



ENVIRONMENTAL ASSESSMENT FOR 2850 HERD RD & 6833/6823 BELL MCKINNON TEMPORARY USE PERMIT

PREPARED FOR:

MUNICIPALITY OF NORTH COWICHAN
7030 TRANS-CANADA HIGHWAY
DUNCAN, BC V9L 6A1

CORVIDAE PROJECT #2023-051
JULY 2023

CORVIDAE
ENVIRONMENTAL CONSULTING INC

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CAVEAT

This Environmental Assessment (EA) has been prepared with the best information available at the time of writing, including the District of North Cowichan Official Community Plan, communications with the client and regulators, site visits, review of site plans and design drawings and other documentation relevant to the project. This EA has been developed to assist the project in remaining in compliance with relevant environmental regulations, acts and laws pertaining to the project and to identify and mitigate the expected impacts of the project and reclamation activities directly related to the project.



1 INTRODUCTION

Corvidae Environmental Consulting Inc. (Corvidae) is pleased to provide this Environmental Assessment (EA) for the proposed changes to 2850 Herd Rd (PID 006-095-674) (Zoned A2), 6833 and 6823 Bell McKinnon (PID 006-341-616) (Zoned R1) (all together referred to as the project).

The project area is totals 5.26 ha in size and has been formerly used for agriculture with a residential property. The property was cleared of trees several years ago. Then more recently cleared in 2022. The eastern portions of the project are largely void of vegetation due to recent clearing between February and July 2022. There are currently three existing homes and several accessory structures within the project extent. Surface water features include a constructed roadside ditch, an ephemeral watercourse, and a wetland (Figure 1).

For the Temporary Use Permit (TUP) the landowners are proposing to level the area for a parking lot for the construction team building the hospital, which will be capped with gravel; and a soil storage area for topsoil and organics from the hospital construction site to the south, stockpiled on site temporarily, then reapplied for landscaping on the hospital site. The total topsoil storage is 7000 m³. The 15 m wide area of land on the east side of the property, adjacent to the neighbouring Agricultural Land will be seeded with a grass seed for the interim, and then become parkland following the completion of the TUP project (during the future development).

1.1 REGULATORY FRAMEWORK

This environmental assessment is designed to comply with the provisions set out in the Municipality of North Cowichan Official Community Plan (OCP) for development permit areas and for compliance with the provisions for environmental protection contained in the following relevant legislation:

Municipal

Municipality of North Cowichan Official Community Plan Bylaw No. 3900 (2022)

- Mature Forest is mapped within the eastern extent of the project, as per Map 4 Environmentally Sensitive Areas of the OCP. Development Permit Area 3 (Natural Environment) applies to development within 15 metres of any environmentally sensitive area shown on Map 4 – Environmentally Sensitive Areas or identified as environmentally sensitive by a qualified environmental professional.
- The polygon mapped as Mature Forest no longer applies to this project as clearing of mature trees occurred on the property between February and July 2022 according to available imagery (Google Earth Pro).
- Areas of high groundwater vulnerability are noted within the project area as per Map 5 Water Source Protection (District of North Cowichan). An objective of DPA-3 is to protect shallow and vulnerable aquifers from risk of groundwater contamination. This will be addressed in the future development, but does not apply to

North Cowichan Zoning Bylaw 1997 No. 2950 (current to April 17, 2023)

- Watercourses, Section 13 (1): Despite any other provisions of this Bylaw, other than section 80.2 (7) (d), no building or part thereof shall be constructed, altered, moved, or extended, nor shall any mobile unit, manufactured home, structure, or fill be located: (a) within 7.5 m (24.6')



from the natural boundary of the sea, or (b) within the riparian assessment area, unless the requirements of the Riparian Areas Regulation of the British Columbia Fish Protection Act have been met; (c) within 15.0 m (49.21') from the natural boundary of any other watercourse or source of water supply, excluding wells

The guiding principle for the use of Development Permits is found within the Local Government Act. Development Permit Areas can be designated for purposes such as, but not limited to the following:

- Protects, enhances and restores the biodiversity and ecological values and functions of environmentally sensitive areas.
- Fosters compatibility between development, existing land uses and environmentally sensitive areas.
- Maintains connectivity between sensitive ecosystems; and
- Protects water quality and quantity.

Provincial

Wildlife Act (1996)

- As per Section 34 of the British Columbia Wildlife Act it is an offence for a person to possess, take, injure, molest or destroy a bird or its egg; the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl; or the nest of a bird when the nest is occupied by a bird or its egg.

Invasive Species Council of BC

Weed Control Act (1996, current as of May 10, 2023)

- In accordance with the regulations, an occupier must control noxious weeds growing or located on land and premises.

Riparian Areas Protection Regulation (RAPR)

- Surface water features within the project do not meet the definition of a stream under RAPR as they do not provide fish habitat and do not drain into fish habitat. More details are provided in Section 4.6.

Federal

- Migratory Birds Convention Act (1994)
- Species at Risk Act (SARA) (2002)



DURATION OF LOGISTICS PHASE.

2023				2024				2025				2026			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

LEGEND

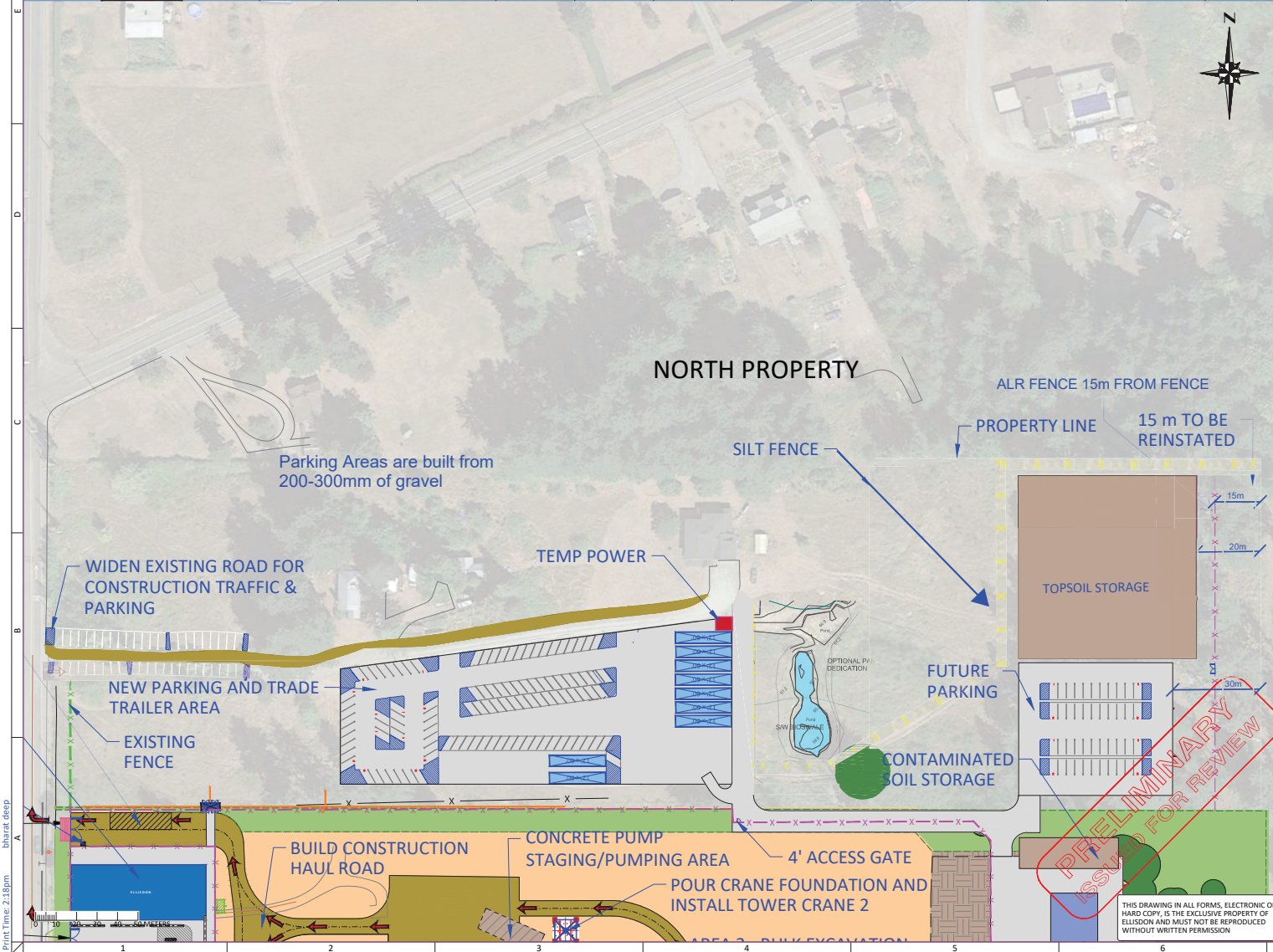
- PROPERTY LINE
- CONSTRUCTION FAST FENCE
- CONSTRUCTION SWING GATES
- CONSTRUCTION SITE
- EXCAVATION / OPEN-CUT
- ROUGH GRADING
- CONSTRUCTION HAUL ROAD
- TYPICAL ACTIVE CONSTRUCTION
- CONCRETE PUMP STAGING AREA
- CONSTRUCTION RAMP
- CONSTRUCTION TRAFFIC
- FLAG PERSONNEL
- TOWER CRANE
- DUMP TRUCK AND EXCAVATOR
- CRANE PICK-UP AREA WITH FLATBED
- TRADE TRAILERS

SCOPE OF WORK

- June 2023**
- Raft slab excavation and mud slab.
 - Raft slab formwork and foundation
 - Install additional trade trailer offices and site washrooms.

REV 02	10-28-21	SITE AND LOGISTICS UPDATES	RD
REV 01	10-14-21	SITE AND LOGISTICS UPDATES	RD
No.	DATE	DESCRIPTION	BY

<p>EllisDon We build our great relationships.</p>	CONSTRUCTION SCIENCES ENGINEERING SERVICES GROUP 1004 Middlegate Road, Suite 1000 Mississauga, Ontario, L4Y 1M4 CANADA Tel: 905-896-8900 Fax: 905-803-6346 www.ellisdon.com		
	PROJECT NAME: CDH REDEVELOPMENT	DRAWING TITLE: SITE LOGISTICS - Phase 2.2 : Excavation (Bulk & Detail), Foundations and Raft & Ground Slabs. (cont.)	
BRITISH COLUMBIA	DATE: 12.15.22	SCALE: N.T.S.	DRAWN BY: RD
	PROJECT NO: CDH-LOG-02B-NP	DRAWING NUMBER: 	SHEET NO: 0



PRELIMINARY
ISSUED FOR REVIEW

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2 SCOPE OF WORK

A Qualified Environmental Professional (QEP) from Corvidae completed an environmental assessment for the property. The environmental assessment documented the ecological features on the property, including the wetland identified on site. During the assessment, the following features were documented in this report:

- Areas of sensitivity, habitat and biodiversity values;
- Plant communities and plant species on site;
- Potential wildlife presence and wildlife habitat;
- Soil and terrain properties; and
- Surface water flow patterns.

Following the field assessment, biophysical features were mapped. Mitigations to minimize the impacts of the proposed project on the environment have been provided in Section 6.

3 METHODS

3.1 DESKTOP REVIEW

Baseline biophysical conditions were compiled by reviewing the best available data and information including existing reports for the area and conducting searches of online provincial databases:

- Municipality of North Cowichan Official Community Plan Bylaw No. 3900 (2022);
- North Cowichan Interactive Web Map system (Municipality of North Cowichan. 2019);
- BC Conservation Data Centre (BC CDC 2023a and 2023b);
- iMapBC mapping tool and aerial imagery of the property (Province of BC 2023a); and
- BC HabitatWizard (Province of BC 2023b).

3.2 FIELD ASSESSMENT

A field assessment of the property was completed on May 3rd, 2023, by a QEP from Corvidae. The assessment included characterization of vegetation, ecosystem types, surface water features, wildlife sign and species observations, wildlife habitat, and landscape conditions of the property. Site photos are included in Appendix A.



4 ENVIRONMENTAL SITE ASSESSMENT

4.1 CLIMATE AND BIOGEOCLIMATIC ZONE

The project is located within the Coastal Douglas-fir moist marine (CDFmm) biogeoclimatic subzone (BC CDC 2023b). This biogeoclimatic subzone experiences an annual temperature of 9.2 to 10.5 °C and a mean annual precipitation from 647 to 1263 mm (Nuszdorfer et al. 1991). The CDFmm occurs at low elevations (<150 m) along southeast Vancouver Island, the southern Gulf Islands, and part of the Sunshine Coast. The CDFmm has the mildest climate in Canada. This subzone has a long growing season with warm, dry summers and mild, wet winters (Province of British Columbia 1994).

4.2 TERRAIN AND SOILS

Soils in the CDFmm biogeoclimatic subzone, generally derived from morainal, colluvial, and marine deposits, are typically Brunisols, grading with increased precipitation to Humo-Ferric Podzols (Nuszdorfer et al. 1991). Soils in the western half of the property are characterized by moderately well-draining silt loam soils. Soils at the project center near the wetland include poorly draining, silt loam soils, and soils to the east are moderately well drained loam soils.

The terrain on the property is generally flat, with increasing slopes at the eastern extent (sloping west).

4.3 VEGETATION

The eastern portions of the project are largely void of vegetation due to previous clearing of mature forest. Vegetation remaining in this area is comprised of shrubs, reed canarygrass (*Phalaris arundinacea*), and pockets of red alder (*alnus rubra*) where soils are moist. The western aspects of the property contain large, grassed areas, shrubs, fruit trees, alder thickets, and intermittent mature trees. Riparian vegetation associated with the roadside ditch, wetland, and northern drainage include reed canary grass, red alder, hardhack (*Spiraea douglasii*), Himalayan blackberry (*Rubus armeniacus*), and slough sedge (*Carex obnupta*). Areas surrounding the project to the north and east are forested and are characterized by a canopy of Douglas-fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), western hemlock (*Tsuga heterophylla*), and western redcedar (*Thuja plicata*).

Several non-native (exotic) invasive plant species occur throughout the property such as Himalayan blackberry, wild teasel (*Dipsacus fullonum*), Oxeye daisy (*Leucanthemum vulgare*), and Scotch broom (*Cytisus scoparius*).

4.4 WILDLIFE

Wildlife sightings during the field assessment included several bird species (passerines), a black-tailed deer, and one unidentified amphibian within the wetland. The property has habitat potential for birds, mammals, and amphibians. Remaining mature trees onsite and within abutting properties can provide nesting and roosting habitat for raptors, songbirds, owls, and woodpeckers. No wildlife dens or burrows were detected during the site assessment. It is anticipated that the project area is potentially utilized by small mammals and reptiles, however, cover areas (large and small coarse woody debris) are lacking. No at-risk species or ecosystems were detected at the time of the site assessment.



4.5 SPECIES AT RISK

A query of the BC CDC iMap and iMapBC tools yielded four (4) occurrences of species at risk and two (2) ecosystems at risk within 2 km of the project (Figure 2). None of the species or ecosystems at risk shown in Figure 2 were detected on the property on May 3, 2023. One occurrence of federal *Species at Risk Act* critical habitat was detected within a two-kilometer radius of the property for barn owl (*Tyto alba*) (BC CDC 2023b and Province of BC 2023b). This occurrence does not overlap with the project boundaries and no suitable habitat exists for barn owl within the project.

4.6 RIPARIAN AREAS AND FISHERIES

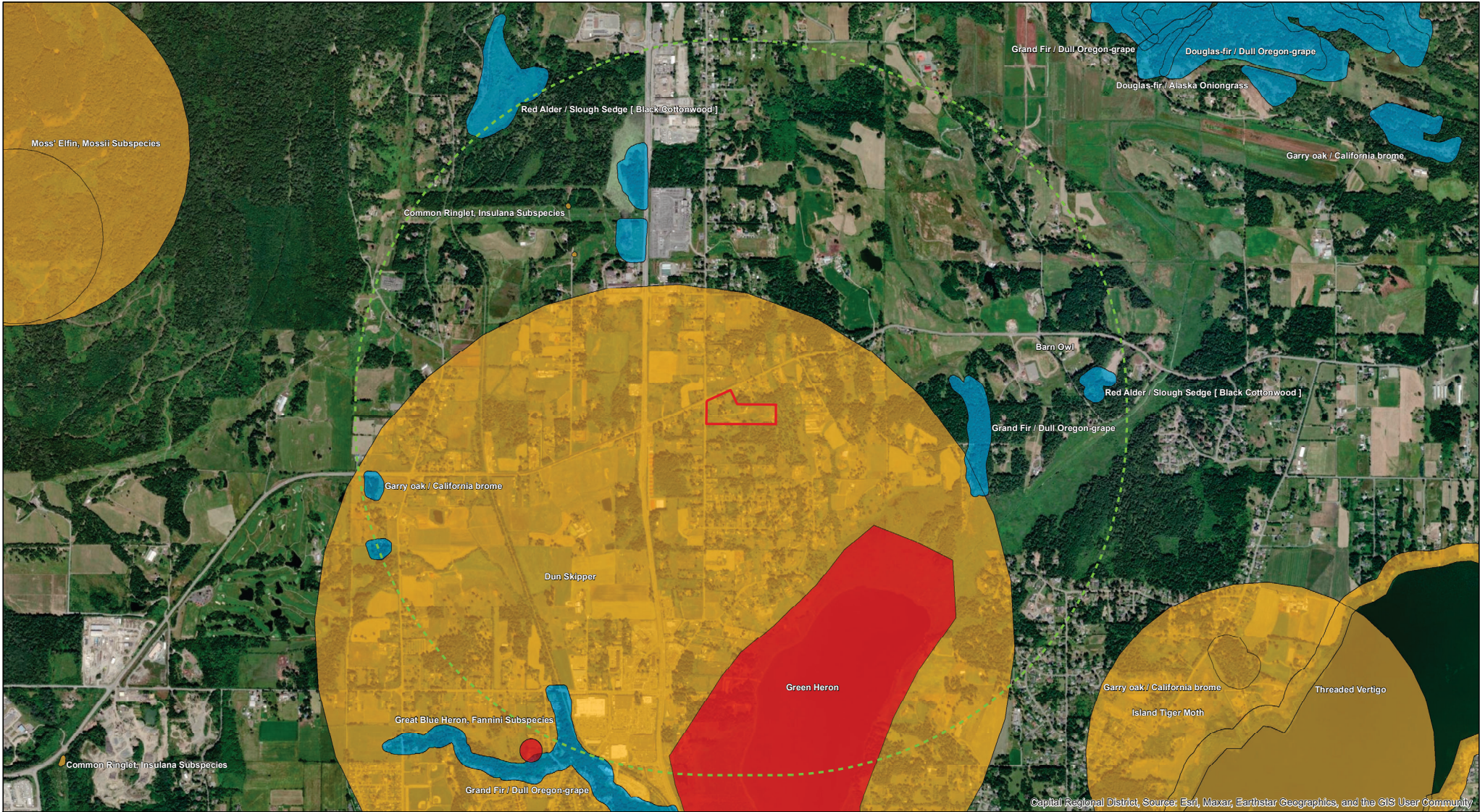
An ephemeral watercourse was observed to the east of the main residence within 6833 Bell McKinnon Road. Flows originate within the property to the north (2796 Herd Road) and are conveyed within a narrow channel in a southeast direction for entry into a small wetland near the southern property line of 6823 Bell McKinnon Road. The wetland currently drains through a culvert underneath an onsite road to a ditch located to the south within the new hospital site at 6775 Bell McKinnon Road. The upper extent of the ephemeral watercourse was dry at the time of the assessment. Standing water was observed within the southern sections of the watercourse and within the wetland.

The wetland and watercourse are excluded from the definition of stream under the RAPR because they do not support fish and do not drain into a watercourse that supports fish. Extensive modifications to the environment within the property to the south to accommodate the new hospital has included enclosure of a watercourse immediately downstream of the onsite wetland and wetland modification for the purpose of stormwater management and detention.

A constructed roadside ditch occurs to the south of the main driveway into the site and discharges to the wetland further east. It is anticipated that these surface water features described above are dry during the summer months when precipitation is reduced or absent. The ditch, watercourse, and wetland are also not expected to be fish-bearing, although detailed sampling has not occurred. These surface water features are not mapped within the BC HabitatWizard database (Province of BC 2023b) or on North Cowichan's OCP Map 4 (Environmentally Sensitive Areas).

The onsite surface water features will be protected during the proposed soil storage and parking area construction with the implementation of the measures described in Section 6 of this report.





Capital Regional District, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Species and ecosystems at risk occurrences in the vicinity of the Site



0 500 1,000 2,000 Meters
 Project: 2850 Herd Road, 6833 6823 Bell McKinnon Road | Sources: ESRI Basemap, DataBC

- Property Boundary
- 2 km area around property boundary

Species at Risk

- Ecological Community
- Vertebrate Animal
- Invertebrate Animal

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 ENVIRONMENTAL CONSULTING INC

Corvidae Project No.
 COR-2023-051

Rev. #	Date
0	June 4, 2023

Figure 2

5 POTENTIAL ENVIRONMENTAL EFFECTS

The potential impacts of the proposed activities on the environment are:

- Loss of existing vegetation and spread of invasive plant species,
- Change in wildlife habitat availability and wildlife mortality risk, and
- Erosion and sediment transport within and around the future home development area.

The residual environmental impacts of the activities on the property will be reduced by the implementation of the mitigation and restoration measures recommended in Section 6 of this report.

VEGETATION

The effects of vegetation removal may include loss of biodiversity of plant species and increased susceptibility to invasive plants not only in the cleared areas but also in adjacent plant communities. Vegetation immediately adjacent to cleared areas may experience changes to the canopy structure and understory plant species due windthrow, increased light and moisture penetration. A positive effect will be the removal of the blackberry and broom on site during the project development and landscaping to a natural habitat with native species.

INVASIVE SPECIES

Invasive plants are particularly adept at colonizing degraded plant communities and disturbed soils in high traffic areas, such as the margins of roads and parking areas. Invasive plants establish readily in disturbed areas as they have a wide ecological tolerance and grow and propagate quickly. The effects of invasive plant establishment may be the reduction or displacement of native species by capturing resources and occupying habitats.

WILDLIFE AND WILDLIFE HABITAT

Habitat loss and alteration from vegetation clearing can cause displacement of wildlife, use of less suitable habitat, reduced foraging ability, increased energy expenditure and lower reproductive success. Reduced habitat effectiveness can occur as a result of habitat edge creation. The introduction of buildings with many windows into previously unused spaces can increase mortality risk for birds.

EROSION AND SEDIMENT

Removal of vegetation and ground disturbance may expose soils to erosion and can result in the movement of sediment on the property. Damage or degradation of surface soils during construction can include loss of soil structure, increased erosion, and soil compaction which can negatively affect post-construction reclamation efforts. Potential release of deleterious substances to nearby surface water features can negatively affect drainage systems.



6 RECOMMENDED ENVIRONMENTAL PROTECTION MEASURES

The mitigation measures provided in this report are designed to protect sensitive ecosystems and were developed in accordance with:

- Municipality of North Cowichan Official Community Plan Bylaw No. 3900 (2022),
- Procedures for Mitigating Impacts on Environmental Values (Environmental Mitigation Procedures) (BC Ministry of Environment [MOE] 2014a),
- Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia (Government of BC 2014),
- Environmental Best Management Practices for Urban and Rural Land Development in British Columbia (BC Ministry of Water, Land and Air Protection 2004), and

VEGETATION

The 15 m wide area along the eastern boundary of the property is adjacent to agricultural land. As per North Cowichan's regulations, this buffer area must be vegetated. As the area would be developed in the future, we have proposed an interim remediation plan. The interim plan is an application of an aggressive seed mix to remediate the area. We are proposing to use a Premier Quick Grow Reclamation Seed Mix specs are provided in Table 1. Seeding Rate is 112-168 kg per hectare.

Table 1. Quick Grow Reclamation Seed Mix

Common Name	Percent by Weight
Annual Ryegrass	15%
Perennial Ryegrass	12%
Creeping Red Fescue	10%
Timothy	5%
Alsike Clover	3%
Single Cut Red Clover	5%
Fall Rye	50%

For topsoil storage location, seed immediately after placement with a combination of agronomic species (fall rye, clover, and grasses). and/or seeded with native seed mix (Table 2). Seeding rate is 56-112 kg per hectare.

Table 2. Coastal Revegetation Mix

Common Name	Percent by Weight
Creeping Red Fescue	22.5%
Perennial Ryegrass	20%
Annual Ryegrass	25%
Tall Fescue	10%
Orchardgrass	5%
Red Top	0.5%
Timothy	5%
White Clover	2%
Alsike Clover	5%



Common Name	Percent by Weight
Single Cut Red Clover	5%

NON-NATIVE (EXOTIC) INVASIVE PLANT SPECIES

Immediate eradication of new and existing infestations should be a high priority during any development and maintenance on the property. Non-native (exotic) invasive plant species should be removed using the most appropriate methods, at the correct time of year, and plant material must be disposed of correctly (burned or bagged and disposed of properly in a landfill) to avoid re-establishment or spread. Following removal, re-seed bare soil with desirable, competing vegetation. Chemical control is not recommended due to the sensitive shoreline ecosystem on the property.

Mitigation measures to control and minimize the spread of invasive weeds on the site include:

- Clean all machinery before arrival onto the site to ensure that weed seeds and other propagules (e.g., pieces of root) are not brought into the project area.

WILDLIFE AND WILDLIFE HABITAT

The following measures should be taken to minimize impacts on wildlife and wildlife habitat:

- Clearing of existing vegetation, including tree cutting, brushing, or clearing and grubbing, should occur outside of the sensitive time period for breeding and nesting birds from mid-March to end of August (Government of Canada 2021b), unless a detailed bird nest sweep has been completed. Two bird nest sweeps were completed prior to clearing or topsoil storage.
- If disturbance of vegetation is to occur within this time period, then a QEP must perform a bird nest survey to identify any nesting birds that may be potentially impacted by the project. The survey must be completed within 3 days of the planned clearing/disturbance, and the results are valid for 3 days. If nesting bird activity is detected, then the QEP will recommend the appropriate mitigation, such as protective buffers.
- Where suitable and safe, retain habitat that provides shelter for wildlife, such as standing dead trees and fallen rotten logs.
- Avoid removal of established trees or shrubs, where possible.
- Contact a reputable tree removal company or arborist to safely take down potential danger trees.
- In the event that an amphibian or reptile is encountered during clearing or construction, the QEP will recommend the appropriate mitigation, such as avoidance or relocation. All salvage must be done by the QEP with an appropriate wildlife permit.

STORMWATER MANAGEMENT

Stormwater resulting from development should be returned to natural hydrologic pathways or managed to avoid excessive overland flow that could cause erosion of soils. The parking lot is permeable and water infiltration will go through the gravel cap to the soils below and into the vegetated area prior to entering any watercourse areas.

A detailed stormwater plan is being provided under a separate cover. For the TUP the sediment fence is in place, and no drainage areas will be touched.



EROSION AND SEDIMENT CONTROL

The primary focus of erosion and sediment control planning is erosion control; if there is no erosion then there is no sediment. Erosion control is far more cost effective to implement and manage than sediment control. Erosion controls, including the recommendations listed below, are recommended to be maintained for the duration of the construction period.

- Install a sediment fence barrier outside of the wetland SPEA, protecting this ecosystem.
- Seed the topsoil storage area with an agronomic mix immediately after placing, this includes a fall rye, clover and grass mix.
- Heed weather advisories and schedule work to avoid wet and rainy periods that may result in high surface water flow volumes and/or increase erosion and sedimentation.
- Regularly monitor the aquatic environment for signs of sedimentation during all phases of the development activities and take corrective action if required.
- Store materials and soils in dry, flat areas at least 15 m outside the edge of the identified wetland area.

POLLUTION CONTROL, FUELING AND SPILL RESPONSE

All construction equipment accessing the property should be in good working order. Any leaks should be repaired prior to commencing work. Any fueling of equipment will be done on site or set staging areas with drip-trays underneath machinery.

All fuel containers and other potentially deleterious substance containers will be secured so that they may not be emptied or upset by vandals when left overnight in the area. A large, labeled mobile spill kit capable of mitigating spills of 100 litres of fuel is recommended to be kept on site. The kit should contain the following materials or equivalent:

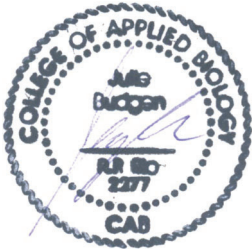
- absorbent pads (hydrocarbons and antifreeze)
- absorbent socks (oil, gas & diesel)
- a jar of leak stop compound
- 1 spill instruction sheet



7 CONCLUSION

The potential environmental impacts of the proposed activities associated with the TUP have been presented in this report. All construction will occur at least 15 m away from the onsite wetland and watercourse, with erosion protection measures installed to avoid deleterious materials from entering these areas.

Report prepared by:



Julie Budgen, R.P.Bio., P.Ag.,
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Accessed June 2023.



APPENDIX A – SITE PHOTOGRAPHS

Photo 1. Interior access road from Bell McKinnon, looking east. May 3, 2023.



Photo 2. West view of southern parcel extent and proposed parking area in background. May 3, 2023.



Photo 3. Existing wetland, looking north. May 3, 2023.



Photo 4. Northeast view of western onsite structures (houses/outbuildings). May 3, 2023.



Photo 5. South view into new hospital site and outflow location for onsite wetland. May 3, 2023.



Photo 6. Northwest view of historically cleared areas mapped as mature forest. May 3, 2023.



Photo 7. Watercourse leading into onsite wetland, looking southwest. May 3, 2023.



Photo 8. East view into adjacent, forested ALR land. May 3, 2023.



Photo 9. North view of proposed soil storage location. May 3, 2023.



Photo 10. Southwest view of roadside drainage ditch. May 3, 2023.

