From: Maddie Graham
Sent: May 11, 2026 11:39 AM
To: Maddie Graham
Subject: FW: Summary of environmental considerations for development near Rance Island
Attachments: Zayonc_EnvironmentalConcerns_HGB_rance-island-development.docx; CWH_wetland_types.pdf; ISCBC-Factsheet-Knotweeds-180216-WEB.pdf

From: Bob Beckett [redacted]
Sent: May 10, 2026 11:32 AM
To: Daniel Zayonc [redacted]
Cc: Daniel Sailland <dsailland@acrd.bc.ca>; Alex Dyer <adyer@acrd.bc.ca>
Subject: Re: Summary of environmental considerations for development near Rance Island

Hi Dan,

Thank you for reaching out to me regarding the TUP for Rance Island.

I have copied ACRD staff so that they may review and copy the APC members prior to Thursday's meeting.

Bob Beckett
Sent from my iPhone

> On May 10, 2026, at 09:54, Daniel Zayonc [redacted] wrote:
>
> Dear Director Beckett,
>
> I see that the APC is reviewing a TUP for HGB developments near Rance Island on May 14. I am sharing this information as a ten year Bamfield resident who is a Qualified Environmental Professional trained in Green Shores (Level 2), Riparian Areas Protection Regulation (RAPR), and in the midst of completing a wetland delineation course.
>
> Attached is a report highlighting my concerns about the current developments occurring on the HGB properties near Rance Island. Broadly I support the idea of reinvigorating the area with a low impact development but I'm concerned that various legislation are not being adhered to. In the attached report, I've provided some background information, opportunities to address the concerns, and a final message of support for Indigenous led sustainable development. The slough area around Rance Island is a

sensitive ecosystem that offers great tourism value to our village. This development, if approached carefully, could highlight the best Bamfield and Huu-ay-aht have to offer.

Generally, I think it would be valuable to have a qualified environmental professional review streams and wetlands in our area. I've found that the provincial datasets are insufficient for our West Coast Vancouver Island freshwater resources. As such, it is understandable that developers and planners are unaware of the streams and wetlands that are on lands that fall under jurisdiction of the ACRD. Wetlands and streams are key ecosystem components that provide ecosystem services like flood protection, wildfire mitigation, drinking water and should be provided effective stewardship.

Thanks for your attention and I'd be happy to answer any questions,
Daniel Zayonc (Registered Professional Biologist)

<West Coast Wetlands FINAL_ClayoquotBiosphereTrust2025.pdf>

Report by Daniel Zayonc May 7, 2026

HGB Campground Development Near Rance Island in Bamfield

Yesterday I revisited the proposed campground development near Rance Island. The opportunity for a low impact campground is a great idea to safeguard a sensitive ecosystem while highlighting environmental values that make the Bamfield environment unique. The Bamfield OCP highlights protecting coastal areas as a high priority and lays out several tools to ensure thoughtful development including Riparian Areas Protection, Natural Hazard Areas Protection, and Coastal Protection through the planning process. With careful development and planning, the proposed campground could highlight the best Bamfield has to offer.

I was surprised at the amount of work being conducted and I am curious about the status of the development permit from MOTT and the ACRD. While I was on site, I observed various activities that I fear violate regional, provincial, and federal legislation. I've laid out the most relevant legislation that should be considered but there may be more including the Species at Risk Act, Wildlife Act, and Migratory Bird Act.

Development is both necessary and welcome — but it must also respect the environmental and cultural values that make the Huu-ay-aht Territory and Bamfield unique and a preferred destination for HFN Citizens, residents and visitors alike. Without careful attention, a cascade of unintended environmental effects could result, undermining the very values that make this development successful in the long term. After observing early stages of construction and land use changes, I am concerned that environmental safeguards are not being fully integrated into planning and implementation.

HGB Campground Development (PID 017-801-231)

The HGB Campground Development near Rance Island, is located outside Treaty Settlement Lands and therefore falls into the ACRD planning process. The area holds both ecological and cultural importance — historically, herring spawned in nearby eelgrass beds, and **Ostrom's Machine Shop** remains an important heritage site in Bamfield's history. The area is full of stories that are opportunities for developers to promote the area (link). The area is known locally for tremendous wildlife viewing opportunities as the intact sensitive ecosystem supports juvenile fish, migratory birds, and is a rare mudflat habitat within the Bamfield Harbour.

A new campground is being constructed through the property from Ostrom's toward Binnacle Road. This road crosses three small fish-bearing streams, is surrounded by small wetlands, and traverses areas heavily infested with **Japanese knotweed**, a provincially listed noxious weed known to damage infrastructure and ecosystems.

Given the risk knotweed poses to long-term infrastructure and land value ($3 billion is the estimated annual control cost of Japanese knotweed in the UK; local example here) — it can grow through pavement and foundations — I am curious what the environmental consultant

has prescribed for treatment. The **BC Government** may impose fines if noxious weeds are left unmanaged, so addressing this early and before work begins is in the developer's best interest.

Fortunately, Huu-ay-aht has invested in **training and certifying 5 staff** with herbicide application qualifications, offering immediate, in-house capacity to assist with control efforts. Collaborative action now can prevent costly remediation later and demonstrate Huu-ay-aht's commitment to responsible development.

Recommendations to align with legislation

Weed Control Act – Duty to control noxious weeds

- Halt all development to ensure Japanese knotweed does not spread through the development footprint and elsewhere. This will reduce the risk of future infestations and fines from the province.
- Work with HFN staff to implement a herbicide treatment program to control the spread and presence of Japanese Knotweed.
- Proceed with development after control of Japanese knotweed and adherence to other legislation

Riparian Areas Protection Regulation – streamside protection and enhancement area (SPEA)

- Obtain the services of a qualified environmental professional to identify streams and delineate wetlands and their respective SPEA.
- Take note of Ws53 (Western Redcedar, Sword Fern, Skunk Cabbage) and Ws54 (Western redcedar, Western Hemlock, Skunk Cabbage) wetlands. Provide a 15m buffer to wetlands.

Fisheries Act – Harmful alteration, disruption, or destruction of fish habitat

- I noticed that wetland areas may be actively getting infilled by the developer which may constitute a harmful alteration, disruption, or destruction of fish habitat under the federal Fisheries Act. Identify where wetlands and streams are located and provide 15m buffers.

Water Sustainability Act – Changes in and about a stream

- Remove proposed campsites and other developments that will impact natural stream flows from development plan.

Consider following a green shores approach to shoreline development.

- The area is considered a marsh shore which includes both mudflat and delta areas. Marsh shores are generally highly sensitive and productive natural areas. The intertidal

(foreshore) zone in this area is typically dynamic, changing in response to large stream flows and storm events. Though dynamic, the shore zone in these areas is generally accreting rather than eroding. It is important to allow sufficient space to allow these natural sediment processes to occur. With this type of shoreline, the following guidelines apply:

1. Provide a property-specific assessment with respect to building setbacks and shore protection designs, as stream sediment processes are important and will vary from site to site.
2. Dredging or filling of marsh shore should not be permitted.
3. Use of marsh shore areas should be limited to park or conservation uses that do not require structural intrusions.
4. Where shore protection measures are necessary, make use of "beach nourishment" designs, which add appropriately sized material to the upper beach, creating a natural beach slope and beach armour.
5. Sea walls and rip rap embankments should not be used to protect these shoreline areas.
6. Retain or restore an average 15m wide (with a 5m minimum) shoreline zone (i.e., shoreline vegetation) over at least 50% of shore length.

Ensure adherence to ACRD DPA requirements.

- DPA I Riparian Areas Protection
- DPA II Natural Hazard Areas Protection
- DPA IV Coastal Protection

Summary:

The HGB campground project can and should showcase the best of sustainable Indigenous-led development — where economic growth, environmental stewardship, and cultural revitalization move hand in hand. I strongly encourage early and ongoing coordination between developers, the HFN Lands and Natural Resources Department, and environmental professionals to ensure projects reflect the Nation and community's long-term vision.

Thoughtful development today will safeguard the lands, waters, and cultural heritage that future generations of Huu-ay-aht citizens and Bamfield residents depend on and what draw tourists in.

Ws53 Western redcedar – Sword fern – Skunk cabbage

Thuja plicata – Polystichum munitum – Lysichiton americanus

General Description

Western redcedar – Sword fern – Skunk cabbage swamps are uncommon in the Georgia Depression. They occur in receiving sites in topographic depressions, toe slopes, and peatland margins in areas where wet conditions are maintained in hollows, but better-drained sites exist on raised mounds.

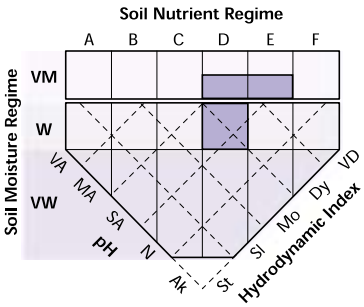
Thuja plicata dominates the open canopy with *Tsuga heterophylla*, *Acer macrophyllum*, and *Picea sitchensis*. *Alnus rubra* is also common in natural openings and where clearing has occurred. The shrub layer is moderately developed: *Oemleria cerasiformis*, *Rubus spectabilis*, and *Sambus racemosa* are the most common species. *Lysichiton americanus* is very prominent in the herb layer along with other rich-site indicators.

Gleysol and Humisols are common soil types. Most sites have at least a veneer of dark, woody peat.

Characteristic Vegetation

Tree layer (30 - **70** - 95)
Acer macrophyllum*, *Alnus rubra, *Picea sitchensis*, ***Thuja plicata*, *Tsuga heterophylla***
Shrub layer (10 - **52** - 99)
Oemleria cerasiformis*, *Rhamnus purshiana*, *Rubus spectabilis*, *Sambucus racemosa
Herb layer (5 - **61** - 95)
Athyrium filix-femina, *Dryopteris expansa*, ***Equisetum telmatiea*, *Lysichiton americanus*, *Maianthemum dilatatum*, *Polystichum munitum***, *Stachys chamissonis*, *Tiarella trifoliata*
Moss layer (0 - **38** - 80)
Eurhynchium praelongum, *Leucolepis acanthoneuron*, ***Mnium* spp.**

Wetland Edatopic Grid



Comments

*The **Ws53** supports moderately productive forest. Soils indicate a wetland environment but plant community composition does not clearly reflect this because pronounced microtopography allows upland species to occur. Most species in **Ws53** sites are facultative wetland indicators.*

*The **Ws53** describes rich, wet skunk cabbage forests of the CDF and very dry CWH; similar site conditions in the rest of the CWH are described by the **Ws54**.*

*The **Ws53** includes site series CDFmm/11 and CWHxm/12.*

Thuja plicata – Tsuga heterophylla – Lysichiton americanus

General Description

Western redcedar – Western hemlock – Skunk cabbage swamps are common in the Coast and Mountains at low elevations. They occur in low-lying areas on floodplains and receiving sites at toe slopes and wetland margins. These sites are strongly mounded, with conifers on elevated microsites.

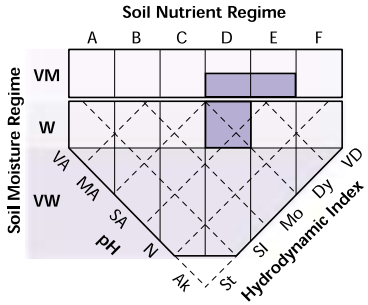
The canopy is open and consists primarily of *Thuja plicata* and *Tsuga heterophylla*. Shrubs root mainly on mounds: *Gaultheria shallon*, *Rubus spectabilis*, and *Vaccinium* species are prominent. *Lysichiton americanus* is always present in damp hollows, accompanied by a diversity of rich-site indicators.

Organic veneers of dark, woody humic or mesic peat over fine-textured lacustrine material are typical. However, peat depths are variable, ranging from 0 to 130 cm. Terric Humisols/ Mesisols or Humic Gleysols with peaty humus forms are the most common soil types, but gleyed Podzols also occur.

Characteristic Vegetation

Tree layer (0 - **51** - 100) *Abies amabilis*, ***Picea sitchensis***, ***Thuja plicata***, ***Tsuga heterophylla***
Shrub layer (4 - **55** - 99)
Gaultheria shallon, *Menziesia ferruginea*, ***Rubus spectabilis***, *Thuja plicata*, ***Tsuga heterophylla***, ***Vaccinium alaskaense***, *V. ovalifolium*, ***V. parvifolium***
Herb layer (5 - **59** - 99)
Athyrium filix-femina, ***Blechnum spicant***, *Cornus canadensis*, ***Lysichiton americanus***, *Rubus pedatus*, *Tiarella trifoliata*
Moss layer (5 - **63** - 98)
Hylocomium splendens, ***Mnium*** *spp.*, *Pellia neesiana*, ***Rhytidiadelphus loreus***, *Sphagnum* Group II

Wetland Edatopic Grid



Comments

*The **Ws54** supports poor to moderately productive forest. Soils indicate a wetland environment but plant community composition does not clearly reflect this because pronounced microtopography allows upland species to occur. Most species in **Ws54** sites are facultative wetland indicators. On degrading floodplain sites, forests are dominated by Sitka spruce (see additional units).*

*The **Ws54** describes rich, wet skunk cabbage forests of the CWH; similar forests in the CDF and very dry CWH are described by the **Ws53**. At higher elevations in the MH, forested skunk cabbage ecosystems are described by the **Ws55**.*

*The **Ws54** includes numerous BEC Site Series (see Appendix 4).*

Himalayan Knotweed; N. Page

Invasive Species Council of BC

FACTSHEET
JULY 2017

Knotweeds

Japanese knotweed — Fallopia japonica
Giant knotweed — Fallopia sachalinensis
Bohemian knotweed — Fallopia x bohemica
Himalayan knotweed — Polygonum polystachyum

About Knotweeds

Four knotweed species are currently found in British Columbia: Japanese knotweed (*Fallopia japonica*), Giant knotweed (*Fallopia sachalinensis*), Bohemian knotweed (*Fallopia x bohemica*), and Himalayan knotweed (*Polygonum polystachyum*). All four species are similar in appearance, biology, impacts, distribution, and methods of control and will be discussed under the general title of "knotweeds".

Knotweeds are one of the 100 worst invasive species as identified by the International Union for Conservation of Nature (IUCN) and a top-ten invasive species for control in BC. Its ability to tolerate a range of soil types and climates means that it has the potential to spread much further than it has to date.

Distribution

Knotweeds are native to Asia and were introduced to British Columbia as an ornamental plant. In British Columbia, they are found in the following regions: Vancouver Island, Central Coast, Sunshine Coast, North Coast (Haida Gwaii), Lower Mainland, Nechako, Cariboo, Thompson-Okanagan and the Kootenays.

Bohemian Knotweed Distribution (June 2016)

Himalayan Knotweed Distribution (June 2016)

Giant Knotweed Distribution (June 2016)

Japanese Knotweed Distribution (June 2016)

Legal Status

Knotweeds are designated as provincially noxious under the *Weed Control Act*. They are also regulated under the *Forest and Range Practices Act* and *Community Charter*.

Identification

*A "***Key to Identification of Invasive Knotweeds in BC***" is available online at: www.for.gov.bc.ca/hra/Publications/invasive_plants/Knotweed_key_BC_2007.pdf*

Flowers: Small, white/green flowers grow in showy, plume-like, branched clusters along the stem and leaf axils (joints).

Stems: Green stems, or canes, are hollow with varying thicknesses, upright, and bamboo-like with reddish-brown/red speckles. Stems are generally 1-5 m in height and grow in large, dense thickets. Stems may persist through the winter as bare, grey or straw colored hollow stalks.

Japanese Knotweed
© Illustrated Flora of BC

Rhizomes: At maturity, rhizomes are thick and woody and can spread up to 20m laterally. Rhizomes have reduced leaf scales that span every 2-4 cm. The underside of the rhizomes has adventitious roots that travel into the soil with penetrable force.

Leaves: Predominantly heart- to triangular-shaped on all species except Himalayan, which are elongated and tapered. Leaves on all species, except giant knotweed, are 8-10 cm wide and 15 cm in length. Giant knotweed leaves are generally twice the size of the other 3 species. A distinguishing feature for Japanese knotweed is the zigzag pattern in which leaves are arranged along the plant's arching stems.

Fruits: Typically dark, glossy, 8 to 9 mm long and three-winged. Not all fruits are fertile.

Similar Native Species: Knotweeds, also referred to as "false bamboo" are often confused with Dogwood (*Cornus spp*)

L-R: Giant Knotweed, Japanese Knotweed, Himalayan Knotweed; J Halworth

Japanese Knotweed through concrete; CABI

and Lilac (*Syringa vulgaris*) as the leaf shape of many woody shrubs and small/young trees can look very similar to knotweed. These species can be differentiated by leaves that grow opposite each other along a woody stems.

Ecological Characteristics

Habitat: Knotweeds are often found in riparian areas stockpiled material (example: soil, aggregate, mulch), derelict land, road and railway right of ways and gardens. They prefer moist soil and full or partial sun.

Reproduction: Both root and stem fragments can regenerate — making knotweeds very easy to spread. The primary mode of reproduction is vegetative. Reproduction can occur from as little as 0.7 grams of stem or root tissue. Buried rhizomes can regenerate from depths up to 1m. Historically, knotweeds in their introduced range spread by vegetative means and from a very small number of initial introductions resulting in many knotweed infestations being clones. However, in British Columbia, knotweeds successfully reproduce vegetatively and by viable seed.

Hybridization: Bohemian knotweed is a hybrid between Japanese and Giant knotweed. Bohemian knotweed possesses higher variability than the parent species. For example, Bohemian knotweed leaves are a blend of both parents- they are slightly longer than wide (about mid way between parents for size) and are typically shallowly cordate at the base. Hybrid plants are able produce large numbers of wind-dispersed viable seeds that germinate at rates approaching 100% in some populations.

Dispersal: Plants are often spread through contaminated equipment and soil, and improper disposal of removed plant material. Plants are also dispersed through wind, wildlife, cutting and mowing, flooding events and through human actions such as selling, purchasing, and trading knotweed plants.

$3 billion

ESTIMATED ANNUAL CONTROL COST OF JAPANESE KNOTWEED IN THE UK

Impact

Economic: Knotweeds can grow through concrete and asphalt, damaging infrastructure. This results in significant control, management and repair costs. In the UK, the annual control cost of Japanese knotweed, on a national scale, is estimated at $3 billion (USD). Other impacts include reduction of property values. In the UK, there have been examples where people have been unable to secure a mortgage or insurance on knotweed infested properties.

Ecological: Knotweeds grow rapidly, forming monocultures that limit resources for native plants. Their ability to out-compete native species threatens biodiversity and ecosystem functions. Also, knotweed roots lack the true root hairs necessary to bind to the soil, resulting in erosion and stream sedimentation along banks of creeks and rivers where it has become established.

Social: Knotweeds are a nuisance to anglers, boaters and other aquatic recreationalist as infestations impede access to the waterbody. They also affect homeowners as knotweed rhizomes and stems can push through asphalt, building foundations, concrete retaining walls and drains causing significant damage. Due to their rapid growth, knotweeds can impact sightlines and block signs along highways, affecting the safety of motorists. They have also been known to reduce the stability and integrity of the rail bed and compromise train safety.

Integrated Pest Management

IPM is a decision-making process that includes identification and inventory of invasive plant populations, assessment of the risks that they pose, development of well-informed control options that may include a number of methods, site treatment, and monitoring.

Because knotweeds have the ability to reproduce vegetatively through root and stem tissues, management options must be carefully evaluated on a site by site basis to avoid further spread and complications. Eradication of this plant typically requires a dedicated, multi-year, planned approach.

A. Prevention

» Report infestations:

- **Regional Invasive Species Committees: www.bcinvasives.ca/about/partners/bc-stakeholders/regional-committee-map**
- **Online: www.gov.bc.ca/invasive-species**
- **Toll Free: 1-888-933-3722**

» Do not purchase, trade, or grow knotweed. Instead, grow regional native plants as they are naturally adapted to the local environment and are non-invasive. For a list of non-invasive alternative plants, please see the Invasive Species Council of BC's Grow Me Instead booklet: (www.bcinvasives.ca).

» Maintain or establish healthy plant communities that are resistant to invasion by invasive plants.

» Remove plants, plant parts, and seeds from personal gear, clothing, pets, vehicles, and equipment before leaving the infested area.

» Ensure soil, gravel, and other fill material are not contaminated with knotweed.

» Take special care when controlling knotweed near streams, or ditch lines, to prevent the movement of plant parts downstream.

» Bag or tarp plants, plant parts, and seeds before transporting to a designated disposal site (e.g. landfill).

Japanese Knotweed rootball; W. Tyrrell

B. Biocontrol

Biological Control or biocontrol is the use of an invasive plant's natural enemies (chiefly insects, parasites and pathogens) — to reduce its population below a desired level.

A sap sucker psyllid, *Aphalara itadori*, has been studied as a potential biological control in the Pacific north-west. *A. itadori* feeds on the sap in the phloem cells of the leaves and stems resulting in twisted and deformed leaves and, more importantly, damage to the meristems and reduced biomass.

In 2012, host range screening was completed for *A. itadori* and a permit to import the psyllid into Canada was submitted to the Canadian Food Inspection Agency in October 2012. The agent has been permitted for release and Agriculture and Agri-Food Canada is at a very early research stage of trying to identify the conditions required for establishment. For the current availability of *A. itadori*, please visit: www.for.gov.bc.ca/hra/Plants/biocontrolHome.htm.

C. Chemical Control

Herbicide recommendations and use must first consider site characteristics and be prescribed based on site goals and objectives. Individual herbicide labels should be reviewed, prior to use, for specific site and directions for use. Herbicides should be applied by certified pesticide applicators.

» There are many targeted techniques available to selectively apply systemic herbicides to knotweed, such as, hand spraying, back pack spraying, and wipe on applications.

» Effective herbicides include: imazapyr, glyphosate, triclopyr and aminopyralid.

D. Mechanical Control

Important: *Mechanical control on its own is not an effective management tool. Manual control is only recommended under specific circumstances and should be carried out with extreme caution due to the likelihood of spread through root and stem fragments. Mechanical control is a time consuming treatment option that will require dedication of frequent removal over numerous years. All removed plant material should be disposed of properly (see disposal section).*

» **Mowing** can deplete root reserves over time so the plant is less successful at regenerating after cutting. However, in most cases, repeated frequent mowing fails to eradicate even small patches of knotweed unless carried out over numerous years.

» **Digging** has shown to be effective on very small and recently established populations if done thoroughly (i.e. all root and shoot tissue are successfully removed) and followed by restoration of native plant communities.

» **Burning** is not recommended as the plants contain high water content and all plant tissue, particularly the rhizomes, may not burn.

» **Grazing** may result in short term reduction of above-

ground plant matter. Grazing must be done by trained animals continuously throughout the growing season for numerous years.

- **Cutting** may be effective for small populations if repeated several times a year with constant monitoring. Cutting should be repeated until root reserves are depleted (usually several years). Cutting is most effective when followed up with herbicide application.

Recommended Control Strategy

Chemical control with a systemic herbicide is the recommended treatment strategy for knotweeds due to their extensive root structure and aggressive growth and reproduction. This treatment method is the easiest, most cost effective, and successful treatment method. Knotweeds typically require treatment with herbicide for 3-5 years.

For control of knotweed species on crown land, please review the ***2016 Herbicide Guidelines For Control Of Knotweed Species On Crown Lands***, available at: www.for.gov.bc.ca/hra/plants/publications/2016_Herbicide_Summary_for_Control_of_Knotweeds_on_Crown_Lands.pdf

Disposal

Disposal of invasive plants varies by regions within BC. If you would like specific information on how to dispose your invasive plants, please contact your local government or regional invasive species organization.

- Chemically treated knotweed canes can be left on site to compost.
- Manually removed knotweed plants, plant parts and seeds must be bagged or tarped before transporting to a designated disposal site (e.g. landfill or transfer station). Note: It is recommended that transfer stations provide disposal bins intended solely for invasive plants. This will ensure the plant matter within the container is transported in a sealed unit and properly disposed of at the landfill. All cut plant parts should undergo deep burial (at least 5m deep) at a landfill.
- Burning at home is not recommended as extreme temperatures are required to completely desiccate the plant.
- Do not compost knotweed. Home composting is likely to increase the spread of this species.
- Soil contaminated with knotweed plant material or seed should be handled carefully and either under go deep burial or disposed of at a suitable disposal site. Disposal sites should be far enough away from water and drinking wells to enable herbicide treatment. Disposal sites should be monitored and treated as needed.

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Thank you to the BC Ministry of Environment and the BC Ministry of Transportation and Infrastructure for providing project funding, and to those who advised the development of these management recommendations.

ADDITIONAL CONTACT INFO