south when there was one owner for the two lots. The grassy area was used as a driveway to the garage and as a residential garden. In the grassy area, just inland of the top of the bank and within 15m of the marine shore are 16 “maturing” Douglas-fir trees (shown on Map 2). Between the grassy area and the rear of the property is a Douglas-fir forest with natural understory vegetation. This area includes the four heron nest trees, three of which are shown flagged in Photograph 6.

Residential Construction Proposal following Bio-physical Assessment, reporting
and submission requirements found in CVRD Bylaw 337

a - bio-physical assessment

i. a site plan; See attached Maps 1 and 2

ii. written summary of proposed development works; The proposed development is a residential complex that conforms with Bylaw No. 2781, “Comox Valley Zoning Bylaw 2005” Section 706, Residential-Rural (R-Ru) zoning. This development will conform to setbacks and requirements as presented in: Bylaw No. 337 "Rural Comox Valley Official Community Plan, 2014", Development permit guidelines Aquatic and riparian habitat development permit area. The initial plan is to include land clearing that will protect the marine shore, the slope of land adjacent the marine shore and four trees containing five Great Blue Heron nests (included as a separate report) and provide space for a driveway, primary residence, septic-field, and garden area and staircase to the beach.

iii. a review of development alternatives that have been considered; Development alternatives being considered are:

- 1) Ways to maximise the protected area around the heron nest trees by proposing development within the 15 to 30m portion of the 30m shoreline setback area; and
- 2) Using a pressurized Geoflow Sub surface drip system for the septic-field to minimise tree removal around the heron nests.

iv. inventories of the existing environmentally sensitive features and natural features including rare and threatened plant communities, endangered species and identified critical habitats; A background search of the Conservation Data Centre: Mapped Known Locations of Species and Ecological Communities at Risk (CDC 2017a) revealed no known occurrences of threatened or sensitive species (other than the herons) in the immediate vicinity of the property. There were several locations of the Blue listed¹ coastal wood fern (*Dryopteris arguta*) on Denman Island across Baynes Sound, though no sightings have been reported on the Vancouver Island.

The property falls within the Biogeoclimatic zone: Coastal Western Hemlock – Eastern Very Dry Maritime (CWHxm1) in which all known plant communities are either Red or Blue listed in British Columbia (CDC 2017b). Aside from the heron nests, no environmentally sensitive species were observed. Surprisingly, for a largely developed residential neighbourhood there were no infestations of invasive plants. One species of interest was a relatively large patch of rattlesnake plantain (*Goodyera oblongifolia*) located along the crest of bank. Rattlesnake plantain is a member of the orchid family, is yellow listed, “apparently secure,” but not often seen.

¹ BC Conservation Data Centre Colour codes for identified Plants and Animals.

Red: Includes any ecological community or species that is Extirpated, Endangered, or Threatened in British Columbia. Extirpated ecological communities or species no longer exist in British Columbia, but do occur elsewhere. Endangered ecological communities or species are facing imminent extirpation or elimination. Threatened ecological communities or species are likely to become endangered if limiting factors are not reversed. Placing ecological communities or species on these lists flags them as being at risk and requiring investigation.

Blue: Includes any ecological community or species considered to be of Special Concern (formerly Vulnerable) in British Columbia. Ecological communities or species of Special Concern have characteristics that make them particularly sensitive or vulnerable to human activities or natural events. Blue-listed ecological communities or species are at risk, but are not Extirpated, Endangered or Threatened.

Yellow: Includes species that are apparently secure and not at risk of extinction. Yellow-listed species may have red- or blue-listed subspecies

v. assessments of the environmental impact of the proposed development; The proposed residential construction should have no impact on the marine shore. A beach access staircase is the only development proposed within the 0 to 15m zone from the marine shore. The design will be engineered to protect the slope from erosion. On the upper portion of the property the environmental impact will be restricted to tree removal sufficient to construct a residential complex, septic system and driveway.

vi. all proposed protective measures;

The existing Douglas-fir along the top of the bank (shown on Map 2) will be retained and the area beneath the trees will remain cleared of natural vegetation as a residential lawn and garden. An area of 5m radius around each of the heron nest trees will be temporarily fenced and maintained as natural vegetation. During septic-field construction the installation of the pressurized Geoflow Sub surface drip system may take place within the 5m protected zone around the nest trees as this type of system is designed to not hurt tree roots

vii. measures to preserve, protect, restore or enhance identified environmentally

sensitive areas impacted by the development; The marine shore, with the exception of the area of the staircase, will be protected as a no development area. An area of 5m radius around the four heron nest trees will be protected by temporary fencing. This 5m buffer zone is beyond the drip-line of the nest trees and will include some additional trees that will act as a visual screen to the nests. The fenced area will restrict excavator damage to tree roots and protect the tree trunks from construction materials and activity. The staircase design (approved by an appropriately qualified engineer) will be supported on concrete piers and will not require excavation into the bank and such will have minimal impact on the natural vegetation.

As outlined in a companion report, construction will be timed for outside of the heron nesting season. In 2018, no construction will take place from 15 February to either 1 May (if it confirmed that the herons are not using the nests) or until the end of the nesting season when the heron chicks have left the nests (Typically in early July, but at times this can extend into September).

viii. measures to control drainage or erosion, and to protect banks; The septic-field will be placed near the rear of the property. Rainwater collection from roof drains will be designed to discourage erosion such that they do not funnel all collected water over the bank in point locations.

ix. recommendations for mitigation, restoration and protection of habitat during and after construction. With the exception of the area cleared of natural ground vegetation around the residence and between the residence and the top of the bank, a landscape plan will promote the existing natural vegetation of the site. The existing forest groundcover in the area of the proposed septic-field is about 90% Oregon grape with traces of salal and red huckleberry. It is recommended that the Oregon grape be collected before excavation and transplanted back once the septic drain field has been installed. The ideal timing for this work is in the fall.

Pouring the concrete foundation piers for the beach access stairway will require some digging. It is recommended that the vegetation removed to set the concrete piers be put back in place following removal of the concrete forms. It is recommended that during construction of the beach access stairs that workers protect the surface of the bank as much as possible and work from ladders or other supports rather than disrupting the vegetation and the soil.

b - The bio-physical assessment must:

i. Be prepared in accordance with Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia' published by the B.C. Ministry of Environment, as amended or replaced from time to time; This development plan was prepared using information provided in Develop with Care Guidelines for Coastal Area and fact sheets on Small lot development (Fact Sheet 2); Landscaping (Fact Sheet 7); and Great Blue Herons (Fact Sheet 11)(DWC 2017).

ii. Provide description and maps of the parcel delineating the proposed development in relation to the development permit area, the vegetation buffer area, and any identified wildlife corridors and habitats including the watercourse; See Map 1 and 2.

iii. Propose measures to restore and mitigate impacts; Described in Section a ix, above.

iv. As part of section (iv) provide a landscaping/planting plan with recommended species; The landscape plan includes the retention of the heron nest trees and the Douglas-fir (shown on Map 2), plus as many of the remaining Douglas-fir on the rear portion of the property as possible once the driveway and septic-field requirements have been established. Existing native plants species in the septic-field area (primarily Oregon grape) will be harvested and replanted during the septic field installation. Plants removed for the construction of the concrete piers for the beach access staircase will be replace following removal of the concrete forms.

v. Integrate, where possible, the other information requirements, such as site drainage plans, as outlined in the development permit area guidelines. This report will be amended once the septic-field and site drainage design has been completed. The importance of protecting the ocean bank from erosion is recognised and will be considered in the design process.

vi. Where a fish bearing stream is present, include a riparian area assessment prepared in accordance with the assessment methods prescribed by the riparian area regulations. No streams are present on the property. The marine shore will not be impacted.

Concluding Remarks

If construction on this site is completed following the guidelines stated above there should be no impact to the marine shore as defined under Bylaw No. 337. Developing within 15 to 30m of the marine shore is in line with other residences in the immediate area (Map 1). The proposed design of the marine access staircase, on concrete piers, should have minimal impact to the foreshore bank and no impact on the marine shore. Retaining natural vegetation in the 15m zone along the shoreline, protecting the heron nest trees, plus allowing for the lot-line setbacks there remains a developable area of 690m² (about 7,500 sq. ft.)(Map 2). The proposed development area should be sufficient for a driveway, residential complex, septic system, and marine access staircase.

If you have any questions or concerns regarding this assessment, please contact the undersigned.

Regards,

A handwritten signature in black ink, appearing to read 'Ian Moul', written in a cursive style.

Ian Moul RPBio.

cc Michael and Gail Adams

Literature Referenced

CDC 2017a: B.C. Conservation Data Centre. 2017. Occurrence Report Summary Reports. BC Species and Ecosystems Explorer. B.C. Ministry of Environment, Victoria, BC. Available: <http://a100.gov.bc.ca/pub/eswp/> (accessed 25 Aug 2017).

CDC 2017b: B.C. Conservation Data Centre. 2017. BC Species and Ecosystems Explorer. B.C. Ministry of Environment, Victoria, B.C. Available: <http://a100.gov.bc.ca/pub/eswp/> (accessed 25 Aug 2017).

DWC 2017. Develop with Care Guidelines. B.C. Ministry of Environment.
<http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/>
<http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/Fact-Sheet-2-Small-lot.pdf>
<http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/Fact-Sheet-7-landscaping.pdf>
<http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/Fact-Sheet-11-herons.pdf>



Map 1: Subject Property on Ship's Point Road showing the marine shore and marine shore setbacks.



Map 2: The subject property on Ship's Point Road showing the location of the proposed development area.



Photograph 1: Marine shore below the property looking west from a shallow point to the south.



Photograph 2: Marine shore below the property looking east towards a shallow point.



Photograph 3: Marine Shore, looking west towards boulders serving as a beach groyne.



Photograph 4: Marine shore and vegetated bank.



Photograph 5: Top of bank looking north-west.



Photograph 6: Cleared area at the top of the bank, looking north-west, as viewed from the neighbouring residence to the south.



Photograph 7: Looking north-east towards the shore, showing the natural forest vegetation (three heron nest trees are flagged with blue ribbon).

Ian Moul ^{RPBio.}
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Comox Valley Regional District – Planning Services Department
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1 March 2018

Planning Staff,

Follow-up impact analysis for a Bio-physical Assessment
for Proposed Construction
near the Marine Shore along Ship's Point Road
Lot 14, Plan 17305, Comox District, PID: 003-923-011

The purpose of this letter is to address specific questions relating to my original bio-physical assessment dated 13 September 2017 and revised on 9 January 2018.

In addressing these questions I wish to be clear that I am not trained as a Geo-technical Engineer. The impact analysis in this letter comes from over 25 years of experience as a professional biologist looking at the relationship between human activity and the natural processes of landscapes.

Sections underlined below are from a 27 February e-mail from Brianne Labute, Planner with The Comox Valley Regional District to the property owner, my response is not underlined.

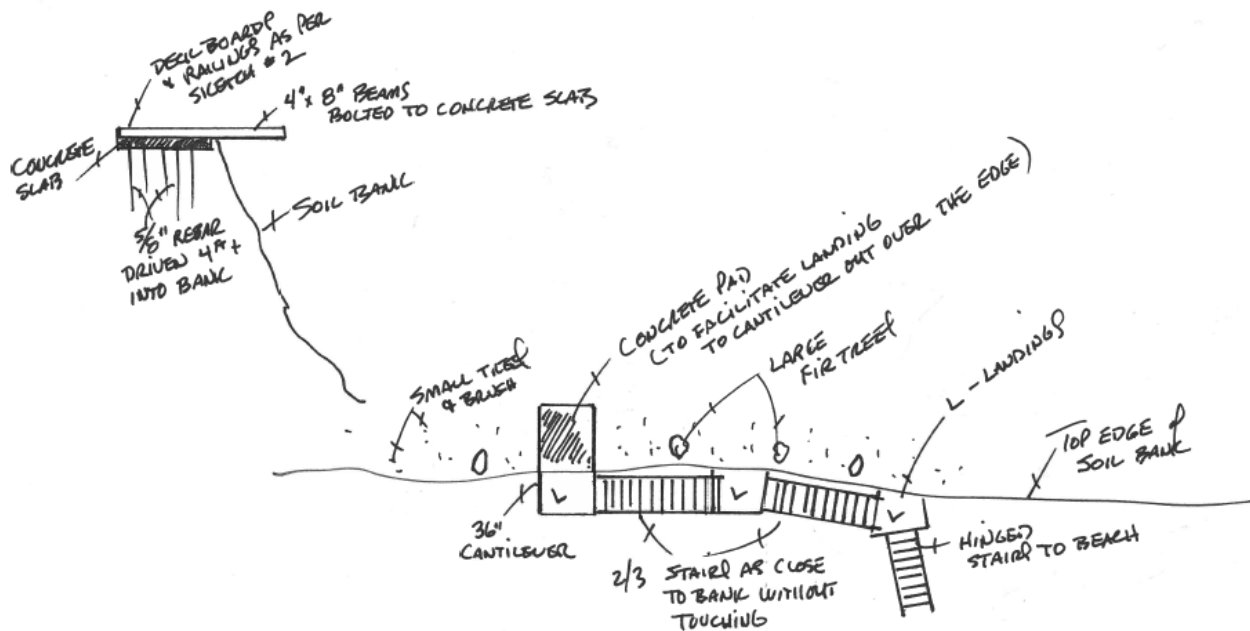
"the biologist's report to provide a more thorough analysis of the impact of the staircase on the shoreline. In particular, the following development permit (DP) guidelines should be addressed in more detail (notes added in blue):

-

iii. a review of development alternatives that have been considered; [from an environmental perspective why is a staircase preferential to a steep trail](#)

To answer this question I will compare the ground impact of the proposed staircase with that of a trail.

With the **area of the proposed staircase**, the drop from the level surface at the top of the bank to the shore is approximately 13 feet (4m) at a 45° slope. The proposed staircase as shown in the sketch design (shown below) includes eight concrete posts in the ground (supporting two landings) and a concrete pad at the upper start of the staircase. My calculation for the surface area of what touches the ground for these features, once installed, is 22 sq. feet (2m²) [based on 2 sq. feet for the combined eight posts + 20 sq. feet for the upper approach]. It is recognised that there would be additional disruption of the soil when installing the posts for the two landings, but once in place the concrete supports would be considered as environmentally inert (like rocks).



To calculate the **area of trail to the beach** I have used the BC Ministry of Forests manual for recreational trail management (BCMF 2018). The manual discusses various slopes and suggests that safe walking trails at less than 10% (6°) should not encourage erosion. The bank at this site is approximately 13 feet high at a 45° slope. An ideal trail would need to be approximately 130 feet (40m) in length. Given that the width of the property is 27.4m wide this would require a switchback. A two foot wide trail (0.6m) at 130 feet plus 5 feet for a switchback would cover an area of at least 270 sq. feet (25m²). This is over 12 times that of the proposed staircase. To excavate the bank to achieve a level trail surface would likely require an additional, but temporary, disruption of the vegetation about four times the foot print of the trail (another 100m² of disturbance). I suggest that when building a beach trail it would be extremely difficult to achieve a satisfactory regeneration of natural vegetation without further erosion.

Further to my original recommendation for a staircase to the beach I concur with the BCMF (2018) manual that suggests that “Steps are used on short, steep trail sections to ensure user safety and to help prevent erosion”.

Outside of the physical points of contact to the ground comparison between stairs and a trail, the stairs have an additional component of shading the native vegetation found on the bank. In this case it is my professional opinion that the plant mix may shift slightly but there will be sufficient light beneath the steps to allow undisturbed vegetation growth on the bank.

iv. inventories of the existing environmentally sensitive features and natural features including rare and threatened plant communities, endangered species and identified critical habitats; describe the physical shoreline characteristics/backshore habitat. The geotechnical report notes that this area is part of an eel grass and fish spawning habitat

The physical shoreline characteristics / backshore habitat are shown in Photograph 1. The proposed staircase would not touch the beach surface influenced by the marine tides. The mentioned “eel grass and fish spawning habitat” is well below any point of contact with the staircase. Eel grass is off shore, typically just below the low tide mark, though occasionally exposed at lowest tides. Spawning habitat for some fish species (herring) is within the eel grass. Other species (smelt and several species of “baitfish”) spawn in the beach sands and gravels near the shore and will not be touched by the proposed staircase.



Photograph 1: Marine shore below the property looking west from a shallow point to the south.

v. assessments of the environmental impact of the proposed development; [what will be the impact of the staircase on natural coastal processes](#)

As mentioned in my original report, beach sediments in the area of this property appear to be building and there is no evidence of erosion along the shore at the base of the bank. It is my opinion that the proposed staircase will have no impact on “natural coastal processes.”

vi. all proposed protective measures; [how will the least impact be achieved? Eg. no tree removal, small footings, etc](#)

The proposed stair construction involves no tree removal. The eight small footings used to support the two landings are the least invasive approach to supporting the staircase. Once the footings are in place natural vegetation will quickly grow back. My recommendation from Section: **a ix** in my original report stands:

It is recommended that the vegetation removed to set the concrete piers be put back in place following removal of the concrete forms. It is recommended that during construction of the beach access stairs that workers protect the surface of the bank as much as possible and work from ladders or other supports rather than disrupting the vegetation and the soil.

The issue here is to avoid scrambling up and down the bank as much as possible. There must be some soil and vegetation disruption to install the footings. While the footings could be hand dug, this is not a really high bank and the footing locations are well within reach of the arm of an excavator at the top of the bank. A couple of scoops with an excavator would likely have far less environmental impact than spending an hour on the bank hand digging a hole. I suggest it is best to allow the builder to decide the best approach to place the footings.

The analysis should address the guideline below and make a case for why a staircase should be permitted.

“b. No buildings, structures or retaining walls should be constructed within 30 metres of the present natural boundary of the sea, stream or watercourse unless mitigative measures are proposed that will result in the same or greater protection of a 30 metre buffer.”

It is been my experience that when people build homes near a beach they want beach access. It is very common that beach access begins with people, often children, climbing up and down a bank. If the terrain is steep climbing goes on the diagonal. Eventually a crude trail forms. The end result is typically erosion and loss of vegetation; the more vegetation disruption the more erosion. This is seen in many public locations where parks staff try to stop the public from climbing up and down banks. The result is often a staircase.

In this location we have a nicely vegetated and apparently stable bank. In this case the property owners are proposing the construction of a staircase. I suggest that this proposed staircase will be far less impact and far more environmentally friendly than what might naturally form as a trail.

If you have any questions or concerns regarding this assessment, please contact the undersigned.

Regards,

A handwritten signature in black ink, appearing to read 'Ian Moul', written in a cursive style.

Ian Moul RPBio.

cc Michael and Gail Adams

Literature Referenced

BCMF 2018. BC Ministry of Forests Recreation Manual Chapter 10: Recreation Trail Management (accessed 1 March 2018):
<https://www.for.gov.bc.ca/hfp/publications/00201/chap10/chap10.htm#s10.4.5>

Ian Moul ^{RPBio.}
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Comox Valley Regional District – Planning Services Department
600 Comox Road, Courtenay, BC,
V9N 3P6

Revised: 12 September 2017 with additional revision 9 January 2018

Planning Staff,

Environmental Assessment for Proposed Construction
near a Heron Colony along Ship's Point Road
Lot 14, Plan 17305, Comox District, PID: 003-923-011

Introduction and Relevant Legislation

The purpose of this report is to document potential environmental impact and proposed mitigation efforts to allow residential construction in close proximity to a Great Blue Heron nesting colony site near Ship's Point Road in the Comox Valley Regional District (CVRD)(Map 1). The Great Blue Heron *fannini* subspecies, a year round resident on the west coast of British Columbia, is protected by legislation at three levels of Government. Specific sections of this legislation applicable to this situation are as follows: herons are protected federally from disturbance under the Migratory Birds Convention Act (1994).

Regulation 12.1 (h) for prohibiting the killing, capturing, injuring, taking or disturbing of migratory birds or the damaging, destroying, removing or disturbing of nest;

Also under federal legislation, the Great Blue Heron *fannini* subspecies is listed as endangered, extirpated, or threatened under schedule 1 of the Species at Risk Act (SARA).

33 No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered species or a threatened species,

Great Blue Herons are specifically mentioned in Section 34 of the Provincial Wildlife Act.

A person commits an offence if the person, except as provided by regulation, possesses, takes, injures, molests or destroys

(a) a bird or its egg,

(b) the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl,

or

(c) the nest of a bird not referred to in paragraph (b) when the nest is occupied by a bird or its egg.

The primary concern with this report is to recommend actions that prevent any violation of federal and provincial legislation while at the same time to demonstrate an ability to work within the restrictions listed in the Comox Valley Regional District Official Community Plan Development Permit Areas found in (Bylaw 337) for the assessment area.

Bylaw No. 337 - RURAL COMOX VALLEY OFFICIAL COMMUNITY PLAN BYLAW, 2014 Part Four –

Blue Heron nest development permit area 82 -

Assessment Area iii 60.0 metre assessment area of a great blue nest site if the nest site is located on a lot that is less than 1.0 hectare in area.

The key aspects of the protective legislation are assuring there are no actions taken during construction (or following construction) that might disturb or molest the herons, or damage their nests. The provincial Develop With Care Guidelines¹ recommend:

Avoid any new disturbance between February 15th and August 31st when herons are nesting.

CVRD Bylaw No. 337 supports this time window and allows an earlier start to construction if:

Part Four – Blue Heron nest development permit area 82 -

Exemptions (a) i. a registered professional biologist with a specialization in ornithology has confirmed that no great blue heron activity is present as of April 30th of any given year.

This report will attempt to present a site plan and a construction schedule that satisfy the above mentioned legislation.

¹ Develop with Care – Section 4, Environmentally Valuable Resources.
<http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/Fact-Sheet-11-herons.pdf>

Report on the condition of the property

The property was visited on 29 August 2017 (an earlier visit was made on 4 July 2017 while in contract with the CVRD). Five heron nests were observed in four trees (Map 2; Photographs 1, 2, 3, and 4). Tree number four is a tree that had not been identified on 4 July. A tree that had been identified as a possible nest tree on 4 July (shown as an X on Map 2), by evidence of excrement at the tree base, was ruled out as a heron nest tree. Tree X was viewed from many angles and no nest was visible. Egg shell fragments were located under all of the four trees shown on Map 2 (See example in Photograph 5) but none were seen under Tree X. All egg fragments were found beneath ground debris and would have been from nesting attempts earlier than 2017. A few heron feathers were located; these would have been from the 2017 nesting season.

While onsite I spoke with a neighbouring resident from the property to the immediate north. He mentioned that as far as he could remember, the herons first nested on the site three years ago, in 2014. That represents four nesting seasons. In 2014, the herons raised some chicks but all were taken by eagles. During the last three nesting seasons the herons have been in the nests but he did not recall any chicks being raised. He said that the herons left the colony area quite early this year. The observations by the neighbour are supported by the egg fragments found under the nest trees.

In summary, Great Blue Herons have used this site since the spring of 2014, but have not been successful in raising chicks.

Much of this property is naturally forested with “maturing” third growth Douglas-fir (30 to 50cm diameter at standard height). There is an area cleared of understory vegetation approximately 15m wide and extending along the top of the bank that serves as a garden area and access to the existing garage.

Residential Construction Proposal following *Bio-physical Assessment, reporting and submission requirements found in CVRD Bylaw 337 – Schedule A.*

(a) A bio-physical assessment is required. The assessment report must be prepared by a qualified environmental professional. The assessment must include:

i. a site plan; (see attached Map 2)

ii. written summary of proposed development works; The proposed development is a residential complex that conforms with Bylaw No. 2781, “Comox Valley Zoning Bylaw 2005” Section 706, Residential-Rural (R-Ru) zoning. This development will conform to setbacks and requirements as presented in: Bylaw No. 337 "Rural Comox Valley Official Community Plan, 2014", Development permit guidelines Aquatic and riparian habitat development permit area (included as a separate report). The initial plan is to include land clearing that will protect the heron nest trees and provide space for a driveway, primary residence, septic field, and garden area and a stairway to the beach.

iii. a review of development alternatives that have been considered; Development alternatives being considered are ways to maximise the protected area around the heron nest trees by:

- 1) Proposing some development within the 15 to 30m portion of the 30m shoreline setback area; and
- 2) Using a pressurized Geoflow Sub surface drip system for the septic field to minimise tree removal around the heron nests.

iv. inventories of the existing environmentally sensitive feature(s); A background search of the Conservation Data Centre: Mapped Known Locations of Species and Ecological Communities at Risk (CDC 2017a) revealed no known occurrences of threatened or sensitive species (other than the herons) in the immediate vicinity of the property. There were several locations of the Blue listed ² coastal wood fern (*Dryopteris arguta*) on Denman Island across Baynes Sound, though no sightings have been reported on the Vancouver Island.

² BC Conservation Data Centre Colour codes for identified Plants and Animals.

Red: Includes any ecological community or species that is Extirpated, Endangered, or Threatened in British Columbia. Extirpated ecological communities or species no longer exist in British Columbia, but do occur elsewhere. Endangered ecological communities or species are facing imminent extirpation or elimination. Threatened ecological communities or species are likely to become endangered if limiting factors are not reversed. Placing ecological communities or species on these lists flags them as being at risk and requiring investigation.

Blue: Includes any ecological community or species considered to be of Special Concern (formerly Vulnerable) in British Columbia. Ecological communities or species of Special Concern have characteristics

The property falls within the Biogeoclimatic zone: Coastal Western Hemlock – Eastern Very Dry Maritime (CWHxm1) in which all known plant communities are either Red or Blue listed in British Columbia (CDC 2017b). Aside from the heron nests, no environmentally sensitive species were observed. Surprisingly, for a largely developed residential neighbourhood there were no infestations of invasive plants. One species of interest was a relatively large patch of rattlesnake plantain (*Goodyera oblongifolia*) located along the crest of bank. Rattlesnake plantain is a member of the orchid family, is yellow listed, “apparently secure,” but not often seen.

v. assessments of the environmental impact of the proposed development; The primary concern with developing this site is the environmental impact of disturbance to the heron nesting site. It should be noted that the herons chose to nest in this residential area. All the nests are within 20m of a public road. Three nests are less than 9m from the driveway of the private residence to the south, and one nest is within 2m of the driveway of the private residence to the north. The herons are subject to the generally accepted noises of a residential area, including: lawnmowers, weed-whackers, leaf-blowers, pressure washers, loud car engines, and many other sounds. In such a residential area it is not feasibly possible to create a quiet zone around the herons.

Aside from disturbance by human caused noise the biggest potential impact on the nesting herons is ongoing depredation by Bald Eagles. The comments by the neighbouring resident confirm that the eagles can access the nests and remove heron chicks. Removing additional trees to allow a driveway, septic field and residence will not likely help or hinder the situation that is already happening. Additional human activity near the nest trees will be equivalent to what is found in other heron nesting areas: Stanley Park and Jericho Park in Vancouver, or Beacon Hill Park in Victoria.

vi. identify all proposed protective measures; An area of 5m radius around the four heron nest trees will be protected by temporary fencing. This 5m buffer zone is beyond the drip-line of the nest trees and will include some additional trees that will act as a visual screen to the nests. The fenced area will restrict excavator damage to tree roots and protect the tree trunks from construction materials and activity. During septic field construction the installation of the

that make them particularly sensitive or vulnerable to human activities or natural events. Blue-listed ecological communities or species are at risk, but are not Extirpated, Endangered or Threatened.

Yellow: Includes species that are apparently secure and not at risk of extinction. Yellow-listed species may have red- or blue-listed subspecies

pressurized Geoflow Sub surface drip system may take place within the 5m protected zone around the nest trees as this type of system is designed to not hurt tree roots.

Construction will be timed for outside of the nesting season. In 2018, no construction will take place from 15 February to either 1 May (if it confirmed that the herons are not using the nests) or until the end of the nesting season when the heron chicks have left the nests (Typically in early July, but at times this can extend into September).

vii. identify measures to preserve, protect, restore or enhance identified ESA impacted by the development; The nest trees will be preserved and protected by temporary fencing. As the nest trees will not be destroyed or damaged there will be no need to restore them. Given the size of the residential lot there is no room to enhance the existing nesting area.

viii. identify measures to control drainage or erosion, and to protect banks; Protection of the bank is discussed in the accompanying Biophysical Shoreline Assessment Report. There is no apparent need to divert water from the nest tree area. The trees, upstream from the house site, should continue to receive a similar amount of precipitation and ground water as they do at this time.

ix. recommendations for the mitigation, restoration and protection of habitat during and after construction. By leaving the nest trees in place and protecting the understory vegetation with temporary fencing the existing habitat around and beneath the nest trees will be preserved. Following the character of many other local residents, the portion of the property around the nest trees will be left as a natural area. No additional mitigation is proposed.

(b) The assessment completed by the ornithologist must identify the breeding season, review the proposed activity within the development permit area and provide recommendations on how to manage and mitigate impacts of the proposed activity within the assessment area during breeding season if permitted under the Wildlife Act and after active breeding season to protect the long term integrity of the nesting habitat.

For Great Blue Herons living in the Vancouver Island area the breeding season typically begins in mid February and can continue into July or even September. In the Baynes Sound area there are no records of herons beginning the nesting season before the 1st of March. Typically, around the 1st of March, herons start to congregate in the vicinity of nesting colonies. By the third week of March the herons are in the nesting colonies, courting, building and rebuilding their nests. Egg laying and incubation begins around mid April. Herons lay four to five eggs at

two day intervals. Incubation is for 28 days and heron chicks begin to hatch by the second week of May. For the first two and half weeks after hatching there is always at least one adult heron at the nest with the chicks. As the chicks grow, both the adult herons spend increasingly less time at the nest and more time flying back and forth to the feeding areas. The first heron chicks begin to leave the nests between eight and ten weeks after hatching, towards the end of June. If the nesting season proceeds in a 'normal' manner, all chicks and adult herons will have left the nesting colonies by the end of July. If the herons are disturbed early in the nesting season, they will often make a second nesting attempt. Herons in the Strait of Georgia area have been known to have chicks on the nest as late as mid September. During the winter months herons disperse throughout the local area. In the winter months, herons are frequently seen perching in trees in small groups of two to six birds.

To manage and mitigate impact to nesting herons, no construction will take place from 15 February until either: 1) the heron chicks have left the colony area (typically sometime in July) or 2) the 1st of May if the herons have not returned to the nesting site or have abandoned the nesting attempt. The timing of either 1) or 2) above will be determined by myself, a Qualified Environmental Professional with regards to working around herons.

The long term integrity of the nesting habitat will be maintained by retaining the nest trees and surrounding vegetation in a 5m radius from the nest trees.

(c) Within the great blue heron nest site development permit area, the applicants shall include a report complete with a site plan furnished at their expense and prepared by a registered professional biologist with a specialization in ornithology. This report shall include an evaluation and recommendations with regard to the following:

i. the great blue heron nest site environmental values to be protected; Five nests in four trees will be protected.

ii. breeding status of the tree/nest site; Anecdotal reports from a local resident suggest that Great Blue Herons have attempted to nest at this site for four nesting seasons, beginning in 2014. The herons at this site have not successfully raised chicks.

iii. an evaluation on the condition of the great blue heron site assessment area located on a property; While a tree assessment was not prepared by a professional arborist, the trees appear in good health. The nests are well up in the trees. There is evidence of small branches with fir needles, suggesting that the nests were added to in 2017. As a professional biologist

that has viewed dozens of heron colonies over the past 25 years, even if this property was not touched I would rank this as a poor colony site with minimal chance of producing heron chicks in either the short or the long term.

iv. recommended mitigative measures; It is my professional opinion that development of this site will not decrease the chances of successful nesting of herons. No mitigation measures are proposed.

v. assessment of any habitat to be protected or restored. The area of 5m around each of the nest trees creates a calculated protected zone of 226m² or 14% of the property. This area should be sufficient to protect the nest trees and nests within the trees.

Concluding Remarks

If construction on this site is completed following the guidelines stated above there should be no impact to the heron nest trees as defined under Bylaw No. 337. If you have any questions or concerns regarding this assessment, please contact the undersigned.

Regards,

A handwritten signature in black ink, appearing to read 'Ian Moul', written in a cursive style.

Ian Moul RPBio.

cc Michael and Gail Adams

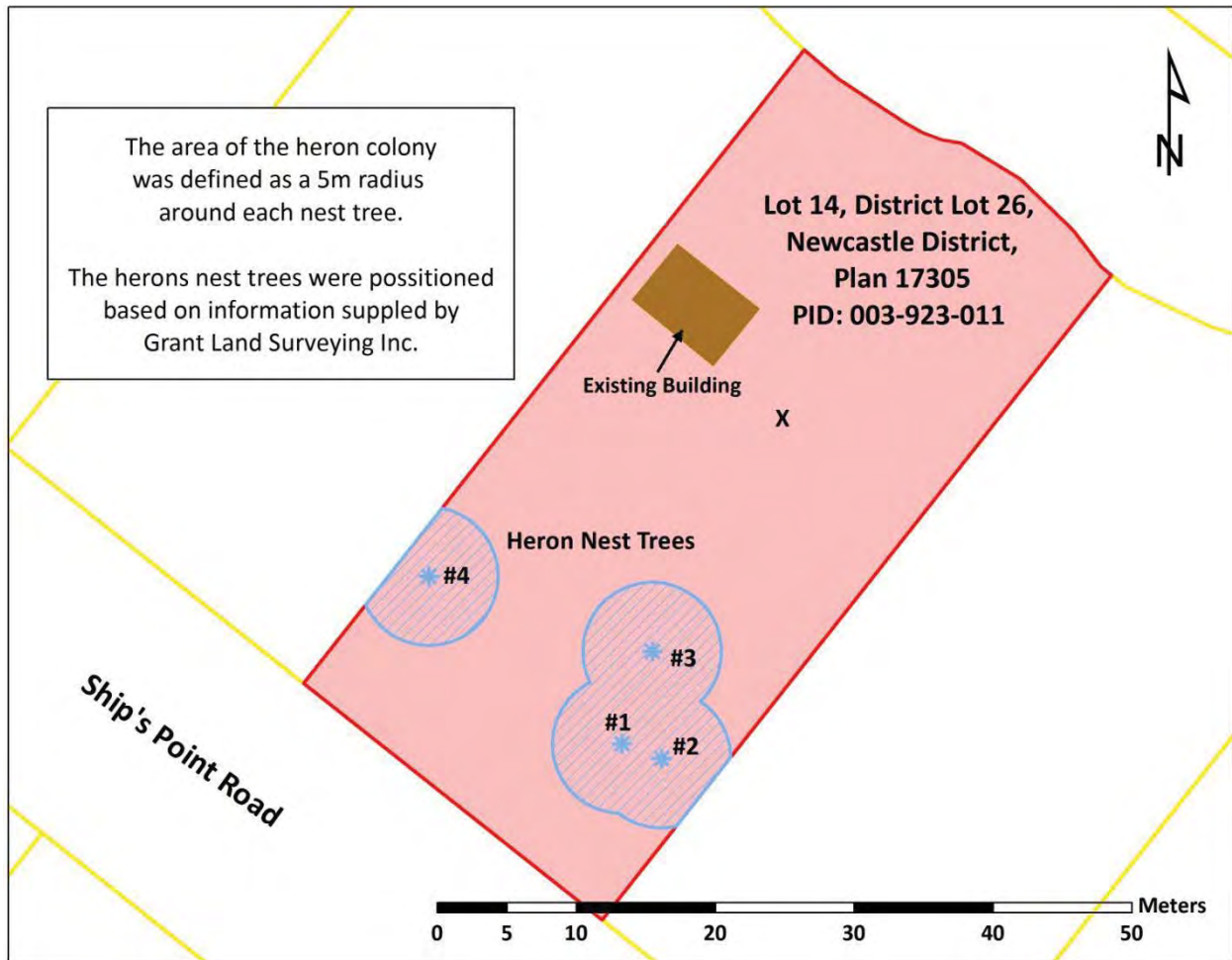
Literature Referenced

CDC 2017a: B.C. Conservation Data Centre. 2017. Occurrence Report Summary Reports. BC Species and Ecosystems Explorer. B.C. Ministry of Environment, Victoria, BC. Available: <http://a100.gov.bc.ca/pub/eswp/> (accessed 25 Aug 2017).

CDC 2017b: B.C. Conservation Data Centre. 2017. BC Species and Ecosystems Explorer. B.C. Ministry of Environment, Victoria, B.C. Available: <http://a100.gov.bc.ca/pub/eswp/> (accessed 25 Aug 2017).



Map 1: Subject Property on Ship's Point Road showing the 60m Great Blue Heron nest tree assessment area.



Map 2: The subject property on Ship's Point Road showing the location of the heron nest trees and proposed 5m zone of protection around each nest tree.



Photograph 1: Heron nest trees number 1, 2 and 3, looking south towards Ship's Point Road.



Photograph 1: Heron nest trees number 1, 2 and 3, looking north-east towards the shore.



Photograph 3: Heron nest tree number 4, looking north-west towards a neighbouring residence.



Photograph 4: Two heron nests in tree number 1.



Photograph 5: Heron egg shell under forest debris.



Photograph 6: Rattlesnake Plantain found along the top of the bank.



Lewkowich Engineering Associates Ltd.
geotechnical • health, safety & environmental • materials testing

Mike Adams
1237 Croft Road
Quesnel, BC
V2J 5R5

File: F5003.02
Date: January 16, 2018

PROJECT: SINGLE FAMILY RESIDENCE, LOT 14 SHIPS POINT ROAD, FANNY BAY, BC

SUBJECT: ADDENDUM TO GEOTECHNICAL ASSESSMENT (LEA FILE: F5003.01R1) – FORESHORE ACCESS

LEGAL DESCRIPTION: LOT 14, DISTRICT LOT 26, NEWCASTLE DISTRICT, PLAN 17305

Dear Mr. Adams,

1. INTRODUCTION

Lewkowich Engineering Associates Ltd. (LEA) was retained to conduct a geotechnical assessment of the above referenced property. LEA received a beach access design from the Client after the assessment was submitted. This addendum to F5003.01r1 provides recommendations with regards to the proposed beach access.

2. BACKGROUND

- a. LEA understands that the proposed development includes a 280m² (~3000ft²) single family residence. We also understand that the Client wishes to develop beach access on this lot (design attached). The property boundaries on the east side extend past the base of the foreshore slope. Drawings indicate that there is adequate space for a wood frame stair that does not encroach on public property.
- b. The foreshore slopes range in steepness from 30° to 45°. The lower half of these slopes consisted of shallower graded talus slopes. The foreshore is currently accessed by a very steep 'trail'. This trail may form a preferential flow path and aggravate erosion on the slope. The shoreline fronting this site is fairly well protected from prevailing northwest and southeast winds by Denman Island. This section of shoreline forms part of a lower energy drift cell. The majority of wave action affecting the site refracts around Denman Island

Client: Mike Adams
Project: Lot 14 Ships Point Rd, Fanny Bay, BC
File: F5003.02
Date: January 16, 2018
Page: 2 of 4



before reaching the study area.

3. CONCLUSIONS AND RECOMMENDATIONS

- a. LEA has reviewed the Client's design. From a geotechnical perspective we have no objections to the installation of this structure.
- b. Footings that support the stair should be founded on competent subgrade (ie. intact silt stone or well compacted talus).
- c. The stair may settle and shift due to movement in the talus. Ongoing maintenance of the stair may be required as the slope continues to naturally erode.
- d. Prior to construction, the footing bearing grades should be stripped to remove all unsuitable materials to provide a competent soil subgrade for support.
- e. Foundation loads should be supported on a subgrade approved for use as a bearing stratum by our office. Non cohesive soils classified as dense or very dense sand or gravel may be assigned a Service Limit State (SLS) bearing capacity of 50kPa and an Ultimate Limit State (ULS) bearing capacity of 66kPa. This soil should be free of organics and consist of undisturbed native soil, as identified by a qualified geotechnical engineer.
- f. Prior to placement of footings, any bearing soils that have been softened, loosened, or otherwise disturbed during the course of construction should be removed.
- g. Silt fence should be installed along the east property boundary, as an erosion and sediment control (ESC) measure before construction of the stair. Where preferential flow paths of storm water runoff are observed on the slope, measures such as temporary check dams and diversion swales should be installed. These measures should prevent erosion by slowing and diverting flows. Following construction, disturbed soils must be revegetated. Vegetation must be maintained in a dense condition.
- h. The Geotechnical Engineer should evaluate the bearing soils at the time of construction to

Client: Mike Adams
Project: Lot 14 Ships Point Rd, Fanny Bay, BC
File: F5003.02
Date: January 16, 2018
Page: 3 of 4



confirm that footings are based on appropriate and properly prepared founding material. We also recommend reviewing ESC measures and field siting of the stair with the Geotechnical Engineer before construction to ensure that adequate measures are in place.

4. ACKNOWLEDGEMENTS

Lewkowich Engineering Associates Ltd. acknowledges that this report may be requested by the approving officers of the Comox Valley Regional District for permit applications. We acknowledge that this report has been prepared solely for, and at the expense of the Client. We have not acted for or as an agent of the Comox Valley Regional District in the preparation of this report.

5. LIMITATIONS

The conclusions and recommendations submitted in this report are based upon the data obtained from a limited number of widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction or further investigation. The recommendations given are based on the subsurface soil conditions encountered during the investigation, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. Due to the geological randomness of many soil formations, no interpolation of soil conditions between or away from the test holes has been made or implied. Soil conditions are known only at the test hole locations. If other soils are encountered, unanticipated conditions become known during construction or other information pertinent to the structures become available, the recommendations may be altered or modified in writing by the undersigned.

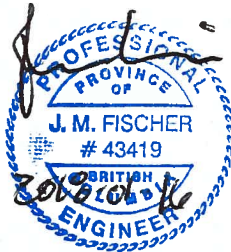
Client: Mike Adams
Project: Lot 14 Ships Point Rd, Fanny Bay, BC
File: F5003.02
Date: January 16, 2018
Page: 4 of 4



6. **CLOSURE**

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 us at your convenience.

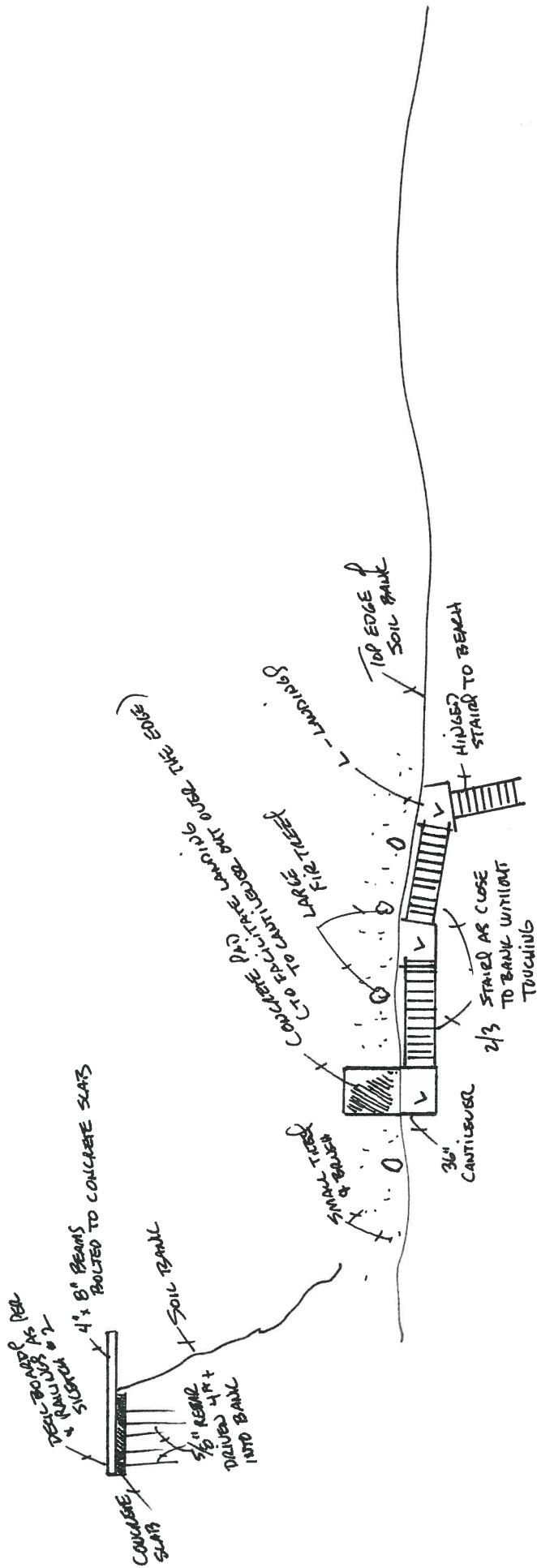
Respectfully Submitted,
Lewkowich Engineering Associates Ltd.

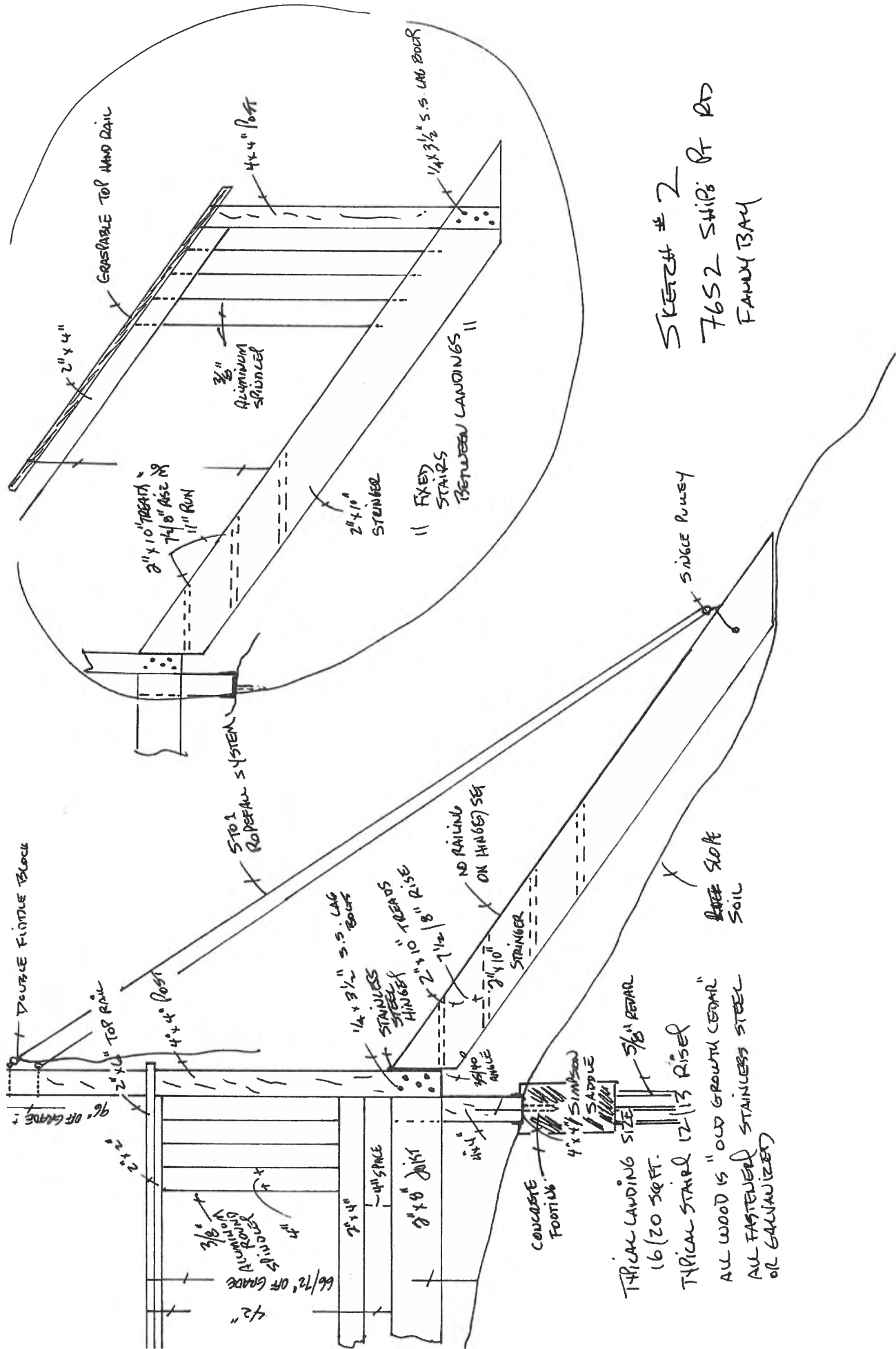


Johannes Fischer, P.Eng.

Attached: Access Stair Plans

SKETCH # I - 7652 SHIP, Pt. RD
FAUOH BAY





SKETCH # 2
 7652 SHIP'S RT RD
 FAMILY BAY

CONCRETE FOOTING
 4x4 SIMPSON SADDLE
 5/8\"/>

SOIL SLOPE

DOUBLE FINNED BLOCK

2x4\"/>

4x4\"/>

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