



Denman Island Local Trust Committee

Special Meeting Revised Agenda

Date: April 29, 2022
Time: 4:00 pm
Location: Electronic Meeting

			Pages
1.	CALL TO ORDER	4:00 PM - 6:00 PM	
	“Please note, the order of agenda items may be modified during the meeting. Times are provided for convenience only and are subject to change.”		
2.	APPROVAL OF AGENDA		
3.	<i>DE-RZ-2021.1 (DENMAN HOUSING ASSOCIATION - DHA) - Staff Report</i>		2 - 76
4.	DENMAN HOUSING AND SHORT TERM RENTALS REVIEW PROJECT - Staff Report		77 - 80
5.	ADJOURNMENT	6:00 PM - 6:00 PM	

File No.: DE-RZ-2021.1 (Denman
Housing Association/
Pandesign)

DATE OF MEETING: April 29, 2022

TO: Denman Island Local Trust Committee

FROM: Sonja Zupanec, RPP, MCIP
Northern Team

SUBJECT: Application to amend the OCP and LUB to allow for a density transfer and 20 units of Affordable Housing – “Denman Green” Project

Applicant: Simon Palmer on behalf of the Denman Housing Association and Henning Nielsen

Location: 1151 Northwest Road (PID 000-393-941); Danes Road (031-395-864 AND 031-395-872); 6080 Woodham Rd (PID 009-704-523), Denman Island

RECOMMENDATIONS

1. That Denman Island Local Trust Committee Bylaw No. 242 cited as “Denman Island Land Use Bylaw, 2008, Amendment No. 1, 2021” be amended by removing line item 2 from section 1.20 of the R2(8) site specific zoning regulations and renumbering subsequent sections accordingly.
2. That Denman Island Local Trust Committee Bylaw No. 242 cited as “Denman Island Land Use Bylaw, 2008, Amendment No. 1, 2021” be read a second time as amended.
3. That the Denman Island Local Trust Committee has reviewed the Islands Trust Policy Statement Directives Only Checklist and determined that Bylaw No. 241, cited as “Denman Island Official Community Plan, 2008, Amendment No. 1, 2021” and Bylaw No. 242, cited as “Denman Island Land Use Bylaw, 2008, Amendment No. 1, 2021” are not contrary to or at variance with the Islands Trust Policy Statement.
4. That Denman Island Local Trust Committee Bylaw No. 241 cited as “Denman Island Official Community Plan, 2008, Amendment No. 1, 2021” be read a second time.
5. That the Denman Island Local Trust Committee has considered the March 11, 2022 Hydrogeological Technical Review from the Ministry of Land, Water and Resource Stewardship (formerly FLNRORD) for 1151 Northwest Road and determined that despite resolution DE-2021-052, proof of an approved water license is not required prior to a Public Hearing being scheduled and the applicant is requested to submit it to Islands Trust planning staff prior to final consideration of Proposed Bylaws 241, 242 and 243 for adoption.
6. The Denman island Local Trust Committee request staff to schedule a Community Information Meeting and Public Hearing for Bylaw No. 241 cited as “Denman Island Official Community Plan, 2008, Amendment No. 1, 2021” and Bylaw No. 242 cited as “Denman Island Land Use Bylaw, 2008, Amendment No. 1, 2021”

REPORT SUMMARY

This report summarizes one recommended amendment to Proposed Bylaw No. 242 (LUB) and the updated analysis of the consistency of the “Denman Green” application DE-RZ-2021.1 (DHA) with the Islands Trust Policy Statement checklist. Staff are recommending the Denman Island Local Trust Committee (LTC) proceed to second reading of both bylaws to amend the Official Community Plan (OCP) and Land Use Bylaw (LUB), and that staff schedule a community information meeting (CIM) and public hearing during the regularly scheduled LTC meeting in May. All relevant background information pertaining to this application is posted to the Islands Trust [current applications webpage](#).

BACKGROUND

On March 22, 2022 the Denman Island Local Trust Committee (LTC) passed the following resolutions:

DE-2022-026 It was MOVED and SECONDED,

that Denman Island Local Trust Committee Bylaw No. 241 cited as “Denman Island Official Community Plan, 2008” be given first reading as amended. **CARRIED**

DE-2022-030 It was MOVED and SECONDED,

that the Denman Island Local Trust Committee Bylaw No. 242 cited as “Denman Island Land Use Bylaw, 2008, Amendment No. 1, 2021” be given first reading as amended. **CARRIED**

DE-2022-031 It was MOVED and SECONDED,

that the Denman Island Local Trust Committee endorse the draft restrictive covenant for 1151 Northwest Road, DE-RZ-2021.1 (DHA) as per Attachment 3 of this staff report, for inclusion in a future public hearing package. **CARRIED**

DE-2022-032 It was MOVED and SECONDED,

that the Denman Island Local Trust Committee request staff to set up an electronic special meeting for late April or early May to consider further steps in the Denman Green rezoning. **CARRIED**

ANALYSIS

Issues and Opportunities

Staff have identified the following preliminary issues and opportunities, discussed in more detail below:

- Recommended amendment to Bylaw No. 242 (LUB) (Attachment 2); and
- Status of water approvals and consistency with Islands Trust Policy Statement Checklist.

Recommended Amendment to Bylaw No. 242 (LUB)

The co-applicant and owner of the Danes Road receiver parcels is maintaining their previously stated request that the site specific 6.0 metre setback provision in the proposed R2(8) zone (Attachment 2) should not be applied to the lot boundaries adjacent to the Denman Island Conservancy covenant. The topography of the land adjacent to the covenant area is sloped away from the views to the northeast and are not likely to be developed. The owner also maintains that the extent of the covenant boundary in combination with the standard R2 setbacks of 3.0 metres, adequately ensures appropriate siting of buildings and structures adjacent to sensitive

areas. Staff are recommending the site specific setback regulation be removed from the R2(8) zoning in Proposed Bylaw No. 242 (LUB) as per the owner's request:

"2. Despite line 1 in Table 5 of this Section, the minimum setback of buildings and structures, except for a fence or pump/utility house from a conservation covenant boundary is 6 meters."



Figure 1. Danes Road receiver parcels in proximity to the Conservation Covenant boundaries (dashed pink)

Status of Water Approvals and Consistency with ITPS

The Ministry of Lands, Waters and Resource Stewardship (LWRS, formerly FLNRORD) conducted a hydrogeological review (Attachment 7) of the Denman Green [water plan](#). The applicant has submitted an updated professional report addressing the impact of the well's use on the adjacent wetland (Attachment 5); and updated wastewater report (Attachment 6). The staff summary of the key findings in these documents are:

1. The DHA well requires improvements to the well head, seal cap, regrading of the area around the well. The province will likely be requiring metering of water use and monthly or more frequent monitoring of groundwater levels as conditions of a groundwater license.
2. The DHA well and aquifer were thought to be hydraulically connected to the onsite wetland but the applicant has provided confirmation from their hydrogeologist that it is not. This information has been forwarded to LWRS and a verbal update from their office may be available by the April 29th LTC meeting, or by the May 31 LTC meeting.
3. Adjacent groundwater users are not anticipated to experience adverse impacts based on DHA's projected well water use. Minor interference between the DHA well and the Museum property well was noted in the test results, however the test pumping rate was 89% greater than the proposed long term capacity so it has not been flagged as an issue. No other interference with other wells in the vicinity was noted.
4. The DHA well is determined by LWRS to have a long term capacity of 8.43 m³/day, the consultant estimated it at 9.45 m³/day.
5. The DHA well is determined to have a low risk of salt water intrusion.

The supporting documentation provided by the applicant (summarized above) gives planning staff confidence to advise the LTC that the bylaws to enable the Denman Green proposal are consistent with the Islands Trust Policy Statement (ITPS). A comprehensive analysis is provided in Attachments 3 and 4.

The LTC passed a resolution in 2021 requiring the applicant to submit the approved water license from LWRS prior to a public hearing being scheduled. The applicant is likely months away from such an approval. Planning staff

recommend that the LTC re-consider this direction in order to advance Bylaw Nos. 241 and 241 to second reading and proceed to a public hearing in May 2022. The applicant can still provide proof of the approved water license prior to the LTC considering final adoption of the bylaws. The water license if approved, will be valid for a specific period of time (~3 yrs) from the date of issuance. The applicant would theoretically be penalized for time spent completing the legislative review process for the rezoning application while the water license is considered 'active'. The staff recommendation on page 1+2 of this report supports final proof of an approved water license prior to the LTC's final consideration of the supporting bylaws.

RATIONALE FOR RECOMMENDATIONS

Staff recommend one amendment to Bylaw No. 242 (LUB); LTC consideration of second reading of the proposed bylaws; and the scheduling of a CIM and public hearing in May 2022. The staff recommendations are found on page 1 and 2 of this report.

ALTERNATIVES:

- 1. Defer consideration of community information meeting/public hearing until provincial water approval is obtained by the applicant.**

The LTC can defer consideration of further readings or the scheduling of the CIM/PH until such a time that the applicant has submitted an approved water license from the province.

Next Steps

If the LTC concurs with the staff recommendations, staff will update the bylaws with second readings and prepare the necessary notification for the upcoming community information meeting and public hearing.

Submitted By:	Sonja Zupanec, RPP, MCIP, Island Planner	April 26, 2022
Concurrence:	Robert Kojima, Regional Planning Manager	April 26, 2022

ATTACHMENTS

1. Proposed Bylaw No. 241 (OCP)
2. Proposed Bylaw No. 242 (LUB)
3. Staff analysis of ITPS/OCP
4. ITPS Checklist for Bylaw Nos. 241 and 242
5. Potential Impact of Well on Wetland – Elanco, April 2022
6. Wastewater Assessment 1151 Northwest Road – H2O Environmental, April 2022
7. Hydrogeological Technical Review 1151 Northwest Road – LWRS (formerly FLNRORD), March 2022

PROPOSED

DENMAN ISLAND LOCAL TRUST COMMITTEE BYLAW NO. 241

A BYLAW TO AMEND DENMAN ISLAND OFFICIAL COMMUNITY PLAN, 2008

The Denman Island Local Trust Committee, being the Trust Committee having jurisdiction in respect of the Denman Island Local Trust Area under the *Islands Trust Act*, enacts as follows:

1. That the Denman Island Local Trust Committee Bylaw No. 185 cited as “Denman Island Official Community Plan, 2008” is amended as shown on Schedule “1” attached to and forming part of this bylaw.
2. This bylaw may be cited for all purposes as "Denman Island Official Community Plan, 2008, Amendment No. 1, 2021".

READ A FIRST TIME THIS 22ND DAY OF March , 2022

READ A SECOND TIME THIS xx DAY OF , 2022

PUBLIC HEARING HELD THIS xx DAY OF , 2022

READ A THIRD TIME THIS xx DAY OF , 20xx

APPROVED BY THE EXECUTIVE COMMITTEE OF THE ISLANDS TRUST THIS
xx DAY OF , 20xx

APPROVED BY THE MINISTER OF MUNICIPAL AFFAIRS AND HOUSING THIS
DAY OF , 20XX

ADOPTED THIS DAY OF , 20XX

Chair

Secretary

DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 241

Schedule “1”

1. Schedule “A” – Official Community Plan Policy Document of the Denman Island Local Trust Committee Bylaw No. 185, cited as “Denman Island Official Community Plan, 2008” is amended as follows:
 - 1.1. PART E FAMILIES AND INDIVIDUALS, E1 – HOUSING, Housing Objectives is amended by adding the following new objective following the text of Objective 4:
 - 1.2. “Objective 5 To protect and enhance the supply and quality of rental housing.”
 - 1.3. PART E FAMILIES AND INDIVIDUALS, E1 – HOUSING, Housing Policies, Policy 1 is amended by adding the following sentence to the end of the first sentence: “except for lots created for the purpose of allowing multi-family affordable housing.”
 - 1.4. PART E FAMILIES AND INDIVIDUALS, E1 – HOUSING, Housing Policies, Policy 9 is replaced in its entirety with the following:

“In the Residential and the Rural designation, the principal use should be single family residential with the exception of the following:

 - The existing cabins on the R1(2) zoned parcel and the rental accommodation on the two R1(1) zoned parcels as permitted by the Denman Island Land Use Bylaw; and
 - Multi-family affordable housing through the completion of a successful rezoning application.”
 - 1.5. PART E FAMILIES AND INDIVIDUALS, E1 – HOUSING, Housing Policies, Policy 10 is amended by changing “Policy 29” to “Policy 30”.
 - 1.6. PART E FAMILIES AND INDIVIDUALS, E1 – HOUSING, Housing Policies, Policy 10 is amended by adding “28, 29, or” after the word “Policy” and before the number “30.”
 - 1.7. PART E FAMILIES AND INDIVIDUALS, E1 – HOUSING, Housing Policies, Policy 27 is replaced in its entirety with the following:

“Applicants applying for a zoning amendment prior to 2032 for new single family or multi-family dwellings should be required to meet or exceed BC Energy Step Code Level 2 standards for new construction, either by way of a site specific amenity zone or by way of a restrictive covenant registered on title.”
 - 1.8. PART E FAMILIES AND INDIVIDUALS, E1 – HOUSING, Housing Policies, Policy 28 is amended by adding an additional bullet to the end of the list that reads: “that residential rental tenure zoning is considered to ensure affordability is maintained in perpetuity.”

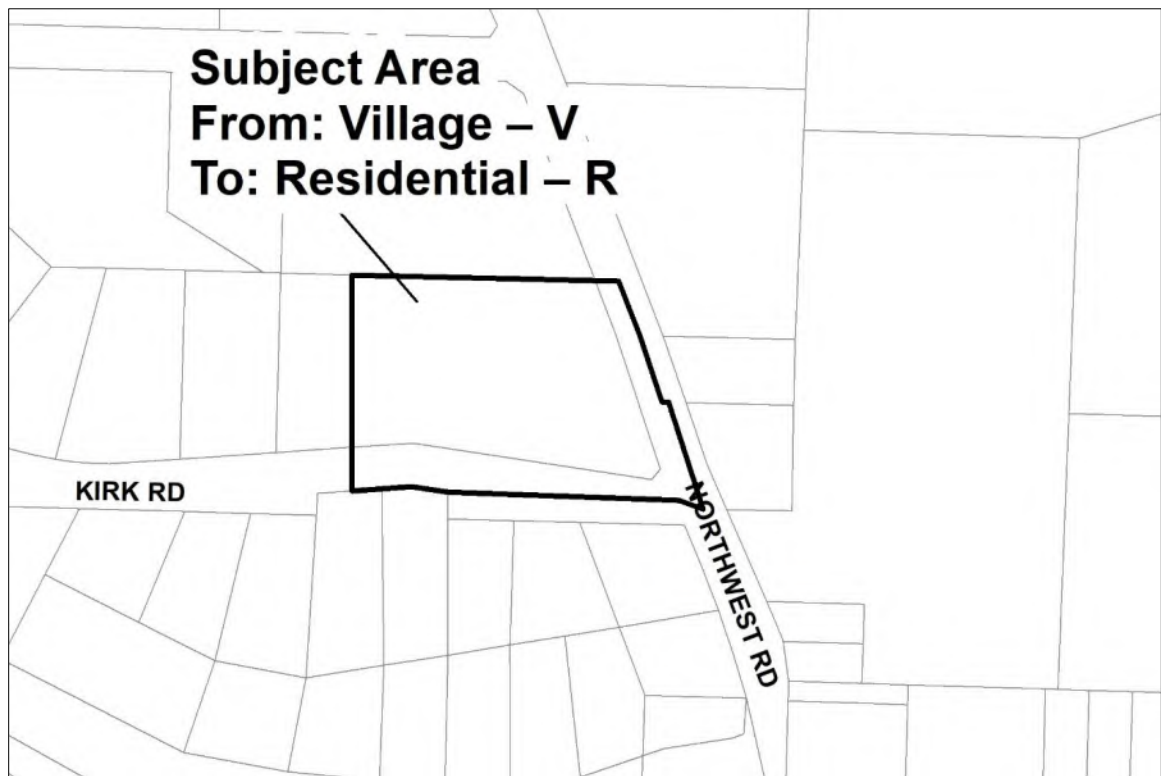
DENMAN ISLAND LOCAL TRUST COMMITTEE

BYLAW NO. 241

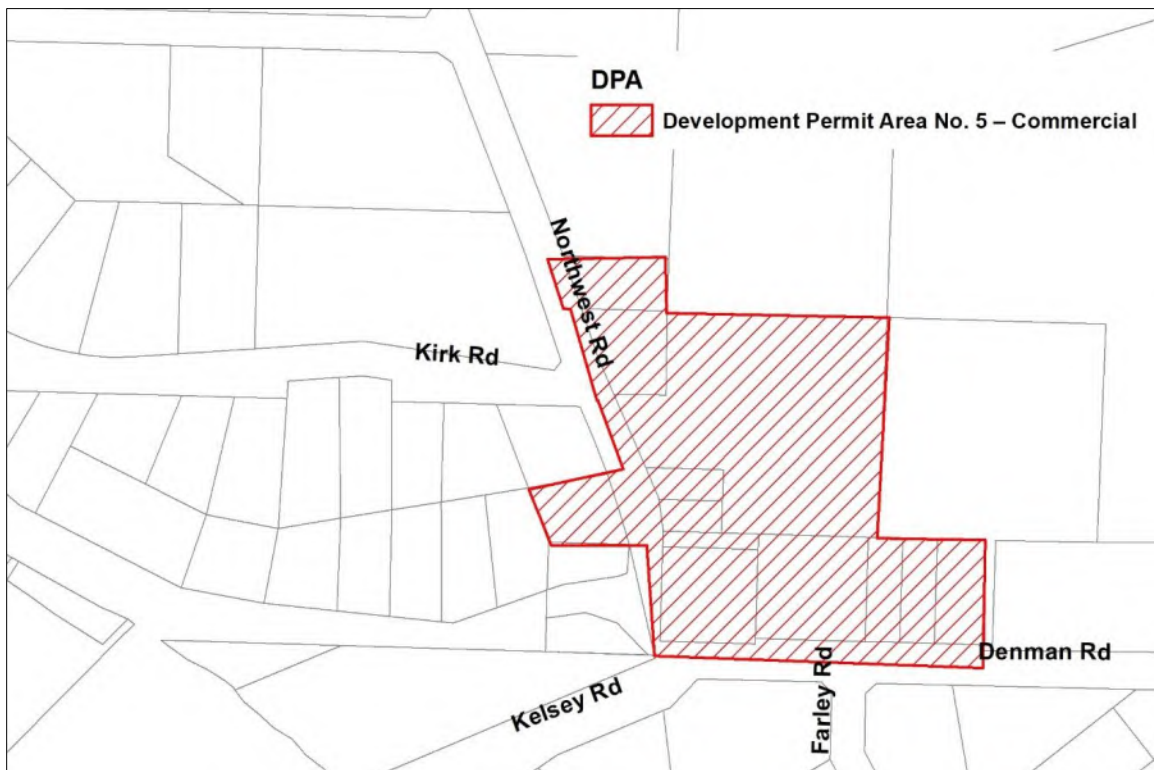
Schedule "2"

1. Schedule "C" – Land Use Designations of the Denman Island Local Trust Committee Bylaw No. 185, cited as "Denman Island Official Community Plan, 2008" is amended by changing the designation of PID 000-393-941 as shown on Plan No. 1 attached to and forming part of this bylaw, and by making such alterations to Schedule "C" of Bylaw No. 185 as are required to effect this change.
2. Schedule "E" – Map 2 North Development Permit Areas of the Denman Island Local Trust Committee Bylaw No. 185, cited as "Denman Island Official Community Plan, 2008" is amended by removing the 'Commercial' Development Permit Area designation from PID 000-393-941 as shown on Plan No. 2 attached to and forming part of this bylaw.

Plan No. 1



Plan No. 2



**DENMAN ISLAND LOCAL TRUST COMMITTEE
BYLAW NO. 242**

A BYLAW TO AMEND DENMAN ISLAND LAND USE BYLAW, 2008

The Denman Island Local Trust Committee, being the Trust Committee having jurisdiction in respect of the Denman Island Local Trust Area under the *Islands Trust Act*, enacts as follows:

1. Citation

This bylaw may be cited for all purposes as “Denman Island Land Use Bylaw, 2008, Amendment No. 1, 2021”.

2. Denman Island Local Trust Committee Bylaw No. 186, cited as “Denman Island Land Use Bylaw, 2008,” is amended as per Schedule 1 attached to and forming part of this bylaw.

READ A FIRST TIME THIS 22nd DAY OF March , 2022

READ A SECOND TIME THIS _____ DAY OF _____ , 2022

PUBLIC HEARING HELD THIS _____ DAY OF _____ , 2022

READ A THIRD TIME THIS _____ DAY OF _____ , 202x

APPROVED BY THE EXECUTIVE COMMITTEE OF THE ISLANDS TRUST THIS

_____ DAY OF _____ , 202x

ADOPTED THIS _____ DAY OF _____ , 202x

Chair

Secretary

**DENMAN ISLAND LOCAL TRUST COMMITTEE
BYLAW NO. 242**

1. Schedule "A" of Denman Island Land Use Bylaw, 2008 is amended as follows:

- 1.1 PART 1 ADMINISTRATION, Section 1.1 Definitions is amended by replacing the definition of "lot coverage" with the following:

"lot coverage means the percentage of the total area of the lot covered by buildings and structures including roof overhangs but excluding cisterns connected to a building for the purposes of rainwater harvesting and collection."

- 1.2 PART 1 ADMINISTRATION, Section 1.1 Definitions is amended by adding the following definitions in alphabetical order:

"dwelling, multi-family means a building containing two or more dwelling units (excluding a principle dwelling with a secondary suite), each having their own entrance, which may include an entrance from a common interior corridor or an exterior entrance;

dwelling unit, single family means a building containing one dwelling unit;

residential rental tenure means the granting of a right to occupy a *dwelling unit* as living accommodation where the minimum occupancy period is thirty consecutive days, and where the *dwelling unit* is not owned by a *dwelling unit* occupant, but where regular payments are made to the owner for the use of the *dwelling unit*;"

- 1.3 PART 2 GENERAL REGULATIONS, Section 2.1 Accessory Buildings and Structures, 10 is amended by adding the words "and the use is not permitted on a parcel in the 'Affordable Rental Housing (R4) Zone'." after the word "Bylaw".
- 1.4 PART 2 GENERAL REGULATIONS, Section 2.1 Travel Trailers, 11 is amended by adding the words "except on a parcel zoned 'Affordable Rental Housing (R4).'" after the word "accommodation".
- 1.5 PART 2 GENERAL REGULATIONS, Section 2.4 Home Occupation Regulations, Permitted Home Occupation Uses is amended by adding the following new regulations 3 and 4 after regulation 2 and by making such consequential numbering alterations to effect this change:

"3 Despite regulation 2 of this section, the following uses, and no others are permitted as home occupations in the R4 zone:

- general business offices
- professional offices, excluding health services
- artist or artisan studios"

4 Notwithstanding 2.4 regulation 3 of this section, the following is prohibited in the R4 zone:

- on site purchase of any products or services
- on site attendance of clientele or customers
- creation of noise which disturbs persons"

- 1.6 PART 2 GENERAL REGULATIONS, Section 2.4 Home Occupation Regulations, Number of Employees is amended by adding the following new regulation 17 after regulation 16 and by making such consequential numbering alterations to effect this change:

“Despite regulation 16 of this section, no non-resident employees are permitted in the R4 zone.”

- 1.7 PART 2 GENERAL REGULATIONS, Section 2.5 Parking Regulations, Number of Parking Spaces Required, 16, residential is amended by removing:
- “one per one single family residential use”, and replacing it with:
 - “one per one single family residential dwelling unit”
- 1.8 PART 2 GENERAL REGULATIONS, Section 2.5 Parking Regulations, Number of Parking Spaces Required, 16, residential is amended by adding another bullet:
- “two per dwelling unit in a multi-family dwelling”
- 1.9 PART 2 GENERAL REGULATIONS, Section 2.5, Parking Regulations, Number of Parking Spaces Required, 17, Minimum number of bicycle parking spaces is amended by adding another bullet:
- “one per dwelling unit in a multi-family dwelling”
- 1.10 PART 2 GENERAL REGULATIONS, Section 2.6 Signs Regulations, Permitted signs, 1 is amended by adding “Affordable Rental Housing (R4)” after “(R3)”.
- 1.11 PART 2 GENERAL REGULATIONS, Section 2.7 Screening Regulations, Landscape Screens, 8 is amended by removing “R3 zone” and replacing with “R3 and R4 zones”.
- 1.12 PART 3 ZONE REGULATIONS, Section 3.1 Creation of Zones, 1, Zone Classification, Zoning Code, Residential Zones is amended by adding “Affordable Rental Housing R4”.
- 1.13 PART 3 ZONE REGULATIONS, Section 3.3 “Residential Zoning Tables”, Table 1 – Permitted Uses is deleted in its entirety and replaced with:

Table 1 - Permitted Uses

		R1	R2	R3	R4
Principal Uses					
1	Residential	✓	✓	✓	
2	Residential Rental Tenure subject to registration of housing agreement				✓
3	Parks	✓	✓	✓	✓
4	Utilities	✓	✓	✓	✓
Accessory Uses					
5	Home occupation uses listed in Section 2.4 accessory to a principal residential use	✓	✓	✓	✓
6	Forest fungi production accessory to a residential use, on lots 2.0 ha or larger	✓	✓	✓	✓
7	Horticulture and agriculture, other than intensive agriculture, accessory to a principal residential use	✓	✓	✓	✓

8	Occasional wood working and wood processing using wood obtained from the lot and accessory to a principal residential use	✓	✓	✓	
9	Generation of electricity from non-polluting renewable sources and accessory to a principal residential use	✓	✓	✓	✓
10	Secondary suites and secondary dwelling units		✓		
			*Secondary dwelling units must be approved through a Temporary Use Permit		

1.14 PART 3 ZONE REGULATIONS, Section 3.3 “Residential Zoning Tables”, Table 2 – Permitted Buildings and Structures is deleted in its entirety and replaced with:

Table 2 - Permitted Buildings and Structures		R1	R2	R3	R4
1	Single family dwelling units	✓	✓	✓	
2	Multi-family dwelling units				✓
3	Buildings and structures accessory to a constructed single family dwelling unit	✓	✓	✓	
4	Buildings and structures accessory to a constructed multi-family dwelling unit				✓
5	Buildings and structures to accommodate horticulture, agriculture and sale of horticultural and agricultural products	✓	✓	✓	✓
6	Buildings and structures for parks and utilities	✓	✓	✓	✓
7	Pit privies	✓	✓	✓	
8	Fences	✓	✓	✓	✓
9	Signs, subject to Section 2.6	✓	✓	✓	✓
10	Portable sawmill accessory to a residential use, to accommodate occasional wood working and wood processing	✓	✓	✓	
11	Buildings and structures for the generation of electricity from non-polluting renewable sources	✓	✓	✓	✓
12	Common house			✓	✓

1.15 PART 3 ZONE REGULATIONS, Section 3.3 “Residential Zoning Tables”, Table 3 – Density of Uses, Buildings and Structures is deleted in its entirety and replaced with:

Table 3 - Density of Uses, Buildings and Structures		R1	R2	R3	R4
1	Minimum lot area per principal single family dwelling unit	1.0 ha	4.0 ha	n/a	n/a
2	Despite line 1 of this table, maximum number of single family dwelling units on lots less than the minimum area shown in line 1 of this table	1	1	n/a	n/a
3	Subject to line 1 of this table, maximum number of dwelling units per lot	5	n/a	15	
4	Maximum combined lot coverage of buildings and structures	25%	25%	n/a	10%

5	Maximum number of buildings or structures for the generation of electricity from non-polluting sources	1	1	1	3
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- 1.16 PART 3 ZONE REGULATIONS, Section 3.3 “Residential Zoning Tables”, Table 4 – Height is deleted in its entirety and replaced with:

Table 4 – Height		R1	R2	R3	R4
1	Maximum height of principal buildings and structures				
	located less than 100.0 metres from the natural boundary of the sea	7.0 m	7.0 m	7.0 m	7.0 m
	located 100.0 metres or more from the natural boundary of the sea	9.0 m	9.0 m	9.0 m	9.0 m
2	Maximum height of buildings and structures				
	accessory to a residential use	6.0 m	6.0 m	6.0 m	6.0 m
	used exclusively for agriculture	15.0 m	15.0 m	15.0 m	15.0 m
3	Maximum height of a fence, excluding deer netting	2.0 m	2.0 m	2.0 m	2.0 m
4	Maximum height of a pump/utility house located within a setback area	2.5 m	2.5 m	2.5 m	2.5 m
5	Maximum height of a boathouse	4.5 m	4.5 m	4.5 m	4.5 m

- 1.17 PART 3 ZONE REGULATIONS, Section 3.3 “Residential Zoning Tables”, Table 5 – Setbacks is deleted in its entirety and replaced with:

Table 5 - Setbacks		R1	R2	R3	R4
In addition to regulations 1 to 5 in Section 2.3, the following setbacks apply					
1	Minimum setback of buildings or structures, except for a fence, pump/utility house or pit privy				
	from the front lot line	7.5 m	7.5 m	30.0 m	10.0 m
	from the rear or side lot line	3.0 m	3.0 m	30.0 m	10.0 m
	from the exterior side lot line	4.5 m	4.5 m	30.0 m	10.0 m
2	Minimum setback from all lot lines for pit privies, feeding troughs, manure piles and buildings and structures for housing animals for agriculture, except domestic chicken coops	8.0 m	8.0 m	30.0 m	30.0 m
3	Minimum setback from all lot lines for domestic chicken coops	3.0 m	3.0 m	30.0 m	10.0 m

- 1.18 PART 3 ZONE REGULATIONS, Section 3.3 “Residential Zoning Tables”, Table 6 – Floor Area is deleted in its entirety and replaced with:

Table 6 - Floor Area		R1	R2	R3	R4
1	Maximum gross floor area of a pump/utility house located within a setback area	6.0 m ²	6.0 m ²	6.0 m ²	10.0 m ²
2	Maximum gross floor area of a boathouse located within 15.0 metres of the natural boundary of the sea	30.0 m ²	30.0 m ²	n/a	n/a
3	Maximum gross floor area of a single family dwelling unit	n/a	n/a	139.4 m ²	n/a
4	Maximum gross floor area of a dwelling unit in a multi-family dwelling	n/a	n/a	n/a	
5	Maximum gross floor area of a common house	n/a	n/a	279 m ²	n/a
6	Maximum combined gross floor area of all accessory buildings and structures	n/a	n/a	1275 m ²	

- 1.19 PART 3 ZONE REGULATIONS, Section 3.3 “Residential Zoning Tables”, Table 7 – Subdivision is deleted in its entirety and replaced with:

Table 7 - Subdivision		R1	R2	R3	R4
1	Maximum density permitted by subdivision is an average of one lot per	1.0 ha	4.0 ha	35.0 ha	
2	Minimum lot area permitted by subdivision, subject to the regulations in 2.8	1.0 ha	2.0 ha	35.0ha	

- 1.20 PART 3 – ZONE REGULATIONS, Section 3.3 – “Residential Zoning Tables”, Table 8 – Site Specific Regulations is amended by adding the following text after row R2(6):

“R2(7)

1. Despite line 3 in Table 3 of this Section, the maximum number of single family dwellings permitted in the R2(7) zone is four.

R2(8)

1. A Siting and Use Permit for a dwelling in the R2(8) zone must be accompanied by written certification from an appropriately qualified professional architect, engineer or energy advisor that the dwelling unit meets or exceeds the applicable requirements of Step 2 of the Energy Step Code in affect at the reference date of this bylaw amendment.
2. Despite line 1 in Table 5 of this Section, the minimum setback of buildings and structures, except for a fence or pump/utility house from a conservation covenant boundary is 6 meters.
3. Despite line 1 in Table 7 of this Section, the maximum number of lots permitted by subdivision in the R2(8) zone is 5.
4. Despite line 1 in Table 7 of this Section, the minimum average lot area permitted by subdivision, subject to the regulations in 2.8 is 2.8 ha.”

1.21 PART 3 ZONE REGULATIONS, Section 3.3 “Residential Zoning Tables”, Table 8 – Site Specific Regulations is amended by adding a new R4(1) Site Specific Zoning Code:

Table 8 - Site Specific Regulations

The regulations listed in tables 1 through 7 of this section apply to the land identified on Schedule B (the Zoning Map) by the site specific zoning code listed below on the left, except as varied by the relevant site specific regulation listed in this Table (Table 8)

Site Specific Zoning Code	Site Specific Regulations
R4(1)	1 Despite line 7 of Table 1 of this Section, the following is not permitted: • the keeping of chickens or other livestock; 2 Despite line 3 in Table 3 of this Section, the maximum number of affordable dwelling units per lot is 20. 3 Despite line 4 in Table 3 of this Section, the maximum combined lot coverage of buildings and structures is 25%. 4 Despite line 1 in Table 4 of this Section, the maximum height of principal buildings and structures located 100.0 meters or more from the natural boundary of the sea is 10.0 m. 5 Despite line 1 in Table 5 of this Section, the minimum setback of a free standing photovoltaic solar array or water cistern from any interior lot line is 1.5 m. 6 Despite line 1 in Table 5 of this Section, the minimum setback of all buildings and structures, except for free standing photovoltaic solar arrays and water cisterns, is 4.0 metres from an exterior lot line and 3.0 metres from an interior lot line. 7 Despite line 4 in Table 6 of this Section, the maximum gross floor area of an affordable dwelling unit is 140 m². 8 Despite Table 7 of this Section, the minimum lot area permitted by subdivision is 1.0 hectare. 9 Despite regulations 16 of Section 2.5, the minimum number of automobile parking spaces required is 1.0 per affordable housing unit. 10 Despite regulations 9, 12, and 15 in Section 2.8, the applicant must provide proof of a water license that permits the withdrawal of the licensed amount of groundwater.

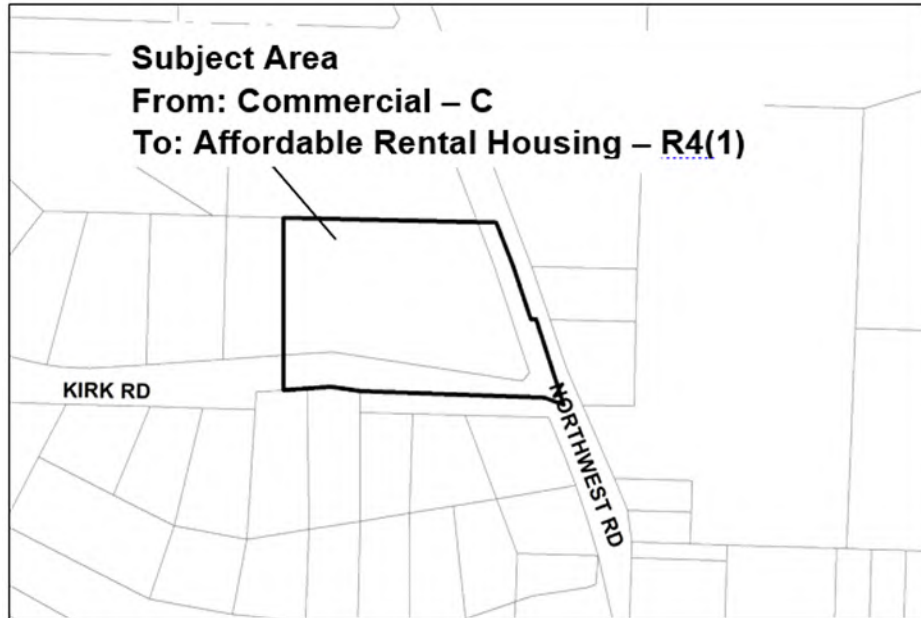
2. Schedule “B” of Denman Island Land Use Bylaw, 2008 is amended as follows:

- 2.1. Schedule “B” – North Sheet is amended by changing the name “North Sheet” to “North Map”.
- 2.2. Schedule “B” – South Sheet is amended by changing the name “South Sheet” to “South Map”.
- 2.3. Schedule “B” – North Map, is amended by changing the zoning classification of PID 000-393-941 as shown on Plan No. 1 attached to and forming part of this bylaw, and by making such alterations to Schedule “B” of Bylaw No. 186 as are required to effect this change.
- 2.4. Schedule “B” – North Map, is amended by changing the zoning classification of PID 031-395-864 LOT 4 SECTION 28 DENMAN ISLAND NANAIMO DISTRICT PLAN EPP105119 and PID 031-395-872 LOT 5 SECTION 28 DENMAN ISLAND NANAIMO DISTRICT PLAN EPP105119 as shown on Plan No. 2 attached to and forming part of this bylaw, and by making such alterations to Schedule “B” of Bylaw No. 186 as are required to effect this change.
- 2.5. Schedule “B” – South Sheet, is amended by changing the zoning classification of the non-Agricultural Land Reserve portion of THE SOUTH WEST 1/4 OF SECTION 13, DENMAN ISLAND, NANAIMO DISTRICT, EXCEPT PART IN PLAN VIP71627 (PID 009-704-523) as shown on Plan No. 3 attached to and

forming part of this bylaw, and by making such alterations to Schedule “B” of Bylaw No. 186 as are required to effect this change.

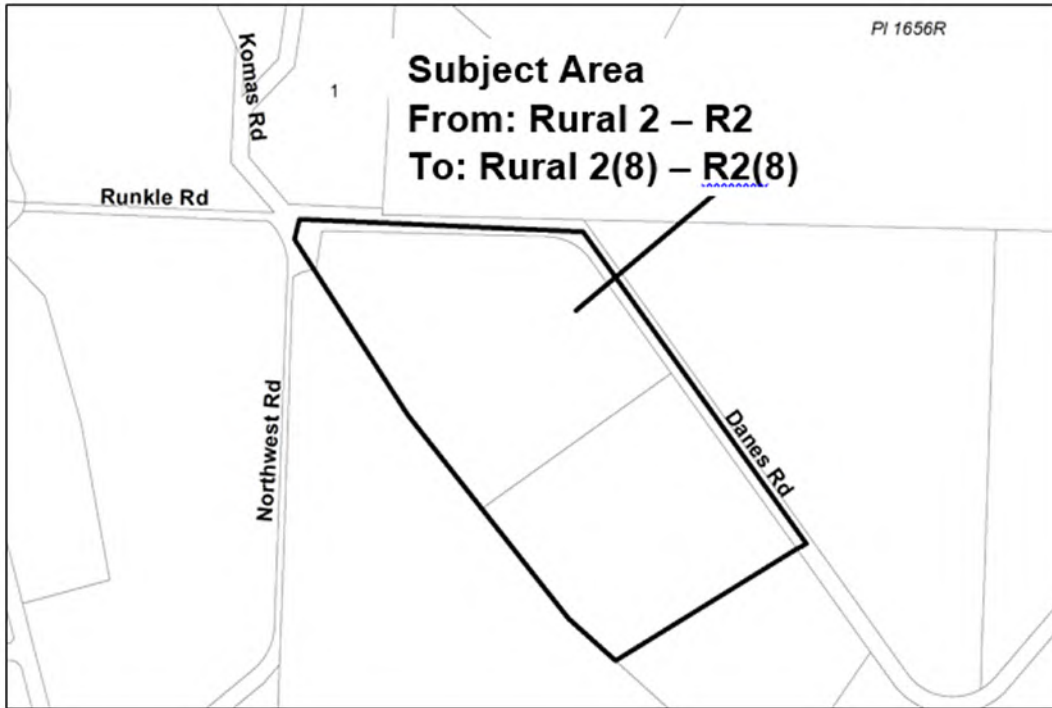
Plan No. 1

(Final plan to be inserted prior to bylaw adoption)



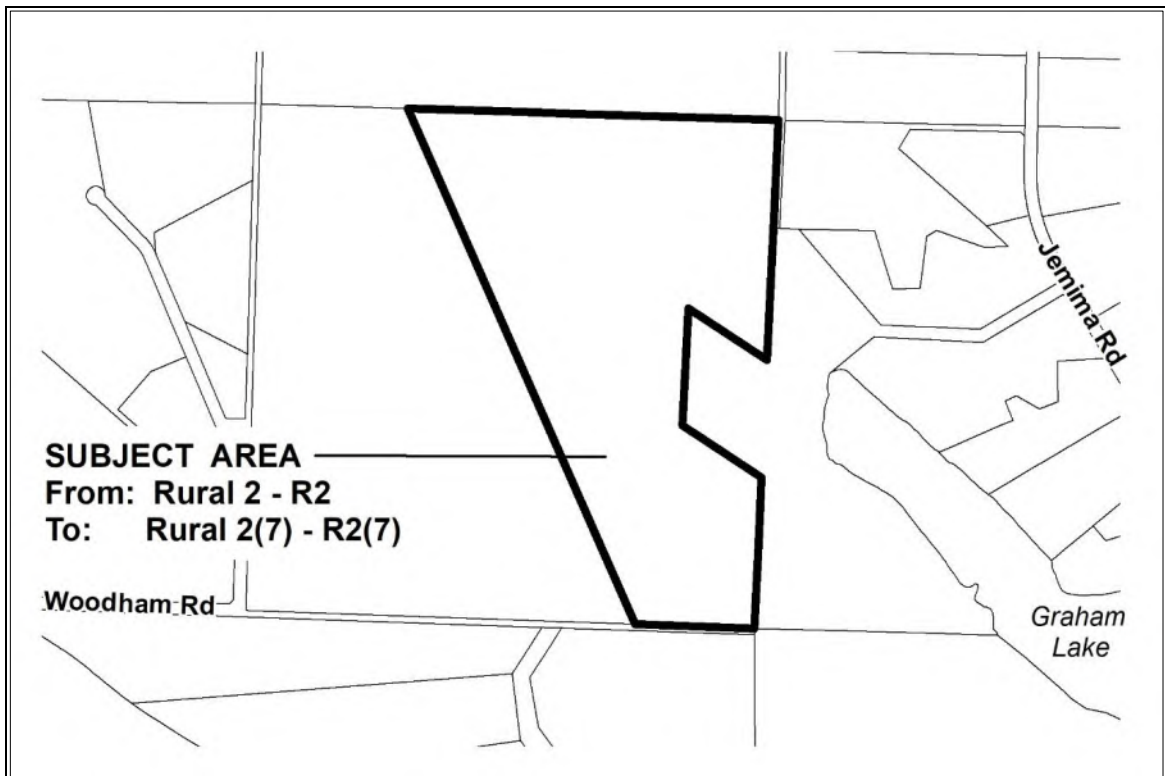
Plan No. 2

(Final plan to be inserted prior to bylaw adoption)



Plan No. 3

(Final plan to be inserted prior to bylaw adoption)



ATTACHMENT 3 – ITPS AND OCP POLICIES DE-RZ-2021.1 (DENMAN HOUSING ASSOCIATION)

ISLANDS TRUST POLICY STATEMENT

ITPS Policy	Complies	Planner Comments from 2021 (Comments updated April 2022 in RED or GREEN)
3.1.5 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address the regulation of land use and development to restrict emissions to land, air and water to levels not harmful to humans or other species.	YES	Staff recommend: 1) confirmation that receiver parcels have sufficient area and conditions for wastewater treatment based on proposed increase in density – COMPLETED see Attachment 5 of this report package; 2) water management plan for affordable rental housing development – COMPLETED see Attachment 6 of this report package and approved groundwater license volume – PENDING however LWRS determined the long term capacity to be 8.43 m3/day. Staff recommend the LTC receive confirmation of license approval prior to adoption of bylaws vs. prior to public hearing; and 3) confirmation that receiver parcel (Lot 4 and 5) have sufficient groundwater resources for additional density - COMPLETED.
3.3.2 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address means to prevent further loss or degradation of freshwater bodies or watercourses, wetlands and riparian zones and to protect aquatic wildlife.	YES	Rezoning should trigger requirement for a comprehensive water management plan for the affordable rental housing development proposal. Small 'swamp' indicated in hydrogeological assessment on Kirk Road property not shown on site plan. – COMPLETED and wetland area delineated on updated site plan/biological inventory (Attachment 5) and intended to be protected through draft restrictive covenant and setbacks.
4.1.6 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address the use of adjacent properties to minimize any adverse affects on agricultural land.	NA	Proposed Lot 4 and 5 are adjacent to ALR land. To be addressed in bylaw amendments and can incorporate ALC buffer requirements. – Not deemed necessary as existing road separates Lot 5 from ALR boundary.
4.4.2 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address measures that ensure: • neither the density nor intensity of land use is increased in areas which are known to have a problem with the quality or quantity of the supply of freshwater, • water quality is maintained, and	YES	Both receiver parcels are classified by Islands Trust mapping as having portions within Moderate and High aquifer intrinsic vulnerability. Staff recommend: 1) confirmation that receiver parcels have sufficient area and conditions for wastewater treatment based on proposed increase in density; - COMPLETED 2) water management plan for affordable rental housing development – COMPLETED and approved groundwater license volume – PENDING and established by LWRS; and 3) - confirmation that receiver parcel (Lot 4 and 5) have sufficient groundwater resources for additional density. - COMPLETED

ITPS Policy	Complies	Planner Comments from 2021 (Comments updated April 2022 in RED or GREEN)
existing, anticipated and seasonal demands for water are considered and allowed for.		
4.4.3 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address measures that ensure water use is not to the detriment of in-stream uses.	YES	Staff recommend: 1) confirmation that receiver parcels have sufficient area and conditions for wastewater treatment based on proposed increase in density; 2) water management plan for affordable rental housing development and approved groundwater license volume; and 3) confirmation that receiver parcel (Lot 4 and 5) have sufficient groundwater resources for additional density. - COMPLETED
5.2.3 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address policies related to the aesthetic, environmental and social impacts of development.	YES	Application addresses positive social impacts of development through provision of affordable rental housing. DPA guidelines can be drafted to further address form and character of housing and water conservation. – not incorporated into proposed bylaws.
5.2.5 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address means for achieving efficient use of the land base without exceeding any density limits defined in their official community plans.	YES	Application will utilize density bank and OCP policy provisions. New policies may be required for density transfer provisions. – COMPLETED
5.3.7 Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the development of land use patterns that encourage establishment of bicycle paths and other local and inter-community transportation systems that reduce dependency on private automobile use.	YES	Location of affordable rental housing development in proximity to village and ferry terminal.
5.6.2 Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the identification, protection, preservation and enhancement of local heritage.	YES	Proposed development provides an opportunity for LTC and K’omoks First Nation consideration. Archaeological Overview Assessment may be recommended pending further consultation with K’omoks. – Arch Branch indicated not required and no comment from K’omoks.
5.8.6 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address their community’s current and projected housing requirements and the long-term needs for educational, institutional, community and health-related facilities and services, as well as the cultural and recreational facilities and services.	YES	Proposal seeks to address community’s current and projected housing requirements for affordable housing.

DENMAN ISLAND OFFICIAL COMMUNITY PLAN BYLAW NO. 185, 2008

OCP Objective/Policy	Complies	Planner Comments from 2021 (April 2022 updated comments in RED or GREEN)
C.2 Freshwater Policy 9 - Zoning regulations should encourage rainwater collection to reduce consumption of groundwater resources; however, adequate controls should be in place to ensure above ground storage tanks are not unsightly.	YES	Applicant is proposing extensive rainwater harvesting, collection, storage, treatment and use to supplement groundwater resources. A comprehensive groundwater management plan is recommended to clarify how water will be stored, used and monitored in this development. – COMPLETED
C.4 Climate Change Policy 2 - The Local Trust Committee should consider energy efficiency attributes, the reduction of greenhouse gas emissions, and climate change adaptation and impacts mitigation in all rezoning applications that propose an increase in density or change of use.	YES	Applicant is proposing to meet BC Energy Step Code standards of construction for energy efficiency in affordable housing units. Rezoning process can identify options to ensure this a requirement of new construction. – COMPLETED
C.4 Climate Change Policy 4 - The Local Trust Committee should support zoning amendment applications for affordable housing that incorporate climate change adaptation and mitigation measures, such as energy efficiency and shared facilities.	YES	– COMPLETED
D.2 Transportation and Utilities Policy 8 - When considering zoning changes, the Local Trust Committee should ensure that the proposed zoning change supports non-automotive transportation.	YES	Rezoning process can identify options to ensure non automotive transportation is adequately incorporated into the proposal (i.e. requirements for bicycle parking) – COMPLETED
D.3 Water Management Policy 6 -When considering a zoning amendment application in an area of scarce ground water supply, the Local Trust Committee should consider requiring mitigating measures to conserve water and protect the ground water resource.	YES	LTC can consider options once adequate data has been provided from the applicant in the form of an approved water management plan. – COMPLETED
D.4 Waste Management Policy 5 - Community sewage treatment should be required for any zoning amendment where the sewage disposal capability of a lot is inadequate for the proposed use.	YES	Applicant has provided a wastewater assessment report for 1151 Kirk Road, however the report does not reference the increase in density anticipated as a result of subdivision and rezoning. Staff recommend similar confirmation for Danes Road parcels. – COMPLETED
E.1 Housing Policy 6 - When developing subdivision regulations for lots adjacent to or encompassing a watercourse, the Local Trust Committee should consider potential negative impact on the watercourse.	YES	Danes Road Receiver parcels are adjacent to watercourses. Staff recommend confirmation of adequate wastewater treatment conditions to support an increase in density in this location. – COMPLETED
E.1 Housing Policy 10 - In the Rural designation zoning regulations should generally permit one dwelling unit per lot, including a secondary suite, provided that the land owner provides	YES	Applicant to confirm if Donor and Danes Rd Receiver parcels were intended to accommodate secondary suites. – COMPLETED

the Local Trust Committee with proof of adequate water supply for each dwelling unit without endangering the water supply of adjacent land owners. A secondary dwelling unit may be permitted on a lot if approved by a Temporary Use Permit.		
E.1 Housing Policy 11 - The overall residential density on Denman Island should generally not increase beyond that permitted by existing zoning on the date this Plan was adopted except that an increase of approximately 5 percent may be permitted to accommodate zoning amendments for special needs and affordable housing, secondary dwelling units approved by the Denman Island Local Trust Committee under a Temporary Use Permit and site-specific zoning amendment applications under Policy 29 of this Section.	YES	Density increase is consistent with this policy.
E.1 Housing Policy 16 - Landowners are encouraged to cluster houses and buildings accessory to a residential use to leave areas of undeveloped space.	YES	Applicant's site plan for Denman Green attempts to cluster housing and accessory buildings.
E.1 Housing Policy 17 - The Local Trust Committee should encourage the establishment and work of non-profit land trusts for affordable housing.	YES	LTC and Executive Committee have supported the financial sponsorship of the bylaw amendment fees for the application.
E.1 Housing Policy 23 - Zoning regulations should establish sufficient setbacks for septic disposal systems: • to ensure that the waste water has been cleaned before entering the sea, wetlands, lakes and other watercourses; and • to protect adjacent properties from effluent or odours.	YES	Confirmation of sewage disposal capability and location on both receiver parcels will inform draft bylaw amendments pertaining to adequate setbacks for sewage disposal systems. – COMPLETED
E.1 Housing Policy 26 - The Local Trust Committee encourages applicants applying for zoning amendments to permit new construction to meet or exceed the Canadian Green Building Council certification, or to provide details on green technology alternatives if meeting the certification requirements is not possible.	YES	Applicant has indicated commitment to BC Energy Step Code building standards. Development Permit guidelines for form and character/water conservation/energy efficiency can be drafted. – COMPLETED
E.1 Housing Policy 28 - The Local Trust Committee should consider zoning amendment applications for affordable housing projects provided: • that the proposal is not located in a connectivity area identified on Schedule D; • that the proposal does not impact negatively on adjacent properties; • that the proposal is small-scale; • that the proposal is clustered and the siting and height are sensitive to surrounding land uses;	YES	Adequate volume and quality of water for 1151 Kirk Road has been confirmed but staff recommend the details for storage, use and monitoring are insufficient and should be supplied in the form of a water management plan and monitoring covenant. – COMPLETED

• that the proposal proves an adequate supply of potable water and an adequate sewage disposal system; • that any environmentally sensitive areas on the lot are identified and the applicant undertakes a conservation covenant to protect such areas; • that the proposed development will not place a strain on existing public services and infrastructure.		
E.1 Housing DAI Policy 31 - The areas designated Residential and Rural in this Plan are designated to encourage housing that accommodates the needs of a variety of families and individuals while protecting the natural environment, the social fabric and the rural character of the community. The objectives of the designation of this area as an area within which development approval information may be required, include ensuring that housing options are sensitive to ground water availability and sewage disposal capability; guarding against contamination of ground water; preserving the rural nature of the Island; ensuring that housing options preserve human diversity in our community; supporting the establishment of affordable housing, rental opportunities and special needs housing; and providing the opportunity for Island seniors to remain in the community, especially in their own or their families' homes. Development approval information may be required to help the Local Trust Committee to determine appropriate uses, density and siting of development in the Residential and Rural designations.	YES	Adequate volume and quality of water for 1151 Kirk Road has been confirmed but staff recommend the details for storage, use and monitoring are insufficient and should be supplied in the form of a water management plan and monitoring covenant. – COMPLETED

ISLANDS TRUST POLICY STATEMENT DIRECTIVES ONLY CHECKLIST

File No.: DE-RZ-2021.1 (DHA)

File Name: Denman Green Affordable Housing Proposed Bylaw No. 241 (OCP) and 242 (LUB)

PURPOSE

To provide staff with the Directives Only Checklist to highlight issues addressed in staff reports and as a means to ensure Local Trust Committees address certain matters in their official community plans and regulatory bylaws, Island Municipalities address certain matters in their official community plans, and to reference any relevant sections of the Policy Statement.

POLICY STATEMENT

The Policy Statement is comprised of several parts. Parts I and II outline the purpose, the Islands Trust object, and Council's guiding principles. Parts III, IV and V contain the goals and policies relevant to ecosystem preservation and protection, stewardship of resources and sustainable communities.

There are three different kinds of policies within the Policy Statement as follows:

- Commitments of Trust Council which are statements about Council's position or philosophy on various matters;
- Recommendations of Council to other government agencies, non-government organizations, property owners, residents and visitors; and
- Directive Policies which direct Local Trust Committees and Island Municipalities to address certain matters.

DIRECTIVES ONLY CHECKLIST

The Policy Statement Directives Only Checklist is based on the directive policies from the Policy Statement (Consolidated April 2003) which require Local Trust Committees to address certain matters in their official community plans and regulatory bylaws and Island Municipalities to address certain matters in their official community plans in a way that implements the policy of Trust Council.

Staff will use the Policy Statement Checklist (Directives Only) to review Local Trust Committee and Island Municipality bylaw amendment applications and proposals to ensure consistency with the Policy Statement. Staff will add the appropriate symbol to the table as follows:

- ✓ if the bylaw is consistent with the policy from the Policy Statement, or
- ✗ if the bylaw is inconsistent (contrary or at variance) with a policy from the Policy Statement, or
- N/A if the policy is not applicable.

PART III: POLICIES FOR ECOSYSTEM PRESERVATION AND PROTECTION

CONSISTENT	No.	DIRECTIVE POLICY
	3.1	Ecosystems
✓	3.1.3	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the identification and protection of the environmentally sensitive areas and significant natural sites, features and landforms in their planning area.
N/A	3.1.4	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the planning, establishment, and maintenance of a network of protected areas that preserve the representative ecosystems of their planning area and maintain their ecological integrity.
✓	3.1.5	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the regulation of land use and development to restrict emissions to land, air and water to levels not harmful to humans or other species.
	3.2	Forest Ecosystems
N/A	3.2.2	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the protection of unfragmented forest ecosystems within their local planning areas from potentially adverse impacts of growth, development, and land-use.
	3.3	Freshwater and Wetland Ecosystems and Riparian Zones
✓	3.3.2	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address means to prevent further loss or degradation of freshwater bodies or watercourses, wetlands and riparian zones and to protect aquatic wildlife.
	3.4	Coastal and Marine Ecosystems
N/A	3.4.4	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the protection of sensitive coastal areas.
N/A	3.4.5	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the planning for and regulation of development in coastal regions to protect natural coastal processes.

PART IV: POLICIES FOR THE STEWARDSHIP OF RESOURCES

CONSISTENT	No.	DIRECTIVE POLICY
	4.1	Agricultural Land
✓	4.1.4	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the identification and preservation of agricultural land for current and future use.
N/A	4.1.5	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the preservation, protection, and encouragement of farming, the sustainability of farming, and the relationship of farming to other land uses.
N/A	4.1.6	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the use of adjacent properties to minimize any adverse affects on agricultural land.
CONSISTENT	No.	DIRECTIVE POLICY
N/A	4.1.7	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the design of road systems and servicing corridors to avoid agricultural lands unless the need for roads outweighs agricultural considerations, in which case appropriate mitigation measures shall be required to derive a net benefit to agriculture.
N/A	4.1.8	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address land uses and activities that support the economic viability of farms without compromising the agriculture capability of agricultural land.
N/A	4.1.9	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the use of Crown lands for agricultural leases.
	4.2	Forests
N/A	4.2.6	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the need to protect the ecological integrity on a scale of forest stands and landscapes.
N/A	4.2.7	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the retention of large land holdings and parcel sizes for sustainable forestry use, and the location and construction of roads, and utility and communication corridors to minimize the fragmentation of forests.
N/A	4.2.8	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the designation of forest ecosystem reserves where no extraction will take place to ensure the preservation of native biological diversity.
CONSISTENT	No.	DIRECTIVE POLICY

	4.3	Wildlife and Vegetation
	4.4	Freshwater Resources
✓	4.4.2	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address measures that ensure neither the density nor intensity of land use is increased in areas which are known to have a problem with the quality or quantity of the supply of freshwater, water quality is maintained, and existing, anticipated and seasonal demands for water are considered and allowed for.
✓	4.4.3	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address measures that ensure water use is not to the detriment of in-stream uses
	4.5	Coastal Areas and Marine Shorelands
N/A	4.5.8	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the needs and locations for marine dependent land uses.
N/A	4.5.9	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the compatibility of the location, size and nature of marinas with the ecosystems and character of their local planning areas.
N/A	4.5.10	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the location of buildings and structures so as to protect public access to, from and along the marine shoreline and minimize impacts on sensitive coastal environments.
N/A	4.5.11	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address opportunities for the sharing of facilities such as docks, wharves, floats, jetties, boat houses, board walks and causeways.
	4.6	Soils and Other Resources
N/A	4.6.3	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the protection of productive soils.

PART V: POLICIES FOR SUSTAINABLE COMMUNITIES

CONSISTENT	No.	DIRECTIVE POLICY
	5.1	Aesthetic Qualities
N/A	5.1.3	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the protection of views, scenic areas and distinctive features contributing to the overall visual quality and scenic value of the Trust Area.
	5.2	Growth and Development
✓	5.2.3	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address policies related to the aesthetic, environmental and social impacts of development.
✓	5.2.4	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address any potential growth rate and strategies for growth management that ensure that land use is compatible with preservation and protection of the environment, natural amenities, resources and community character.
✓	5.2.5	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address means for achieving efficient use of the land base without exceeding any density limits defined in their official community plans.
N/A	5.2.6	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the identification of areas hazardous to development, including areas subject to flooding, erosion or slope instability, and strategies to direct development away from such hazards.
	5.3	Transportation and Utilities
N/A	5.3.4	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the development of a classification system of rural roadways, including scenic or heritage road designations, in recognition of the object of the Islands Trust.
N/A	5.3.5	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the impacts of road location, design, construction and systems.
N/A	5.3.6	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the designation of areas for the landing of emergency helicopters.
N/A	5.3.7	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the development of land use patterns that encourage establishment of bicycle paths and other local and inter-community transportation systems that reduce dependency on private automobile use.
	5.4	Disposal of Waste
N/A	5.4.4	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the identification of acceptable locations for the disposal of solid waste.
CONSISTENT	No.	DIRECTIVE POLICY

	5.5	Recreation
N/A	5.5.3	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the prohibition of destination gaming facilities such as casinos and commercial bingo halls.
N/A	5.5.4	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the location and type of recreational facilities so as not to degrade environmentally sensitive areas, and the designation of locations for marinas, boat launches, docks and anchorages so as not to degrade sensitive marine or coastal areas.
N/A	5.5.5	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the identification of sites providing safe public access to beaches, the identification and designation of areas of recreational significance, and the designation of locations for community and public boat launches, docks and anchorages.
N/A	5.5.6	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the identification and designation of areas for low impact recreational activities and discourage facilities and opportunities for high impact recreational activities.
N/A	5.5.7	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the planning for bicycle, pedestrian and equestrian trail systems.
	5.6	Cultural and Natural Heritage
N/A	5.6.2	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the identification, protection, preservation and enhancement of local heritage.
N/A	5.6.3	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address the preservation and protection of the heritage value and character of historic coastal settlement patterns and remains.
	5.7	Economic Opportunities
N/A	5.7.2	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address economic opportunities that are compatible with conservation of resources and protection of community character.
	5.8	Health and Well-being
✓	5.8.6	Local Trust Committees and Island Municipalities shall, in their official community plans and regulatory bylaws, address their community's current and projected housing requirements and the long-term needs for educational, institutional, community and health-related facilities and services, as well as the cultural and recreational facilities and services.

	POLICY STATEMENT COMPLIANCE
✓	<i>In compliance with Trust Policy</i>
	<i>Not in compliance with Trust Policy for the following reasons:</i>

ELANCO ENTERPRISES LTD.

4965 Cordova Bay Road, Victoria, B.C., V8Y 2K1
Phone 250 744-1357. E-mail: adakin.elanco@gmail.com

Our File: 263

April 20, 2022

By: e-mail

Denman Housing Association.
3720 East Road.
Denman Island, B.C.
V0R 1T0

Attention: Simon Palmer.

Dear Sir.

Re: Assessment of the potential impact that pumping from a well on the 1151 Northwest Road Denman Island property may have on a nearby wetland.

In the communications accompanying the regional Hydrogeologists review and comments on my May 2021 report, on the subject assessment, they have indicated that:

"There is a need for more information regarding the wetland, to prove that it is isolated from the groundwater table during the summer months by identifying a confining layer. This will alleviate any concerns regarding Environmental Flow Needs for the project, or highlight any mitigation that will be required if the wetland hydrology might be impacted by groundwater use."

Assessment Conducted

In order to assess the potential impact that pumping may have on the wetland a brief hydrogeological assessment was carried out. This involved the following:

Installation of three Piezometers and Monitoring Water Levels

Three piezometers were installed in the wetland down slope of the well. The sites are designed to be approximately at the third points in the wetland along a profile leading down slope from the well (see Fig. 1). The field work was performed by Current Environmental personnel of Courtenay, who prepared the February 2, 2022 baseline report on the wetland. Each piezometer was constructed using a 75-mm diameter hand auger that was advanced to depths ranging from 1.7 to 2.0 metres (m) below ground surface. As indicated in the logs provided in Appendix A, each hole penetrated mostly brown organics and clay near surface and was completed in a grey clay unit. The depths and density of roots encountered was recorded, along with evidence of (or lack of) soil mottling.

Soon after each hole has been completed, a 25-mm diameter PVC pipe was installed into the bottom of each hole. Each pipe had a cap on the bottom and four closely spaced horizontal slots which were designed to only let water flow into the side of the pipe. The pipes were set in the center of the hole and medium grained sand was placed in the annulus to a depth of about 75mm above the top slot. A rod was then used to tamp down the sand and determine the depth to the top of the sand fill. This was followed by placing a layer of bentonite pellets and/or bentonite slurry in the annulus, followed by tamping the bentonite into place. Once this seal was installed, the annulus was backfilled with excavated clay and organics to a depth of about 0.1m from the ground surface place and then a surface seal of bentonite (either chips or powder, or both) was placed and tamped down. The top end of the pipe was cut about 0.3m above ground

and a slip on cap placed over the top of each pipe. A typical piezometer installation is illustrated at the bottom of Fig. 1 and depth and elevation details are provided in Appendix A.

A survey was conducted to determine the geodetic elevations of the top of the well casing and, the tops of all three piezometer pipes. Survey hubs installed by Hoerbuerger Land Surveyors were used for this purpose.

The depths to water inside the piezometers were measured on March 30, April 11 and April 14, 2022. Also, the distances to ponded water on the outside of the piezometers and the depth to water in the well were occasionally measured and data loggers installed in each piezometer on March 30th. The data loggers were programmed to read at 10 minute intervals and removed for downloading on April 14th.

Data Compilation

The available lithologic information along a profile following the interpreted groundwater flow path extending from Northwest Road across the Property to Kirk Road was compiled and presented in a profile presented on Fig. 1. The log of the Property well did not have a profile of the near surface soils and hence an interpretation based on nearby well logs, test pit logs and the piezometer logs was used to provide a best interpretation of the soils profile above the bedrock in the area.

The manual measurements of depths to water and logger record were used to prepare the hydrographs presented on Fig. 3 and the piezometric elevations indicated on Fig. 2. Precipitation from the Comox Airport station was used to provide an indication of the amount and frequency of rainfall and snow during the two week monitoring period (see Fig. 3).

Analysis and Interpretation

As indicated in my April 2021 report, the local aquifer appeared to be an unconfined fractured sedimentary bedrock aquifer which, in the vicinity of the well on the Property, has a water table very close to ground surface. The piezometer data has confirmed the presence of a relatively extensive clay layer, which, along with the indications of clay in some of the nearby well logs, leads to the conclusion that the aquifer may be semi-confined.

The head differential between the water level in Piezometer 1 (P1) and the nearby ponded water in the wetland indicates that there is an upward gradient in the northeastern (up-gradient) side of the wetland and the reverse is present in P3, indicating a downward gradient in the southwestern side of the wetland. The piezometric levels in the three piezometers indicate a gradient towards the southwest, indicating that there is water flowing across the wetland in that direction. As the clay has a very low permeability and the vertical gradients are currently very low the leakage from the aquifer into the wetland will be very small, relative to the flow in the aquifer.

The water level trends presented on Fig. 3 indicate a relatively rapid and short term response to precipitation events. This is consistent with direct precipitation on the wetland and some surface water runoff. However, the relatively flat water level trend is consistent with a perched aquifer with little to no contribution from a deep aquifer.

On page 9 of the Current Environmental's February 2022 baseline inventory report they indicate that "Observations of topography of the sites suggest that source water for the wetland comes from the eastern and western third of the subject property itself, as well as from the public works yard immediately to the north of the subject property. Flow from these locations is overland and subsurface, with no stream channels present". I agree with this statement and based on the new information believe that only a very small portion (less than 1%) of the subsurface flow comes from the bedrock aquifer, which is recharged in the area northeast of the Property.

Information provided by local citizens familiar with the Property has indicated that the wetland essentially "dries up during the summer". This is consistent with my observations and suggests that the water table below the wetland recedes below the ground surface during each dry season.

As indicated on Fig. 1 the width of the well capture zone in the bedrock aquifer is about 30m and the width of the wetland is about 130m. This means that the well could only have direct impact on about 23% of the wetland if it was hydraulically well connected to the wetland, which as indicated above, is not the case.

As most of the water consumed by the proposed development will be discharged as treated sewage effluent into a dispersal field located up-gradient of the wetland, much of it will flow towards the wetland (see location on Fig. 1). Experience in other areas, such as Georgia State Environmental Protection Division, 2012, indicates that 80%, or more, of the discharge water will seep into the ground and reach the local water table. As the discharge will be into loamy sand that likely overlies a clay unit in some areas, most of the discharged water will likely flow into the southwestern part of the wetland and enhance water levels in that area during the summer months.

The surface water infiltration measures recommended by Current Environmental, will likely increase recharge into the shallow soils, which will also help recharge the shallow water table and enhance the moisture in the upper portions of the wetland.

Opinion

The confirmed presence of an extensive clay layer below the wetland indicates that there is a lower than previously interpreted hydraulic connection between the fractured bedrock aquifer and the wetland. The small amount of seepage through the clay into the wetland will not cause a measurable impact on the wetland.

This opinion is consistent with the independent analysis and conclusions reached by Current Environmental, as set out in their April 14, 2022 memorandum (see copy in Appendix B).

A combination of installing the recommended surface water infiltration measures which are recommended by Current Environmental, plus a contribution from the sewage effluent dispersal field, will likely result in a small enhancement of moisture levels in the wetland during the dry season.

Response to the March 18, 2022 request.

FLNRO indicated that in order to move the Project forward they would like Elanco Enterprises Ltd and Current Environmental to provide more information and to respond to a set of questions. These questions are listed below, along with our responses in italics:

1. Will the wetland become more dry / less saturated in the summer as a result of the proposed pumping? *Response: Pumping from the well will not directly have any observable impact on the wetland water levels and degree of saturation.*
 - a. To what depth?
 - b. Will the period of drying out be longer, as a result of the pumping?
2. What will the impacts be to the long-term Environmental Flow Needs of the wetland (i.e., will it retain its full current function? Will the vegetation community shift as a result? Will amphibians / invertebrates / mammal or bird species be impacted?) *Response: Pumping from the well will not have any negative impacts on the wetland and hence vegetation, animals and birds will not be impacted.*
 - a. What is the rationale behind the findings of the impact assessment? *Response: The rationale is provided in information provided above, plus Current Environmental's April 14th, 2022 memo, which is provided in Appendix B.*
3. How will / how can the impacts be mitigated? *Response: Pumping from the well will not have a negative impact. However return flow from the sewage effluent dispersal field will result in more water reaching the wetland, which would be beneficial, especially during the dry season.*
4. Will there be any impacts to the function of the wetland, not just as an ecosystem, but also as it functions to improve water quality / recharge to the aquifer for the surrounding water users?" *Response: The above indicated flow into the wetland would be positive in that it would further "polish" the dispersed sewage effluent prior to it leaving the wetland and infiltrating into the fractured bedrock aquifer in the area southwest of Kirk Road.*

I trust that this is sufficient for you present purposes.

Yours truly,

Elanco Enterprises Ltd.



R. Allan Dakin, FEC, P. Eng.
Senior Groundwater Engineer



References:

- Current Environmental. February 2, 2022. Baseline Inventory – PID 000-393-941, Denman Island. Report prepared for Denman Housing Association. 29 pp.
- Current Environmental. April 14, 2022. “Soils Investigation and Vegetation Indicators of Moisture in a Seasonally Wetted Forested Wetland at 1151 Northwest Road, Denman Island”. Memorandum prepared for Denman Housing Association. 2 pp.
- Elanco Enterprises Ltd., May 2021. “Hydrogeological Assessment of Yield and Source Protection for a Well Located at 1151 Northwest Road, Denman Island, B.C.” Report prepared for Denman Housing Association. 10pp.
- Georgia State Environmental Protection Division. 2012. Return Flow Guidance – From Wastewater Disposal Systems. 38 pp.
- H2O Environmental Ltd. April 28, 2021. Wastewater Assessment fir Housing Development – Proposed Lot 2 of Subdivision of Lot B, Sec 18 & 19, Denman Island, Nanaimo LD, Denman Island. Report prepared for Denman Housing Association, Denman Island. 4 pp.
- H2O Environmental Ltd. March 30, 2021. Soil Investigation for Proposed Subdivision of “1511 Kirk Road” Lot B, Sections 18 and 29, DI, Nanaimo LD, Plan 36263. Report prepared for Henning Nielsen, Denman Island. 4pp.

Figures

Assessment of Potential Perched
WaterTable in Wetland on
1151 Northwest Road Property, Denman
Island, B.C.

Plan of Property with Piezometer
Locations Indicated

Drawn: 

Approved: 

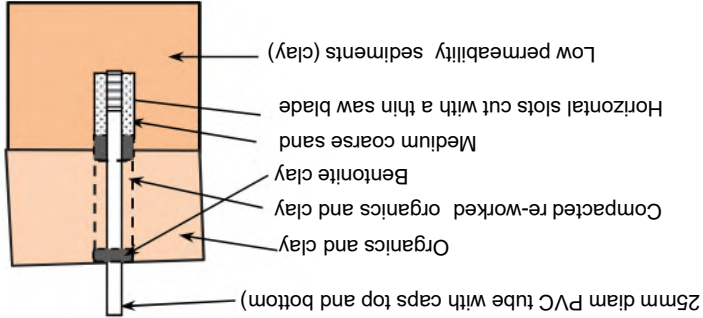
Date
Apr. 2022

Fig. 1

Denman Housing Association

ELANCO ENTERPRISES LTD.
Victoria, B.C. (250 744-1357)
(Permit to Practice No.1001505)

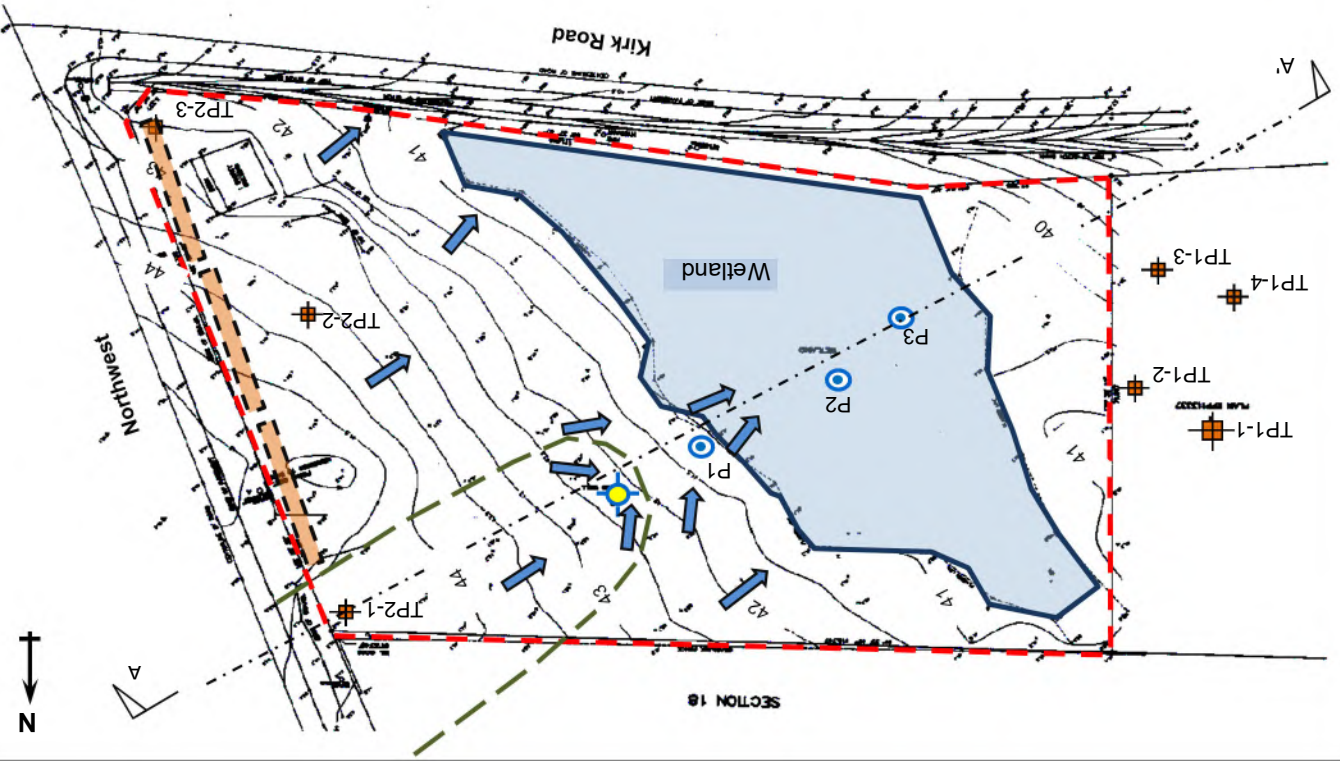
- NOTES
- 1) Base map from Hoerbuerger Land Surveyor's March 9, 2022 map with 0.5m contour intervals.
 - 2) Test pits were provided by the H2O Environmental Ltd., who prepared preliminary plans for a Type 3 waste water systems on Lots 1 and 2.
 - 3) 25-mm diam PVC piezometers installed by Current E Environmental (see typical profile in illustration at right and details in Appendix A).
 - 4) See details on the water supply well in Elanco Enterprises Ltd's May 2021 report.



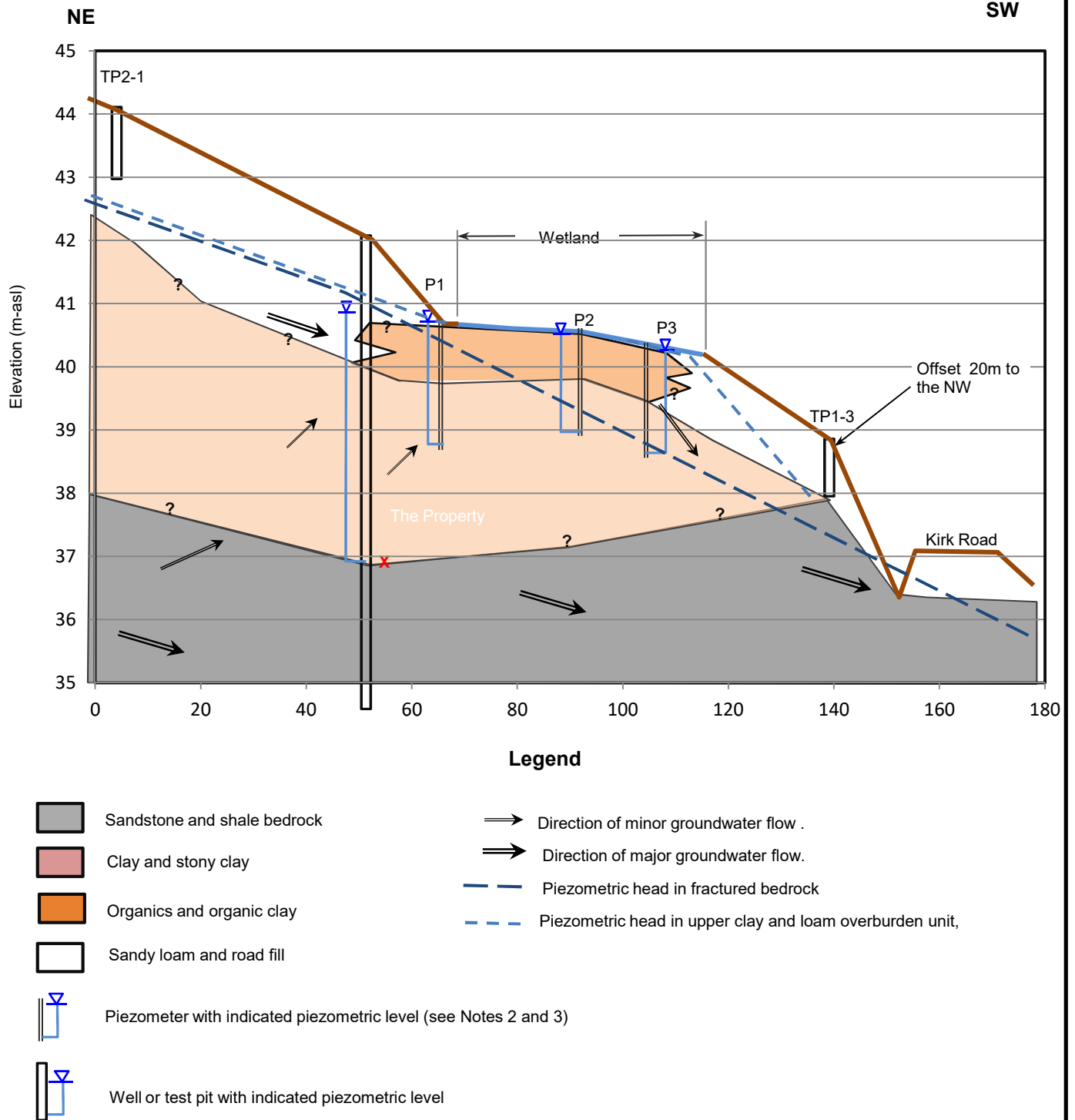
- Project water supply well (see Note 4)
- Shallow piezometer installed in wetland area (see Note 3)
- Interpreted groundwater flow direction in fractured bedrock aquifer below clay unit.
- Approximate location of test pit 1 on Lot 2 (see Note 2)
- Approximate location of proposed sewage effluent dispersal fields.
- Estimated extent of lower portion of Property Well capture zone.

Scale (1:1,250)

0 20 40m



Piezometer construction



NOTES

- 1) See location of the Section on Fig. 1.
- 2) See lithologic profiles encountered in piezometer holes in Appendix A, along with depth and elevation data.
- 3) See hydrographs of monitored water levels on Fig. 3.

Denman Housing Association

ELANCO ENTERPRISES LTD.
Victoria, B.C. (250 744-1357)
 (Permit to Practice No.1001505)

**Assessment of Potential Perched
 WaterTable in Wetland on
 1151 Northwest Road Property, Denman
 Island , B.C.**

Section A - A'

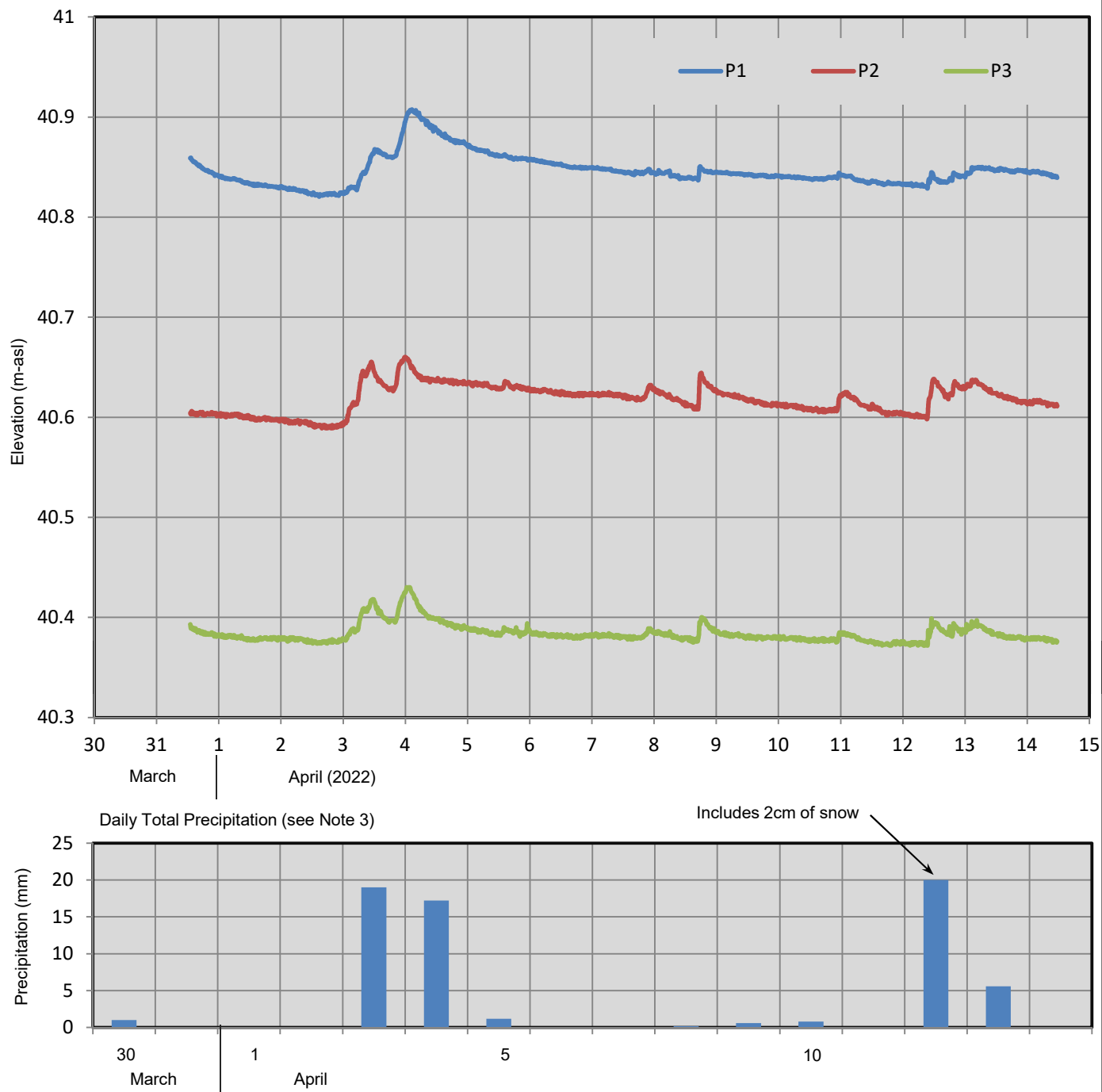
Drawn:

Date

Apr. 2022

Approved:

Fig. **2**



NOTES

- 1) See location of piezometers on Fig 1 and lithological details in Appendix A.
- 2) The water levels were recorded using dataloggers which had been programmed to read at 15 minute intervals.
- 3) Precipitation data from Environment Canada Comox Airport station.

Denman Housing Association

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Victoria, B.C. (250 744-1357)
 (Permit to Practice No.1001505)

**Assessment of Potential Perched
 WaterTable in Wetland on
 1151 Northwest Road Property, Denman
 Island , B.C.**

**Water Level Trends in Three
 Piezometers**

Drawn: 
 Approved:

Date
 Apr. 2022

Fig. **3**

Appendix A

Piezometer Lithological and Elevation Information

(Based on field information obtained by Current Environmental personnel)



Depths (inches) -> 0

76



0

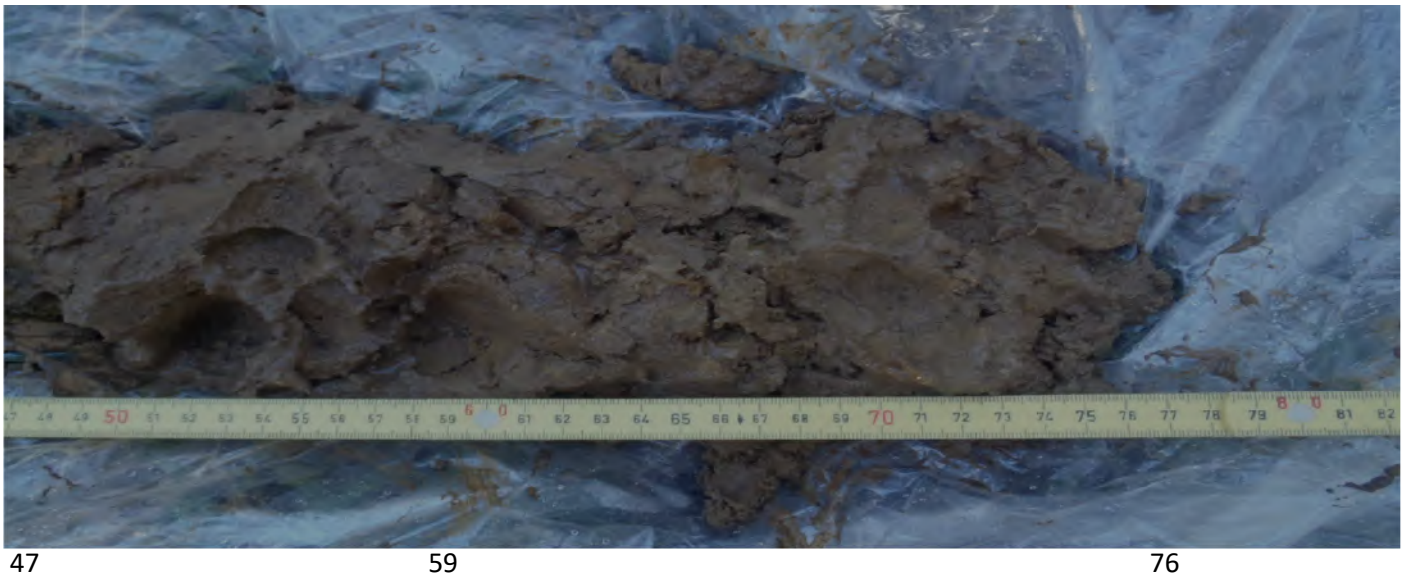
25



13

25

59



Piezometer 1 (P1)

Depth		Elev.	Material	Colour	Roots	Comments
ins	m	m-asl				
30-Mar-22	SWL -->	40.93				
0	0.00	40.89	organics	Dk brown	dense	sticky (trace clay)
11-Apr-22	SWL -->	40.84				
13	0.33	40.55				
15	0.38	40.50	organic clay	Dk brown	sparse	some gleying with mottling
25	0.64	40.25				
40	1.02	39.87	clay	brown	none	some gleying, mottling and sparse gravel
47	1.19	39.69				
59	1.50	39.39				
60	1.52	39.36	clay	grey	none	little grit and sand & less moisture
76	1.93	38.95				
80	2.03	38.85	Bottom of hole			

Static water levels Top of pipe elevation = 41.219 m-asl

Date	Depth to water		Water Elevation	
	Inside	Outside	Inside	Outside
30-Mar-22	0.287	-	40.932	-
11-Apr-22	0.380	0.380	40.839	40.839
14-Apr-22	0.37	0.45	40.849	40.769



Depths (inches) -> 0

63



0

27



15

27

54



Piezometer 2 (P2)

Depth		Elev.	Material	Colour	Roots	Comments
ins	m	m-asl				
0	0.00	40.71	silty loam	Dk brown	dense	high organic content with some pebbles
30-Mar-22	SWL -->	40.67				
11-Apr-22	SWL -->	40.61				
15	0.38	40.33	clay loam	Dk brown	sparse	some sand an pebbles -sticky and wet
27	0.69	40.02				
30	0.76	39.95	clay	Lt brown	none	some sand an pebbles -mottled
40	1.02	39.69				
45	1.14	39.57	clay	Lt brown	none	heavily mottled, compact and dry
54	1.37	39.34				
63	1.60	39.11				
65	1.65	39.06	Bottom of hole			

Static water levels Top of pipe elevation = 41.053 m-asl

Date	Depth to water		Water Elevation	
	Inside	Outside	Inside	Outside
30-Mar-22	0.383	-	40.670	-
11-Apr-22	0.440	0.430	40.613	40.623
14-Apr-22	0.47	0.44	40.583	40.613



Depths (Inches) -> 0

72



0

32



15

32

57



41

57

72

Piezometer 3 (P3)

Depth		Elev.	Material	Colour	Roots	Comments
ins	m	m-asl				
0	0.00	40.50	silty loam	Dk brown	dense	high organic content with some worms
30-Mar-22	SWL -->	40.42				
12	0.30	40.19	silty loam	Dk brown	dense	some pebbles and gravel
21	0.53	39.96				
32	0.81	39.68				
38	0.97	39.53	clay	Lt brown	none	no gravel-mottled
41	1.04	39.45				
57	1.45	39.05				
60	1.52	38.97	clay	Lt brown	none	mottled with some gravel and drier
70	1.78	38.72	Bottom of hole			
72	1.83	38.67				

Static water levels Top of pipe elevation = 40.986 m-asl

Date	Depth to water		Water Elevation	
	Inside	Outside	Inside	Outside
30-Mar-22	0.567	-	40.419	-
14-Apr-22	0.61	0.54	40.376	40.446

Appendix B

Current Environmental April 14, 2022 Memorandum

To: Allan Dakin, P.Eng.
From: Dusty Silvester, R.P.Bio
Cc: Simon Palmer
Dave Ricketts, P.Eng.

Date: April. 14, 2022
Pages: 5
Project: 2157

RE: SOILS INVESTIGATION AND VEGETATION INDICATORS OF MOISTURE REGIME IN A SEASONALLY WETTED FORESTED WETLAND AT 1151 NORTHWEST ROAD, DENMAN ISLAND, BC

INTRODUCTION

This document prepared by Current Environmental Ltd. describes the outcomes of soils investigation observations associated with soil auger samples collected on Mar. 30, 2022 at 1151 Northwest Road, Denman Island, BC. Soil profiles collected alongside observations of vegetation indicator species have been used to infer the seasonal moisture regime of a 0.34 ha wetland and potential effects of draw down from a residential well on the property. The observations and conclusions made in this document are based on existing information available at the time of assessment.

ASSESSMENT SUMMARY

A series of three soil auger and piezometer wells were established in the subject wetland on Mar. 30, 2022 (Figure 1) in support of short-term hydrogeological study of the moisture regime present within the subject wetland. As part of the well installation process, soil cores from hand augering were measured and assessed for their composition and indications of physical factors controlling biological productivity in the wetland.

In general, root presence was densest in surface organic materials up to a depth of 30 cm, sparse root presence was encountered between 30-40 cm depth, and little to no root presence below 40 cm dominated by clay-like materials (Photo 1). The presence of surface and shallow groundwater was encountered concurrent within the organic layer and soil strata above clay materials, indicating that when seasonal drying occurs from reduced surface inputs of rainwater and shallow sub-surface flows shedding from surrounding higher elevation topography, that the assumed perched clay impervious layer maintaining a seasonal perched aquifer will mostly dry.

This anticipated condition is further supported by the presence of indicator vegetation types that include facultative hydrophytic slough sedge (*Carex obnupta*) and red-osier dogwood (*Cornus sericea*) throughout the lowest elevation moist to wet, water collecting parts areas of the wetland (Photo 2), while discrete occurrences of species more well adapted to drier conditions such as grand fir (*Abies grandis*) conifers and salal (*Gaultheria shallon*) understory occur on slightly higher elevation hummocks within the wetland complex (approx. 30 cm above water surface at the time of assessment) (Photo 3).

Memorandum

Grand fir is able to tolerate fluctuating groundwater tables, while salal grows preferentially on water-shedding sites¹. These species are not expected to be present in regions of a wetland that maintain a wet hydroperiod year-round and instead show that surface waters likely recede completely during the driest parts of the year (assumed to be June-Sept.). Furthermore, Douglas fir (*Pseudotsuga menziesii*) and dull-Oregon Grape (*Mahonia nervosa*) are present around the margins and higher elevation terrestrial zones of the wetland (Photo 3) indicating water-shedding, moderately dry to fresh soils, with a presence that decreases with increasing precipitation¹ and supports the inferred seasonally drying characteristics of the site.

CONCLUSIONS

Evidence from soil auger sample holes and presence of vegetation species with distinct ecological requirements indicate that the subject wetland is likely of the type of a perched aquifer maintained by a localized perched clay layer that dries seasonally under reduced inputs from rainfall and water table fluctuation from approx. June-Sept. annually.

It is anticipated that residential well usage on the subject lot should have no effect on the wetland during the winter months when surface inputs are highest, nor in the drier summer months while a naturally occurring reduced water table combined with additional drawdown from well operation will have no appreciable cumulative effect on the seasonally dry status of the wetland.

As a result, it is not anticipated that there will be any appreciable impact from operation of the well on the function, form, or condition of the wetland or its ability to support the existent ecological community of vegetation and wildlife species (e.g., undocumented nesting birds and amphibian breeding/life-history requirements).

Current Environmental Ltd.



Dusty Silvester, R.P.Bio.

This report was prepared exclusively for the Denman Housing Association (the "Client") by Current Environmental Ltd. The quality of information, conclusions and estimates contained herein is consistent with the level of effort expended and is based on: i) information available at the time of preparation; ii) data collected by the author, technical personnel and/or supplied by outside sources; and iii) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by the Client only, subject to the terms and conditions of its contract or understanding with Current Environmental Ltd. Use or reliance on this report by any third party is at that party's sole risk.

¹ Klinka, K., Krajina, V., Ceska, A., and Scagel, A. (1989) *Indicator Plants of Coastal British Columbia*. UBC Press. Vancouver, BC.

FIGURES



Figure 1. Topographic site plan showing the locations of Piezometer installations and hand augered soil test sites labelled P1-P3 within the subject wetland (yellow outline).

Memorandum

PHOTOS



Photo 1. Example of a hand augured soil core (Piezometer 1) showing organic materials in upper 15 cm with dense root presence, followed by sparse root presence in layer with some clay content (15-40 cm), and clay dominated materials absent of root structure > 40 cm depth.



Photo 2. Representative view of lower elevation section of the subject wetland showing dominance of facultative hydrophytic slough sedge, typical of wet to very wet water collecting sites.



Photo 3. Example of higher elevation vegetation type associated with the areas surrounding the wetland dominated by Douglas fir and dull-Oregon grape typical of drier water-shedding sites.

April 20, 2022

H₂O File: 21-5

Denman Housing Association
3720 East Road
Denman Island, BC V0R 1T0

**Re: Wastewater Assessment for Housing Development
Proposed Lot 2 of the Subdivision of Lot B, Secs. 18 & 19, Denman
Island, Nanaimo LD, Plan 36263,
1151 Northwest Road, Denman Island**

Introduction

H₂O Environmental Ltd. (H₂O) was retained by the Denman Housing Association (DHA) to investigate the onsite soil and groundwater conditions and apply that knowledge to the design of a wastewater system for a multi-unit housing development.

Domestic water for this lot will be supplied by a private well. The size of the planned lot is approximately 1.05 ha.

Wastewater Considerations

The proposed onsite development is four 3-bedroom units, six 2-bedroom units and ten 1-bedroom units. The SPM¹ lists the Daily Design Flow (DDF) as 700 litres, 1000 litres and 1300 litres per day (lpd) for the 1, 2 and 3 bedroom homes, respectively. The total estimated effluent flow would be 18,200 lpd from the group of homes. The DHA is committed to reusing light greywater² for toilet flushing and with that in place, the DDF can be reduced by roughly 30% and will be approximately 12,740 lpd.

The average daily flow is estimated to be ½ the DDF. The DDF is used for design to allow for peak uses.

General Site Information

The proposed lot is irregularly rectangular, bordered on the north by the Main Road commercial storage yard. To the east is Northwest Road and to the south is Kirk Road. Residential development is located to the west.

Regional topography consists of a gentle grade to the west-southwest. The subject lot sloped moderately between 5% to 9% towards Baynes Sound to the west.

The well for the development is located more than 30 metres downgradient of the

¹ Ministry of Health, *Sewerage System Standard Practices Manual*, Version 3, September 2014

² Light greywater is water from bathtubs, showers bathroom sinks and laundry. See *Manual of Composting Toilets and Greywater Practice*, BC Ministry of Health, 2016

proposed wastewater dispersal system on the subject lot. All tanks will also be more than 30 metres from the onsite well. There is a well on the corner of the Denman Activity Centre property, located across Kirk Road to the south. This well will also be more than 30 metres from the wastewater system components.

Methodology

Three testpits were advanced on the proposed lot. These were placed along the north south line approximately parallel to Northwest Road.

To measure the *in-situ* permeability of the soils, two permeameter tests were conducted by H₂O on the proposed lot. Auger holes were advanced within the proposed wastewater dispersal area to a maximum depth of 40 centimetres (cm). The permeameter test consists of a calibrated tube filled with water which is inserted into the auger hole allowing the water to escape at a flow rate determined by the ability of the soil to transmit it away from the tube. The water flow out of the tube is measured and a hydraulic conductivity of the soil is calculated from the results.

Figure 1 showing approximate locations of testpits and system components is attached to this report.

Results

The general soil profile is a thin layer of forest debris, underlain by brown sandy loam to with 25% to 30% coarse fragments extending to approximately 60 cm. This layer was followed by competent sandstone bedrock below. It is assumed that surficial groundwater will travel across the bedrock surface. Soil logs are attached to this report.

Laboratory analysis by Down to Earth Labs confirms the sandy loam soil texture determination.

The average measured field-saturated hydraulic conductivity (K_{fs}) of the two tests on the subject site was 1,247 mm/day. Although there is no direct conversion to traditional percolation test rates, this is a range roughly equivalent to a 5 to 7 minute/2.54 cm percolation speed. K_{fs} is generally considered to be approximately $\frac{1}{2}$ of the soil hydraulic conductivity, K .

Based on the assumed highest soil hydraulic conductivity of approximately 3.9 m/day, an assumed average hydraulic gradient of 0.05 (from measured onsite slope), and a soil porosity of 25%, the effluent velocity in the soils was calculated using the following equation: $V = Ki/n$ where: K = hydraulic conductivity, ($2 \times K_{fs}$), i = hydraulic gradient and n = the estimated porosity of the sandy soils. The average velocity of groundwater in the soils on the proposed lot is calculated to be approximately 0.8 metres/day.

Wastewater Treatment Levels

A Type 1 wastewater system is only septic tank treated effluent with total suspended solids (TSS) and five-day biochemical demand (BOD₅) on the order of 150-300 milligrams per litre (mg/L) and 150-250 mg/L, respectively. BOD₅ is a measure of the oxygen use of the microbes within the effluent.

Type 2 effluent reduces the effluent concentrations of TSS and BOD₅ to less than 45 mg/L.

Type 3 effluent standards call for both TSS and BOD₅ to be <10 mg/L and reduction of the fecal coliforms to less than 400 CFU per 100 milliliters. Typically, fecal coliform concentrations from a septic tank range from 10⁵ to 10⁷ colony forming units (CFU) per 100 millilitres. These bacterial standards are generally achieved with tertiary treatment, i.e. – a UV light or placement of a greater depth of specified sand under the dispersal field (passive Type 3). Each higher level of treatment allows a significant reduction in the size of the dispersal field.

However, the key factor in determining the size of the dispersal field is the allowable Linear Loading Rate (LLR). This value takes into account the soil and site characteristics and ties in the DDF volumes to give a minimum length across the slope for the dispersal field to minimize the potential for groundwater mounding. There are methods for allowing shorter distances overall but the total length must still be maintained.

Due to the depth to the restrictive layer and the sensitive nature of the wetlands to the west, H₂O has prepared a design incorporating Type 3 treatment for the wastewater system for the site.

Discussion and System Design

The groundwater velocity on the subject site averages approximately 0.8 m/day. The closest laterals of the proposed area of the wastewater dispersal field are 32 metres from the wetland demarcation line. The effluent from the dispersal fields will travel vertically through the soil until encountering the sandstone bedrock and then travel southwest. The treated effluent will travel past the slab-on-grade buildings and eventually into the wetlands.

The travel time in the subsoils to the wetland would be in excess of 40 days. Fourteen days is the generally accepted time for full polishing and natural attenuation of Type 1 effluent in the native soils. This effluent will be treated to Type 3 standards before being dispersed to the native soils.

The onsite well is located to the north and west of the dispersal field. Again, the nearest lateral to the well will be 36 metres. Travel time will be approximately 46 days in the native soil.

The wetland most likely acts as a recharge area for the local fractured bedrock aquifer from which the onsite well draws its supply. The system will, in effect, be recycling a portion of the water used in the development back to the source of the water in the bedrock.

The wastewater system would consist of septic tanks for the buildings, and all tanks would gravity feed, if achievable, to an 11,365 litre equalization tank. This would pump to a Bionest BN3500 Bioreactor contained within two 11,365 concrete tanks in series.

The Bionest is a suspended media treatment system which will produce effluent in the range of 10 mg/L BOD and 10 mg/L TSS. It incorporates numerous micro-pore aerators within the treatment chamber and a recirculation system to significantly reduce nitrogen in the effluent.

From the Bionest, the effluent would then gravity feed to two UV light units in series to reduce the fecal coliform bacteria to Type 3 quality requirements.

The treated effluent would flow to a 23,185 litre concrete pump tank where it would be time dosed to the dispersal fields. The dispersal fields would use a pressurized distribution arrangement to optimize treatment in the existing soil conditions and avoid soil saturation. Time dosing spreads the application of effluent over an entire 24 hour period versus dosing the field only at peak time uses such as in the morning and evening.

Based on the hydraulic loading rate and the linear loading rate in the SPM, the dispersal field for the development would have to be 170 metres long. This overall length can be accounted for by creating three separate dispersal fields of 58 metres each, each lower on the slope than the one above and separated by 4 metres. The total length of the fields would be approximately 174 metres and each field would be approximately 1.7 m wide. The overall length of the dispersal fields would be approximately 65 m along the Northwest Road side of the property. The beds will be built within two low rock wall structures to minimize impact from people and traffic.

Conversations with the Ministry of Transportation and Infrastructure and Islands Trust have confirmed that use of the setback area for the wastewater dispersal fields along Northwest Road is acceptable and allowed.

The fields would consist of pressurized piping within raised seepage beds, on top of 15 cm of specified sand. There would be duplex pumps in the pump chamber and an

indexing valve to separate the dispersal field into six zones. This reduces the required pump size and allows for better distribution of effluent.

Summary

Testpits were advanced and permeability tests were completed on the site. There is approximately 60 cm of useable permeable sandy loam below grade.

H₂O has designed a Type 3 wastewater system that will safely disperse effluent from the planned housing to the environment.

The wastewater treatment system will consist of separate septic tanks for the buildings and an equalization tank to mitigate wastewater peak flows. Two tanks will contain the aerated effluent treatment units and will be followed by two ultraviolet light disinfection units. The dose tank will be sized to spread the effluent flows out over the entire dispersal field over the course of 24 hours to further mitigate peak flows and avoid saturation of the soil.

The dispersal of the effluent to ground will consist of three separate dispersal fields of 58 metres each, each successively lower on the slope and separated by 4 metres. The total length of the fields would be approximately 174 metres and each field would be approximately 1.7 m wide, with an overall width of approximately 12 metres.

Due to the soil characteristics and the grades onsite, with proper maintenance of the wastewater system, the residence time of the treated effluent in the soil is more than adequate to ensure there is minimum risk that the effluent will negatively impact the onsite well, the wetlands or the neighbouring properties.

Closure

H₂O is pleased to provide you with this letter regarding the soil conditions on the proposed subdivision of proposed Lot B at 1151 Northwest Road on Denman Island. Please contact H₂O with any questions you may have regarding this report.

H₂O Environmental Ltd.

Per: _____
Steven M. Carballeira, P.Geo.
Permit to Practice # 1001460



ATTACHMENT 7
Memorandum

Ministry of Forests, Lands,
Natural Resource Operations and Rural
Development
Water Protection, Nanaimo

March 11, 2022

To: Angela Cameron, Senior Water Authorizations Specialist

File: 20018264

Re: Hydrogeologic Technical Review Denman Housing Association 1151 Northwest Road,
Denman Island, B.C.

On request a review has been completed of hydrogeologic reports and technical assessment related to a groundwater licence application file 20018264.

The purpose was to review the hydrogeologic assessment reports submitted by the applicant in support of the groundwater license application, to evaluate the potential impacts of the proposed water use on adjacent groundwater users, to assess the probability of hydraulic connection between the well and aquifer source and adjacent surface water sources, and to evaluate the risk of sea water intrusion from well operation. The review consisted of reviewing available documentation related to this application and undertaking additional analysis to assess the key aspects of concern outlined above. No field assessment component was completed.

The following information was provided:

- Annual volume 3453 m³/year;
- Average daily volume 9.459 m³/day;
- Purpose of use (waterworks for 20-unit rental housing complex and irrigation for landscaping and residential gardens);
- Period of use (year-round);
- Well Tag Number (WTN) of the production well (WTN 95563; ID 13957).

To formulate my recommendations, I reviewed:

- Available information regarding the application, including well technical assessment, water demand estimates and wetland assessment submitted by the applicant, listed at the end of this document;
- Hydrogeologic data for the area from Groundwater Wells and Aquifers database;
- Spatial (GIS) files from the BC Data Catalogue (Province of B.C., 2022) including: Groundwater wells, aquifers, water allocation restrictions, water rights, parcel mapping cadastral boundaries, freshwater atlas (TRIM), and non-TRIM hydrography;

- Additional geospatial datasets including high resolution elevation data (Digital Elevation Model), digital geologic mapping (BC Geological Survey, 2005; Katnick & Mustard, 2001), and interpolated groundwater level contours from internal and external analysis.

1. Site description

The subject property is located at 1151 Northwest Road, Denman Island, B.C. (PID 000-393-941). The lot area is 10,600 m² (2.6 acres), and it is sited within an area of mixed commercial and rural residential land use on the southwest side of Denman Island, where most properties are serviced by private wells. A map of the subject site and elements discussed in this review is included in Figure 1.

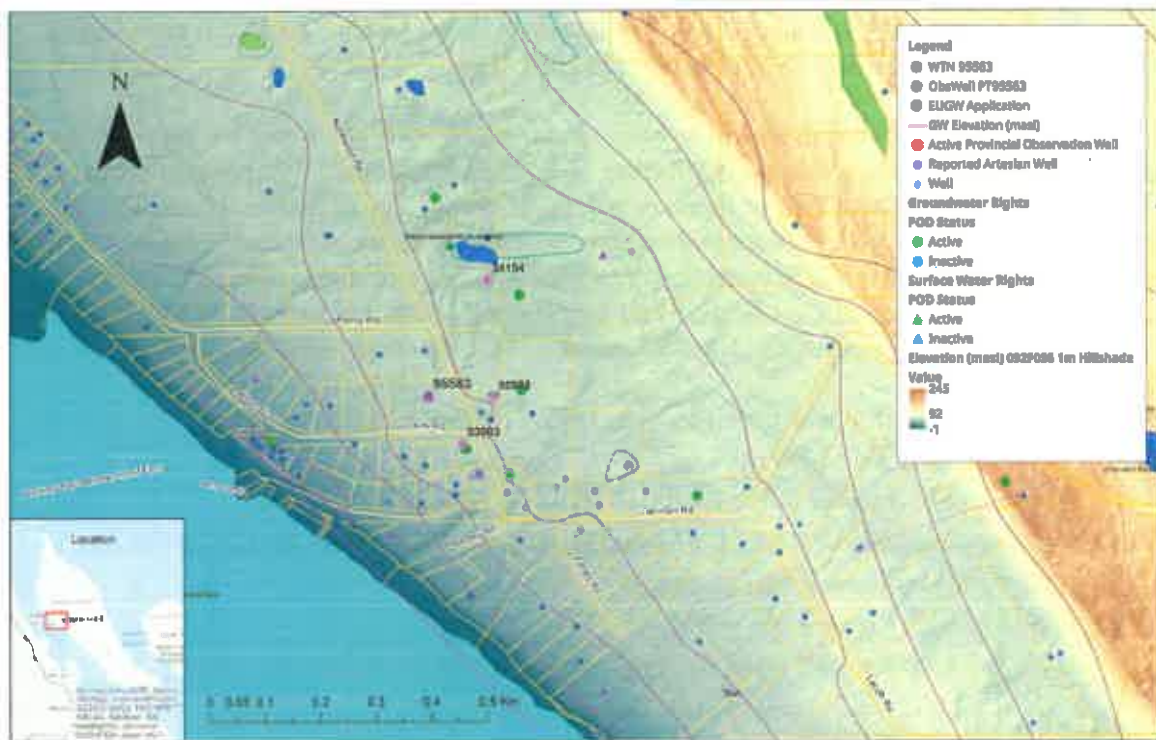


Figure 1: Map of subject area

2. Well and aquifer properties

The production well is Well Tag Number (WTN) 95563 (Identification Plate, ID 13957), originally drilled in June 1991. The well is completed in aquifer material described as soft and hard shale with a single water-bearing fracture reported at 5.0 m (17 ft) below ground surface, and an estimated yield of 15 Litres/minute (4 USgpm).

The subject well is constructed in Aquifer 740 (AQ740), which is composed of fractured sedimentary bedrock of the Nanaimo Group, De Courcy Formation. The aquifer moderate well density overall, in the Denman Island west village area within 1 km radius of the subject well,

the well density is approximately 10 wells/km², and including several water system wells serving businesses, industry and residential developments. Due to the shallow depth of soil and overburden and relatively shallow groundwater depth, AQ740 in this area has a relatively high vulnerability to contaminants introduced at the land surface (Province of B.C., 2022a).

The closest provincial observation well to the site is Observation Well 268 (OW268), sited on the eastern side of Denman, approximately 3.6 km away, which was established in 1981 (Province of B.C., 2022b). Groundwater levels in OW268 fluctuate approximately 2.5 m annually (Figure 2), exhibiting artesian conditions, with water level to 1 m above ground surface during the winter period and declining to roughly 1.5 m below ground in the late summer to early fall, with lowest observed levels in September annually. The long-term trend in groundwater levels within OW268 is considered stable.

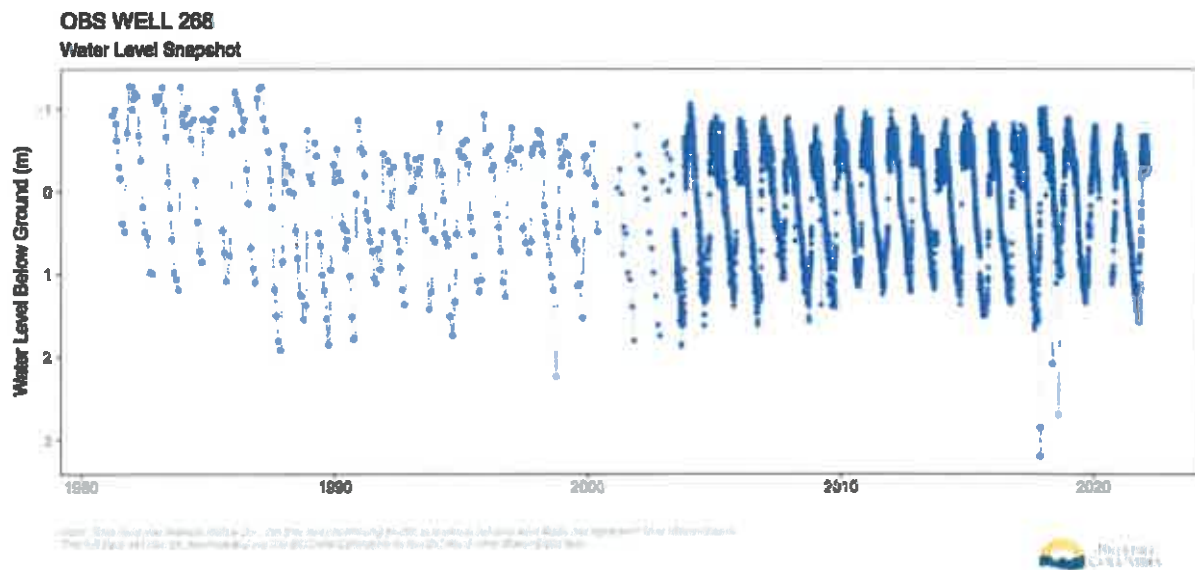


Figure 2: Groundwater levels over time in OW268 Denman Island (Denman Road) (Province of B.C., 2022b)

Technical assessment of WTN 95563 included completion of a long-term (72-hour) pumping test completed from April 9-12, 2021, described in Elanco (2021) report. The test was completed in spring and representative of aquifer response during a period of higher groundwater levels, compared to late August-early September when groundwater levels deeper (see information on Observation Well OW268 below). Approximately 1 mm of rainfall occurred during the test but was not anticipated to have affected the results. Interpretation of the plot of derivative of drawdown vs time (Appendix A, p. 5) shows that radial flow in the well occurred from 60 minutes to 3000 minutes, although there is some variability in the derivative toward the end of the test, this could be an artifact of the manual data collection and it does not appear that boundary conditions were encountered. The Jacob semi-log plot of drawdown vs time and Theis recovery method plots (Appendix A, p. 6) both show two phases of well response, an initial steep curve, which transitions to a shallower slope later in the test. Elanco interprets this as an increase in aquifer transmissivity at further distance from the pumping well. The two stages of response could also be interpreted as initial provision of water from storage within secondary porosity (fractures) and later provision of water from the primary porosity (rock matrix). The recovery

curve (red line, in Elanco, 2021, Fig.11) intercepts the y-axis at $1 > t/t' < 2$ which could indicate a variation in the elastic properties of the aquifer formation, indicated by a higher value of storativity (S) during drawdown in comparison the rebound phase (Driscoll, 1986).

The long-term capacity of WTN 95563 was estimated by Elanco as 9.459 m³/d (1.5 Igpm). Using the manual data provided from the 2021 test, I independently calculated the weighted average pumping test rate, safe available drawdown of the test well, and long-term well capacity, and obtained results that were slightly lower, but consistent with the reported values, as shown in Table 1, with details provided in Appendix A.

Notes on the methods:

- Observed drawdown from the pumping test was projected to 180 days using a semi-log plot of the manual pumping data values to account for a longer dry season due to the observed and anticipated long-term impacts of climate change. The consultant used a 100-day projection which is a standard methodology used for water utility assessments (Province of B.C., 2020).
- For the FLNR analysis, the discharge was taken as the weighted average pumping rate of 0.18 L/s.
- For the long-term well capacity calculation the consultant reported that drawdown was reduced by 1.3 m to account for seasonal variation in groundwater levels – this reported value was utilized in the FLNR analysis for consistency¹. Based on calculations shown in Figure 11 Elanco may have used a smaller value of 0.3 m seasonal variation, and lower discharge rate of 0.173 L/s which accounts for small variation between calculations of the 100-day long-term yield.
- All estimates of safe available drawdown included a 30% safety factor to account for well losses and interference.

Table 1 Long-term well capacity summary WTN 95563

Long-term capacity	m ³ /d	L/min	USgpm	Igpm	L/s
Elanco, 2021	9.459	6.57	1.7	1.4	0.11
FLNR calculation, observed drawdown projected to 100 days, available drawdown to principal fracture including seasonal effects	9.12	6.33	1.7	1.4	0.11
FLNR calculation, observed drawdown projected to 180 days, available drawdown to principal fracture, including seasonal effects	8.43	5.85	1.5	1.3	0.10

3. Groundwater availability and potential impacts to adjacent groundwater users

There are 98 registered wells within 1 km of WTN 95563, corresponding to a density of 10 wells/km² which is considered moderate, based on BC Aquifer Classification System (Berardinucci & Ronneseth, 2002). Within this village area, several wells are used for non-

¹ Elanco, 2021, Appendix D Groundwater at Risk of Containing Pathogens assessment, item g) estimates up to 2.5 m annual variation in groundwater level.

domestic purposes, including local water services (Fig. 1). During the pumping test groundwater levels were monitored in three adjacent wells, with the attributes summarized in Table 2.

Table 2: Observation wells monitored during test

Well Tag Number	93993	93988	34154
Well ID	13960	14314	n.r.
Owner	Museum	Community Centre	Kirnel Water System
Distance (direction) from pumping well (m)	100 (SE)	130 (E)	330 (N)
Elevation at well head	42	45	48
Well depth (m)	56.388	n.r.	32.6136
Static water elevation (masl)*	40.2	42.8	n.c.
Safe Available Drawdown (SAD)(m)	28.14	n.c.	n.c.
Est. max interference from PW	0.1	n.c.	n.c.
% SAD reduction due to Interference	0.36%	n.c.	n.c.

n.r.= not reported, n.c.=not calculated SAD=Safe Available Drawdown = Available Drawdown *0.7 inclusive of 30% safety factor.

*Observation well static levels were not reported in data tables but were Inferred from Elanco (2021) Fig. 9 except where noted.

WTN 93993 no lithology, available drawdown estimated as depth between static water level and sea level.

WTN 93988 well depth not known, SAD not calculated.

WTN 34154 no lithology, principal water source not known, static water level not estimated as groundwater levels were in recovery at start of test (Elanco, 2021, Fig.10).

Elanco (2021) stated that there was no observed interference from pumping well on groundwater levels within the three neighbouring wells monitored during the test. The observation wells were in active use which presents a challenge to interpretation of interference impacts. In addition to the effects on groundwater levels of the wells' own operation, illustrated as cyclical declines in groundwater level with a repetitive periodic pattern, interference was noted between the observation wells and operation of other adjacent wells in the area, such as the school well.

I note that within Elanco's Figure 9, the closest well WTN 93993 (Museum well) sited 100 m from the test well, the static (non-pumping) water levels measured following recovery from its own cyclic pumping appeared to decline by approximately 0.1 m over the period of the test, shown as a trend in declining static levels which exceeds the anticipated trend of decline due to seasonal hydrograph recession. It is possible that this is a consequence of interference from the subject well pumping. This magnitude of drawdown due to interference would result in a less than 0.5% reduction of safe available drawdown within the Museum well. Moreover, the test pumping rate was 70% higher than the proposed average daily demand, therefore under conditions of normal operation, potential interference would likely be proportionally less than observed during the test. No interference from pumping of the subject well was noted in the two other observation wells monitored.

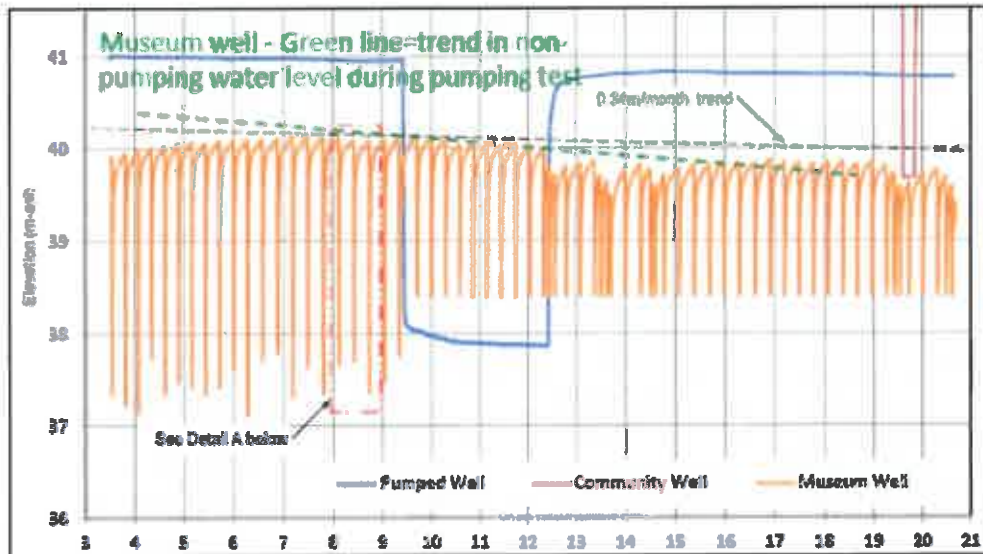


Figure 3: Additional interpretation of possible interference drawdown in WTN 93993 (Museum) due to WTN 95563 pumping, excerpted from Elanco (2021), Fig. 9.

Within fractured sedimentary bedrock aquifers, the magnitude of drawdown with distance and direction from the pumping is anticipated to vary according to the depths, orientation, interconnectivity, and permeability of heterogeneous fracture networks (Allen D. A., 1999). The depth of WTN 95563 is relatively shallow (50 m), and therefore it intercepts shallower principal fractures in comparison to some neighbouring wells. The inferred one-year capture zone for WTN 95563 is elongate and extends ~0.5 km upslope toward the northeast. Due to the relatively small rate of diversion, and low permeability of the aquifer formation, drawdown due to interference in adjacent wells is expected to be relatively small in magnitude, and unlikely to adversely affect water availability for the adjacent users. I have calculated a comparable capture zone (Figure 4) calculations shown in Appendix A (Table A.5). The theoretical capture zone extends downgradient approximately 20 m from the well, reaching the boundary of the largest wetland polygon 3 mapped on the subject property (Figure 6) and intersecting the area of a smaller wetland polygon 1 mapped on the north side of the property. Hydraulic connection aspects are discussed further below.

Reviewing the Elanco (2021) water balance (Table 3), the annual water demand is expected to be supplied by recharge corresponding to approximately 20% of precipitation within the inferred capture zone, an estimate that is consistent with other published studies for the B.C. coast (Gorski & Sacré, 2019; Burgess & Allen, 2016). Seasonal water flux, and impacts on baseflow to adjacent, potentially hydraulically connected wetlands were not considered.

Water supply for the development will be obtained from a range of sources. In addition to groundwater from the well, up to 50% of the water supply for the development is intended to be obtained from rainfall collection and storage which will reduce reliance on groundwater. Due to the long dry season, rainwater collection may not be a reliable source to offset groundwater diversion in summer, depending on the amount of storage included in the site design. Onsite water use is aimed to be reduced by incorporating greywater recycling and demand management through use of water saving household fixtures and resident education (Integral Group, 2022).



Figure 4: Estimated 1-year capture zone for WTN 95563

4. Hydraulic connection to surface water bodies

The guidance document “Determining the Likelihood of Hydraulic Connection” (Province of B.C., 2016a) defines hydraulic connection as being: “for the purpose of water allocation and use,... the reasonable likelihood that pumping of groundwater from a well will eventually result in a change in the flow of a stream or spring or change in the level of a lake, pond, wetland that overlies or borders the aquifer, over a time period and to an extent that the decision maker must take into account in considering the environmental flow needs of the stream or whether the rights of other authorized users on the stream are likely to be detrimentally affected.”

Aquifers of subtype 5a (fractured sedimentary bedrock) may be hydraulically connected to adjacent surface water bodies if there is no continuous confining layer overlying the aquifer adjacent to a stream, or if there is a connection between water levels in the stream and nearby wells.

A recent aquifer mapping study was completed using spatial analysis of aquifer and stream elevations to infer the likelihood of hydraulic connection between surface and groundwater sources (GW Solutions Inc., 2021). In the area of the subject parcel, several small stream segments and wetland were described as hydraulically disconnected. The scope of this desktop analysis did not involve a field survey of current groundwater levels nor identification of unmapped wetland parcels, such as observed on the subject site. Information from site-specific investigations suggests there is likely a relationship between the groundwater and surface water at this site, at least seasonally.

The associated technical assessments and review of wells for this area indicate that overburden sediments are relatively shallow, median 2.4 m in wells within 500 m of the site, as reported in Elanco (2021). The subject well is shallow (15.85 m deep), unconfined (shale bedrock reported at the ground surface), with the primary water-bearing fractures at 5 m below ground, and historic non-pumping water levels ranging from 0.4 to 1.1 mbgs (in January and April respectively). Other information about onsite overburden materials were provided in Appendix A (Elanco, 2021) from the septic assessment report by H2O Environmental in March 2021, for test locations assumed to be on the southeastern portion of the property where the septic system is intended to be sited. In Test Pit 1, soil is described as sandy loam, with glacial till encountered at 0.36 m, Test Pit 2 and 3 encountered sandy loam overlying bedrock at approximately 0.8 m below ground surface. These data confirm inferences that the bedrock is shallow and largely confined, although substrate within the wetland areas may differ from these observations.

Elanco's Figure 4, cross-section from northeast to southeast across the property, excerpted in Figure 5 below, illustrates the shallow groundwater table, and locations where groundwater discharge is likely to intercept the wetland and roadside ditch

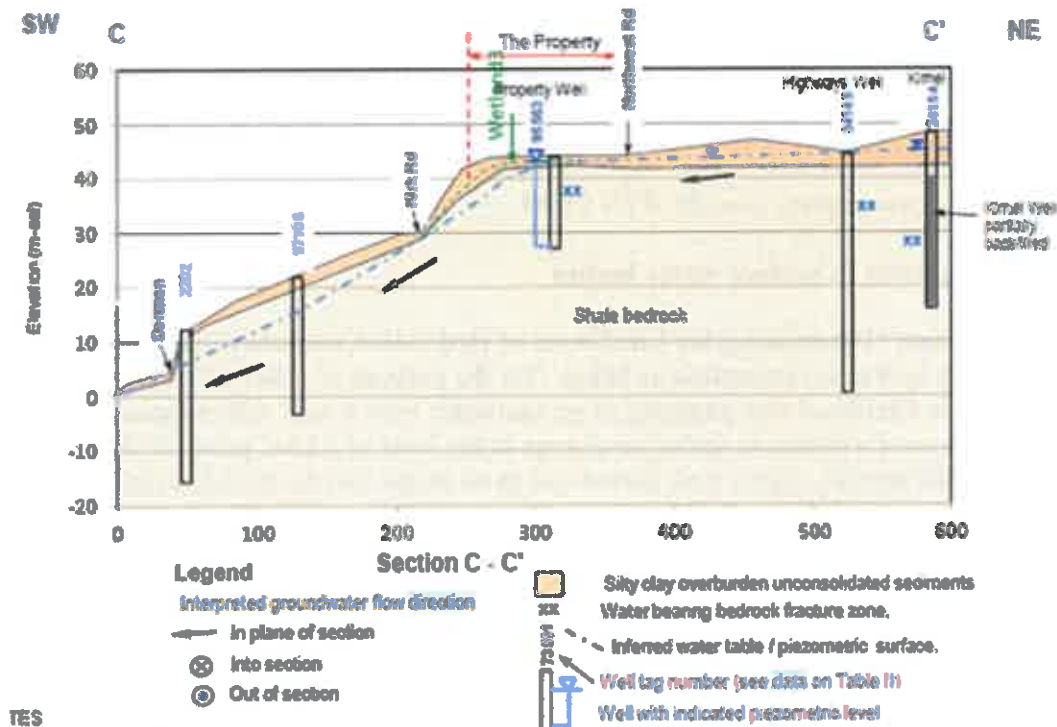


Figure 5: Cross-section from SW to NE across the property illustrating shallow groundwater table and locations of likely hydraulic connection between groundwater table and stream, excerpted from Elanco (2021), Figures 3 and 4. Green line indicates additional interpretation of seasonal water table intersecting wetland polygon 3 identified by Current Environmental.

As a requirement for Island Health Source Approval, an assessment of groundwater at risk of containing pathogens indicated that while the well could be affected by contaminants from septic system discharges and road runoff within the well capture zone, impacts on water quality from the closest mapped wetland (Woods Swamp) were unlikely (Elanco, 2021). The hydrogeologic report included a rough delineation of a wetland ("swamp") on the subject parcel (Elanco, 2021, Fig.6) which is a source of drainage to the roadside ditch on the south side of the property.

However possible impacts of the groundwater diversion on water balance of the wetland were not assessed.

Upon request from FLNR (Angela Cameron, Senior Water Authorizations Specialist, personal communication) a more detailed assessment of the wetlands on the subject parcel was completed by Current Environmental (Feb 2022).

Notes on methods and conclusions with relevance to interpretation of hydraulic connectivity from the wetland baseline assessment:

- The site was visited on January 13, 2022, following a recent rain on snow event.
- There were no significant water features (wetlands, streams, lakes) mapped within the provincial TRIM mapping inventory.
- Three wetland areas were identified in three separate areas to the north, southwest and southeast sides of the property (Figure 6), based on the presence indicator plant species, and observed saturated soil and standing water.
- The source of water was inferred to be from overland drainage and subsurface flow originating from adjacent properties and road sides to the north and east of the lot, some drainage was noted directed through sub-surface drain pipes, with minor to no flow via a culvert draining from the property to the north.
- Standing water 20-30 cm deep was observed in wetland areas and although there was no observed concentration of flow into a discernable stream channel, wetland runoff discharged towards the roadside ditch along Kirk Road.
- The roadside ditch along Kirk Road, on the south side of the property, is not connected to fish bearing stream networks and no fish were observed.
- Disturbance from tree cutting and infilling has occurred along the eastern boundary of the largest wetland area (western and central part of the lot).
- The characteristics of organic soils, and subsurface sediments within the wetland areas were not evaluated.
- Recommendations were made with respect to managing stormwater to retain/restore the natural hydrologic regime of the site, developing a restoration plan, removing fill, and replanting with native species along a 3 m buffer along the margins of the wetland.

The assessment of likelihood of hydraulic connection (HC) between the well and the closest adjacent surface water bodies is mapped in Figure 7 and summarized in Table 4. Based upon available technical reports and mapping, there is a likelihood of hydraulic connection between the well and the onsite wetland, which is a probable source of recharge to the aquifer during the winter period. Information on late summer groundwater levels in the subject well and adjacent wells might provide further evidence of whether the surface water system is ephemeral or becomes vertically separated or perched in comparison to the groundwater flow system.

The wetland baseline inventory (Current Environmental, 2022) theorized that the wetlands are likely ephemeral and dry up in summer, which would support an interpretation of the groundwater and surface water being disconnected hydraulically at that time. If HC is occurring only seasonally, then this could mitigate potential impacts from capture due to groundwater diversion i.e., if groundwater is not a source of discharge to the wetland in the dry season, then groundwater diversion will not impact habitat directly. Deepening of water table due to well pumping could impact hydrophilic plant communities in the long-term. Hydraulic connection to

other wetlands and water sources was considered unlikely due to distance from the well, and low permeability of the fractured bedrock aquifer.



Figure 6: Relative location of WTN95563 and onsite wetlands, after Current Environmental, Feb 2022, Figure 2.

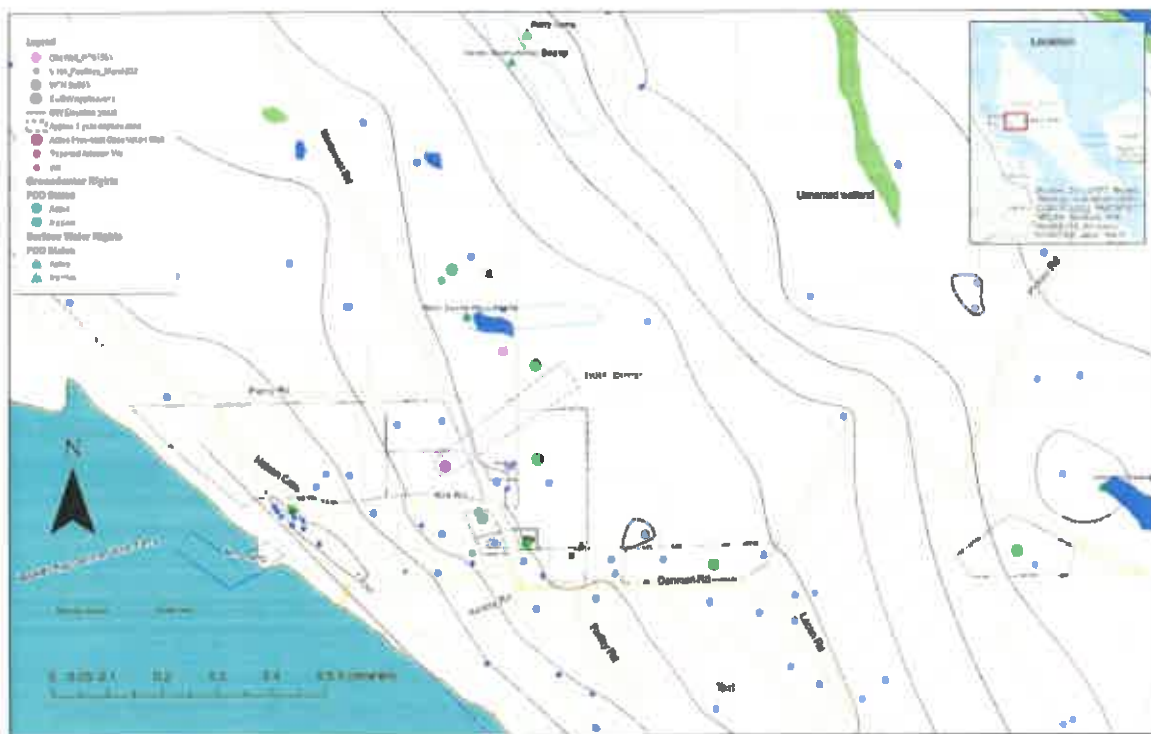


Figure 7: (Above) Map of locations assessed in relation to potential hydraulic connection between surface and groundwater (not including unmapped onsite wetland polygons)

Table 4: Adjacent surface water bodies and preliminary assessment of hydraulic connection

Stream name	Closest distance from well (m)	Direction	Likelihood of hydraulic connection (HC) and rationale
Unnamed wetland on subject parcel (polygon 3)	20	SW	Likely HC due to proximity, lack of aquifer confinement and <1 m vertical separation between groundwater level and wetland during Inter. Wetland may be ephemeral, and not HC during the dry season.
Wood Swamp	253	N	Unlikely HC. Woods Swamp is a likely source of recharge to AQ740 seasonally, however well capture zone is elongate perpendicular to groundwater contours and does not intersect the swamp. The direction of groundwater flow from the area of the swamp is in a southwest direction toward to coast.
Unnamed wetland (west of Pickles Rd)	945	NE	This mapped wetland is upgradient and with the longer-term capture zone for the well (>1 yr). The wetland likely contributes to AQ740 recharge but HC to subject well is unlikely, due to the distance between the sources, low rates of pumping and the low permeability of the fractured bedrock. Deeper fracture networks dip in a northeasterly direction according to geologic mapping, in an opposite direction to WTN 95563.
Johansen Swamp (east of Pickles Road)	1206	E	Unlikely HC. This swamp is more than 1 km from well and outside of Inferred well capture zone. The direction of groundwater flow from the area of this swamp is in a southwest direction toward the coast.

Vulnerability to Sea Water Intrusion

The site and aquifer conditions, and well characteristics were assessed to determine the vulnerability to sea water intrusion. The completed assessment is included in Appendix A, Table A.6. The well was determined to have a low risk of sea water intrusion: the depth of the well is above sea level, the well is sited inland from the coast, and water quality is fresh and below the operational objectives for prevention of sea water intrusion.

Closure and recommendations

The long-term capacity of WTN 95563 was determined to be 8.43 m³/d. There were minor differences between the long-term capacity determined by the consultant (9.459 m³/d) and the FLNR estimate. The revised long-term capacity was based on a conservative approach including projection of observed drawdown during the test to 180 days, which is more consistent with the observed period of minimal aquifer recharge during the dry season compared to the 100-day projection. The Safe Available Drawdown incorporated an estimated seasonal groundwater level variation of 1.3 m, and a 30% safety factor to account for well losses.

Potential pumping test interference between the subject well and the Museum well (WTN 93993) was inferred from the test data. However, the test pumping rate was 89% greater than the

proposed long-term capacity, and the interference drawdown at the test pumping rate was estimated to represent <0.5% of the estimated Safe Available Drawdown for this well. No interference was noted within the two other wells monitored during the test. Based upon this assessment, adverse impacts of the diversion on water availability for adjacent groundwater users are not anticipated.

If granted, groundwater licence conditions should include metering of water use. It is also recommended for the operators to monitor groundwater levels on a monthly or greater frequency to understand variability of groundwater conditions seasonally and over time.

Hydraulic connectivity

The onsite well and aquifer locally are likely hydraulically connected to the onsite wetland, however the degree and seasonality of connectivity is not fully understood. If the wetland is dry or seasonally perched relative to groundwater levels, then adverse impacts of the groundwater diversion on Environmental Flow Needs are not anticipated. Additional evaluation of subsurface soil and sediment properties within the wetland areas would be helpful to verify presence or absence of confining materials such as clay or till which could attenuate the effects of induced recharge due to groundwater pumping.

Well compliance concerns

Based on the photo of the well in the technical report (Photo 2, p.15), improvements to the well head, including replacement of the older sanitary seal cap, and regrading of the area around the well are recommended to ensure compliance with the *Water Sustainability Act* (WSA), Ground Water Protection Regulation (Province of B.C., 2014; Province of B.C., 2016b).

Well inventory

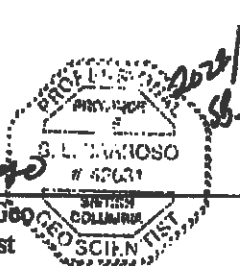
Elanco (2021) reports several errors in the GWELLS database, including incorrect siting of wells on the adjacent highways yard property, and recording of the finished well depth of WTN 34154, which should be corrected during processing of other groundwater licenses within this area.

Respectfully submitted,

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Reviewed technical assessments and submissions:

May 5, 2021. Elanco Enterprises Ltd. "Re: Hydrogeological Assessment of Yield and Source Protection for a Well Located at 1151 Northwest Road, Denman Island, B.C." Prepared for Denman Housing Association.

August 10, 2021. Integral Group. "Denman Green – Water Plan: Potable Water Plan – Denman Green Housing Development." Prepared for Denman Housing Association.

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February 16, 2022. Integral Group. Re: Denman Green Affordable Housing – Licence Application Water Use Update.

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**APPENDIX A
PUMPING TEST ANALYSIS**

APPENDIX A

TABLE A.1: WELL CONSTRUCTION AND PUMPING TEST SUMMARY INFORMATION

1. Identification	Key	Units	Pumping Well	Information Source
Owner Well Name	-	-	Well 95563	
Well Identification Number	-	-	13957	Consultant
Well Tag Number	-	-	95563	GWELLS
Address / Auth. File Number	1151 Northwest Road, Den		20018264	Authorizations
Location (Easting, Northing)	-	m,m		GWELLS
2. Well Construction and Aquifer Information				
Ground Elevation	a	m asl	42	Consultant
Stckup (positive is above ground)	b	m	0.6	Consultant
Well Diameter	-	m	0.15	Consultant
Top of Casing Elevation	c=a+b	m asl	42.6	Calculated
Screen Top Depth	d	m bgl	-	Consultant
Screen Bottom Depth	e	m bgl	-	Consultant
Screen Length	f=d-e	m	-	Calculated
Well Depth	-	m	15.80	GWELLS
Depth to Fracture zone	g	m bgl	4.88	Consultant
Aquifer Type - Subtype	-	-	5a	Consultant
Aquifer Thickness	-	m	0.3	Consultant
Aquifer Material	-	-	shale	Consultant
Distance to Queen's Ditch (onsite wetla	-	m	20	Consultant
3. Water Level Information				
Pre-test Water Level	h	m btoc	1.700	Consultant
Water Level Elevation	j=c-h	m asl	40.900	Consultant
Water Level Date	-	yyyy-mm-dd	2021-Apr-09	Consultant
Estimated Seasonal Variation	j	m	1.30	Consultant
Estimated Lowest Level	k=h-j	m btoc	3.00	Calculated
4. Pumping Test Information				
Pumping Test Start Date	-	yyyy-mm-dd	2021-Apr-09	Consultant
Pumping Test End Date	-	yyyy-mm-dd	2021-Apr-12	Consultant
Duration	-	min	4320	Consultant
End Pumping Level	l	m btoc	4.84	Consultant
Total drawdown	-	m	3.14	
Duration Recovery	-	min	175	Consultant
Recovery after 4320 min	-	m btoc	2.05	Consultant
% Recovery after 4320 min		%	89%	Calculated
Recovery Level after 175 min	m	m btoc		Estimated, Calculated
% Recovery	m=(h-m)/(h-l)	%	-	Calculated
Pumping Rate enter as either L/s, lqpm, Usgpm, m³/s or m³/d	n	L/s	0.18	Consultant
		L/s	0.18	Calculated
		Imp GPM	2.43	Calculated
		US GPM	2.92	Calculated
		m³/s	0.000184	Calculated
		m³/d	15.9	Calculated
5. Aquifer Properties				
Transmissivity	o	m²/s	7.6E-05	Calculated
		m²/d	6.5E+00	Consultant
Storativity (actual or estimated)	p	-	5.00E-03	Consultant
6. Safe Estimated Well Yield				
Proj. Drawdown at 100 days	q	m	3.2	Consultant
Proj. Drawdown at 180 days	q	m	3.28	Estimated from plot
Specific Capacity	o=n/q	L/s/m	0.056	Calculated
Interference From Other Wells	r	m	0.00	Consultant
Top of Screen/Fracture Zone	s=d or g	m bgl	4.88	Calculated
Available Drawdown	t=s-k-b-r	m	2.48	Calculated
Safe Available Drawdown (70%)	u=t*0.7	m	1.74	Calculated
Safe Estimated Sustainable Yield	v=o*u	L/s	0.10	Calculated
Safe Estimated Sustainable Yield	v=o*u	m³/d	8.43	Calculated

Notes: asl = above sea level, bgl = below ground level, btoc = below top of casing, gpm = gallons per minute, Imp=Imperial/UK, m = metres, L = litres, s = second, min = minute, d = day

TABLE A.2: BOREHOLE LITHOLOGY

Ground Elevation: 42 m asl

[illegible]

APPENDIX A

TABLE A.3: Pumping Test Summary for WTN95563

Data Analysis by:	S. Barroso	
Test Date:	2021-Apr-09	
Pumping rate:	15.93	[m ³ /d]

Note: n.m. means no match, n.c. means not calculated, n.d. means not determined

Theis Curve Matching Method

Match Point				
Time, t [min]	Drawdown [m]	W(u)	1/u	u
900	20	30	3000	0.0003333

Cooper-Jacob Straight Line Method

Drawdown per log cycle [m]	x-Intercept t ₀ [min]	Comments
0.2	nc	Radial flow 60-3375 minutes

Neumann Curve Matching Method

Type Curve	β	1/U _a or 1/U _b	U _a or U _b	W(U _a , U _b , β)	Drawdown, s [m]	Time, t [min]
A Curve	n.m.	n.m.	n.c.	n.m.	n.m.	n.m.
B Curve	n.m.	n.m.	n.c.	n.m.	n.m.	n.m.

Theis Recovery Method

Residual DD per log cycle		Comments
	[m]	
Δs' ₁	1.8	Best-fit line from t/t'=100 to 700 (del s' calculated per log cycle)
Δs' ₂	0.8	Best-fit line from t/t'=1075 to 4298 (del s' calculated per log cycle)

Results Summary for WTN95563

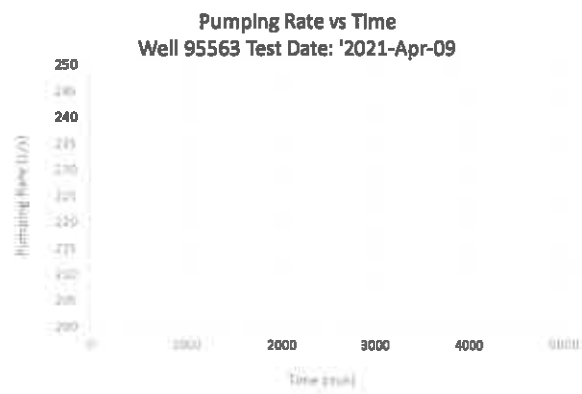
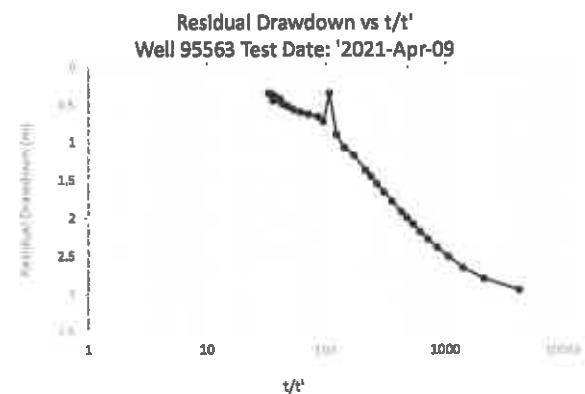
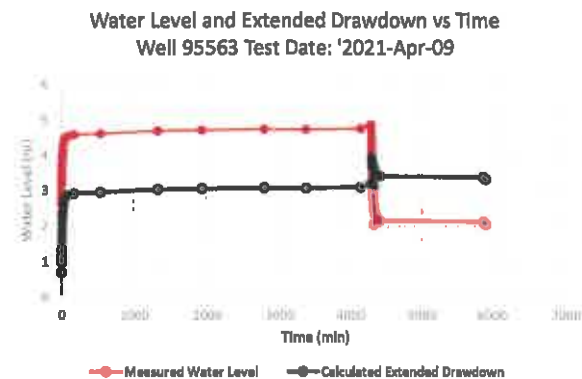
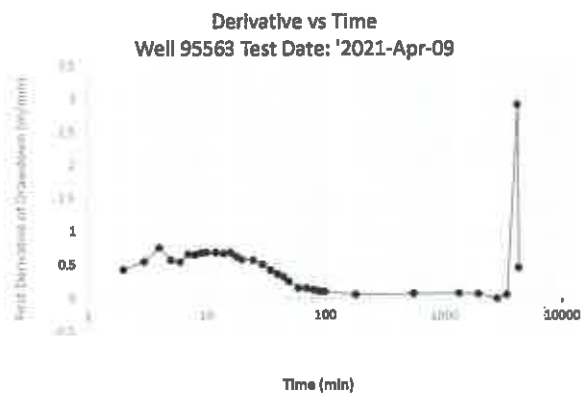
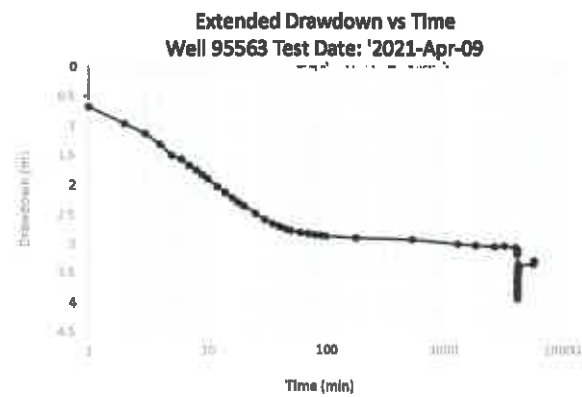
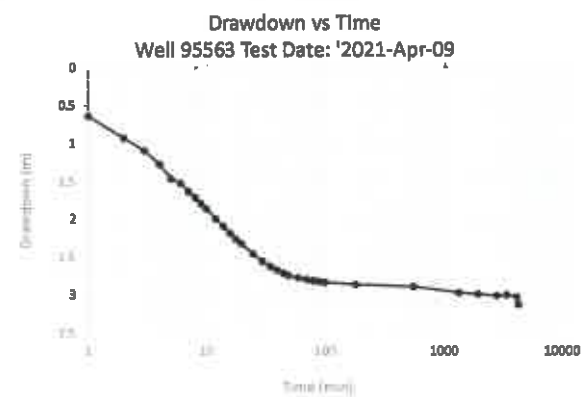
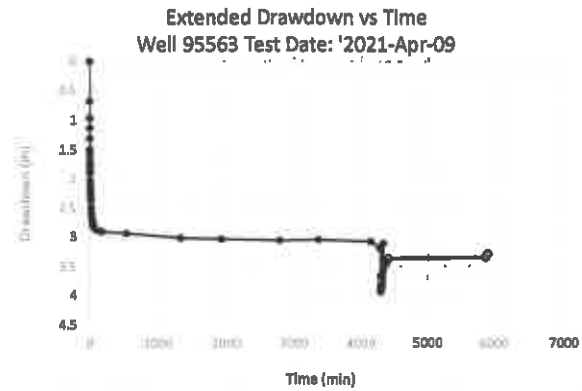
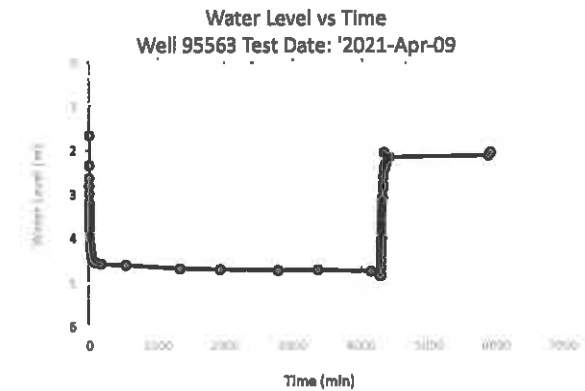
Method	Transmissivity		Storativity		Conductivity	
	T1 [m ² /d]	T2 [m ² /d]	S1 [-]	S2 [-]	K1 [m/d]	K2 [m/d]
Theis	1.90	n.c.	n.c.	n.c.	6.34	n.c.
Jacob	14.58	n.c.	n.c.	n.c.	48.60	n.c.
Neumann	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.
Theis Recovery	1.62	3.65	n.c.	n.c.	5.40	12.15

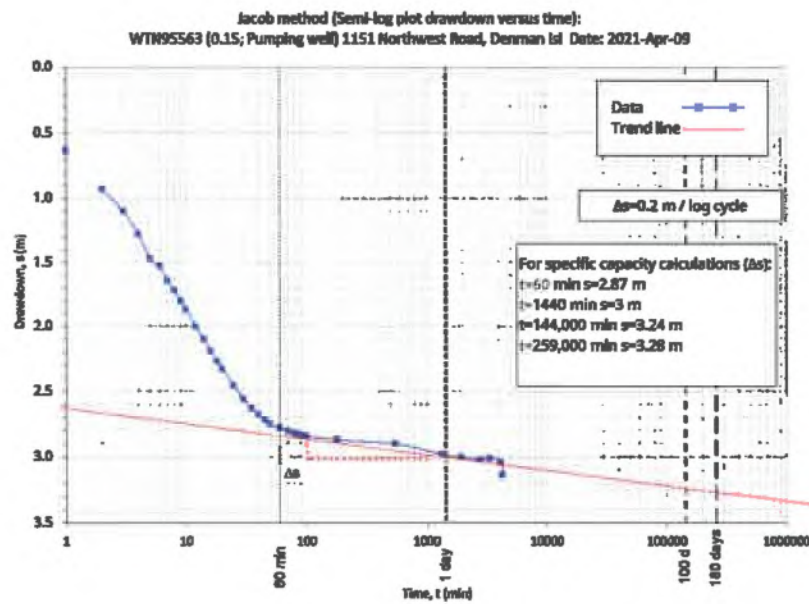
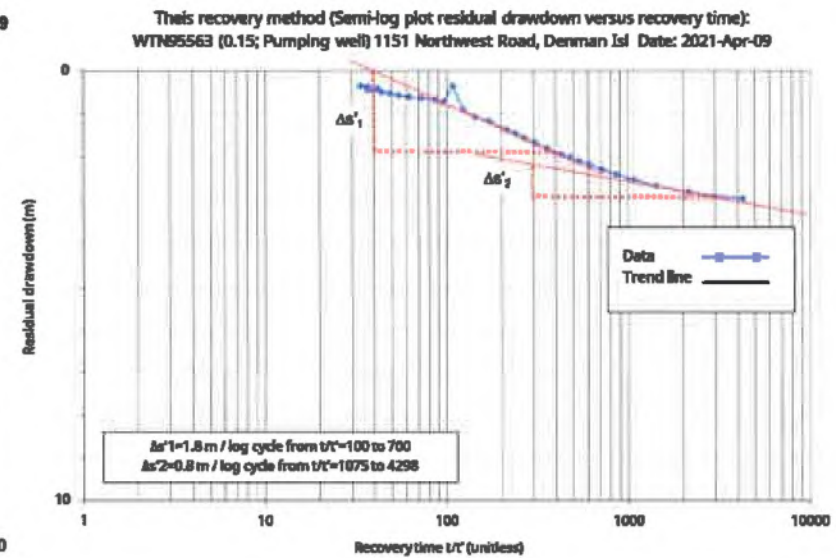
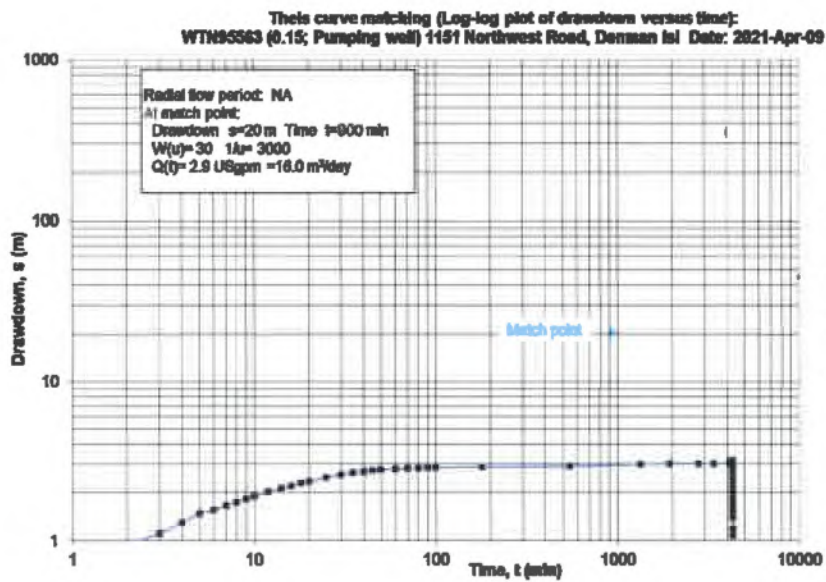
Notes: nc=Not calculated, e.g. storativity not calculated (not valid) for pumping well. For derivation of K, assumption of methods is that well is fully penetrating the aquifer; therefore test provides a conservative estimate of K if the well is only partially penetrating the aquifer. Total aquifer thickness estimated as 0.3 m (1 ft), based on 0.3 m (1 ft) per reported fracture for well intercepting conductivity is thought to be underestimated if aquifer thickness is considered as the vertical depth of the well bore.

Specific Capacity and Yield Estimate

Time [varies]	Drawdown [m]	Specific Capacity [m ³ /min/m]	Long Term Capacity [m ³ /min]	*Long Term Capacity (Q _{calc})=0.7*specific capacity*available drawdown, if Q _{calc} > Q _{pump} , long term capacity for well taken as Q _{pump} (pumping rate during test). Available drawdown calc as depth between static water level and depth of major water-bearing fracture.
1 hour	2.87	5.55		
1 day	3	5.31		
100 days	3.24	4.92	8.54	

APPENDIX A: PUMPING TEST GRAPHS





APPENDIX A**TABLE A.5: Well Capture Zone Calculations For WTN95563**References: Well Protection Tool Kit, and Fetter (2001) *Applied Hydrogeology*, and Lowen *Hydrogeology*, 2018 <https://www.lantzville.ca/ci>

Term	Symbol/Formula	Units	Value	Source
Aquifer Thickness	H	m	0.3	FLNR
Transmissivity	T	m ² /d	6.5232	FLNR
Hydraulic Conductivity	K	m/d	21.744	FLNR
Hydraulic Gradient	I = dh/dl	-	0.02	Consultant
Effective porosity	theta	-	30%	Consultant
Pumping rate (test)	Q	m ³ /d	15.93	Consultant
Pump rate (proposed license demand)	Q	m ³ /d	8.43	FLNR

Up-gradient width	$B = Q/(HKI)$	m	64.62
Width at well	$A = B/2$	m	32.31
Distance well to down-gradient boundary	$x_0 = Q/(2PIHKI)$	m	10.28

Average Linear Velocity (Wyssling Parameter)	$v_0 = K/\theta$	m/d	1.45
--	------------------	-----	------

Travel time, days

days	1	10	50	365
$d = v_0 \cdot t$	1.4	14.5	72.5	529.1
$S_u = (+d + \sqrt{d^2 + (8 \cdot x_0)})/2$	6.2	26.0	89.2	548.9
$S_l = (-d + \sqrt{d^2 + (8 \cdot x_0)})/2$	4.8	11.5	16.7	19.8

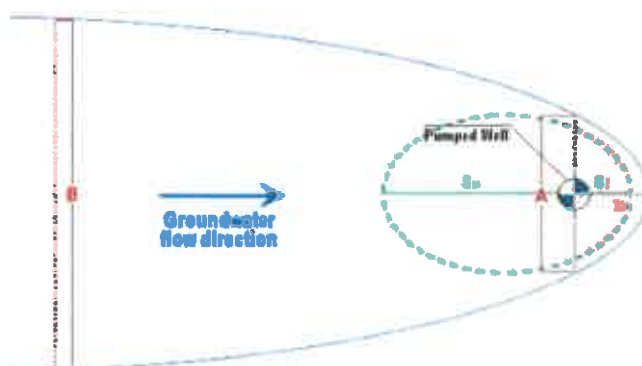
Well ToolKit - Appendix 2.3Source: https://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/wells/well_protection/pdfs/step2.pdf

Term	Symbol/Formula	Units	Value
Pumping rate	Q	L/s	0.10
Transmissivity	T	m ² /s	0.0001
Hydraulic Conductivity	K	m/y	7936.6

Note: Q and T below are conversions from m³ to L and days to seconds/years.

Capture Zone Width up-gradient	$Y = Q/(2000 T I)$	m	32.31
Distance well to down-gradient boundary	$X = Y/PI$	m	10.3

Travel time	$dtot = t K I/n$
Years	m
1	529
5	2646
10	5291



APPENDIX A

TABLE A.6: Saltwater intrusion vulnerability assessment criteria for WTN93563

Assessment criteria	Characteristics associated with increased saltwater intrusion hazard	WTN93563 Characteristics	Observations
A. Well construction and siting			
Well depth (m bgl)	Deeper well that is close to drill into fresh-saltwater transition zone, or below zone	15.80	Relatively shallow well depth
Well head elevation (masl)		82.6	
Bottom of well (masl)	Wells drilled below sea level, with static or pumping water level below sea level	28.20	Bottom of hole above sea level
Static water level (lowest reported) (masl)	Static water level at or below sea level	3.00	
Elevation of principal fracture (masl)	Elevation of principal fracture at or below sea level	4.88	Principal fracture above sea level
Distance of well from coast (m)	Wells within <1 km from the coast (close proximity to coast)	317	Less than 500 m from shore in fractured rock aquifer
B. Aquifer and physiographic criteria			
Aquifer lithology (subtype)	Properties of aquifer influence potential mechanism of intrusion, e.g. through upconing or inland migration of freshwater-freshwater interface during well pumping, or interception of well with and mixing of water from saline	Sedimentary bedrock (5a)	Hard and soft layered shale
Hydraulic connection between aquifer and marine coast	Water levels can be tidally influenced, indicating likelihood of hydraulic connection between aquifer and sea	Not hydraulically connected to sea	No apparent tidal influence on groundwater level hydrograph indicates. Greater than 25 m vertical separation between bottom of well and sea level.
Physiographic indicators	Areas of low topographic gradient, peninsulas, small islands have greater intrinsic vulnerability	Lower risk area	Located in an upland area, inland from the coast
Aquifer vulnerability to saltwater intrusion (risk class)	Hazard rating moderately high to high (in marine areas)	3 (Moderate)	Pumping and coastal hazard vulnerability classification
C. Water quality criteria compared to operational			
Chloride	Above Operational Threshold [150 mg/L]	28 (January 12, 2021) 91.9 (April 12, 2021)	Below operational threshold
Electrical conductivity	Above Operational Threshold [1000 µS/cm]	LAB 350 (January 12, 2021) 388 (April 12, 2021)	Field measurements of conductivity ranged from a 339 µS/cm to 308 µS/cm during April 2021 test, decreasing slightly over period of pumping. All EC values below SWI operational threshold.
Total dissolved solids, TDS	Above Operational Threshold [700 mg/L]	190 (January 12, 2021) 220 (April 12, 2021)	Below operational threshold
Change in water quality during well operation	Increase in salinity during pumping (correlated to increase in pumping rate, or increased duration of pumping)		SWI indicators increased slightly between winter and spring sample (following pumping test). Salinity (EC) decreased during pumping test.
Change in water quality long-term	Increase in salinity over long-term		Not assessed
Comparison of water quality to marine source (Piper-plot analysis)	Water quality on piper plot in the range of values for marine source, or mix of marine with other (fresh or marine) groundwater source		Not assessed
Water quality general observations	Comments related to when and how well sampling was completed, other observations		Water quality fresh overall. April 2021 lab results: Total manganese 0.390 mg/L and higher than drinking water quality guidelines (MAC 0.100 mg/L and AO 20 µg/L), total iron 0.812 mg/L (higher than AO 0.300
*Water quality from sample collected near end of pumping test on April 9-12, 2021, values from laboratory results.			
SEA WATER INTRUSION SUSCEPTIBILITY RATING: LOW			

*Water quality from sample collected near end of pumping test on April 9-12, 2021, values from laboratory results from this and

References:

Health Canada Drinking Water Quality Guidelines Criteria: MAC=Maximum Acceptable Concentration, AO=Aesthetic Objective
 Warner, et al (2015). Seawater intrusion processes, investigation and management: Recent advances and future challenges.
Advances in Water Research .
 Krause and Allan (2016). Chemical Indicators of saltwater intrusion for the Gulf Islands, British Columbia.
 USEPA (1992). Seawater Intrusion Control in Coastal Washington Department of Ecology and Practice.
 Province of BC (2017). Best practices for prevention of saltwater intrusion.
 Sivak and Wal (2021). GIS Modelling of Sea Water Intrusion Risk along British Columbia's Coast. WSS 2021-06.

File No.: DE-6500-02
(Housing and Short Term
Rentals Review Project)

DATE OF MEETING: April 29, 2022
TO: Denman Island Local Trust Committee
FROM: Sonja Zupanec, Island Planner
Northern Team
SUBJECT: Draft Project Charter for the 'Housing and Short Term Rentals Review Project'

RECOMMENDATION

1. That the Denman Island Local Trust Committee amend the title and description of the second Top Priority Project to be *“Denman Island Housing and Short Term Rentals Review Project – Targeted public engagement with First Nations, residents, external agencies and local organizations to update the Official Community Plan and Land Use Bylaw with policies and regulations to strengthen housing options and affordability on the island.”*
2. That the Denman Island Local Trust Committee approve the project charter for the “Denman Island Housing and Short Term Rentals Review Project” dated April 29, 2022.

REPORT SUMMARY

The purpose of this report is to respond to the Denman Island Local Trust Committee’s (LTC) request for staff to prepare a draft project charter to guide the LTC’s Housing and Short Term Rental Review project for the 2022/2023 fiscal year.

Background

At the regular business meeting on March 22, 2022 the Denman Island Local Trust Committee passed the following resolution:

DE-2022-034

It was MOVED and SECONDED,

that the Denman Island Local Trust Committee request staff to prepare a project charter with respect to the Denman Island Official Community Plan and Land Use Bylaw review for housing. **CARRIED**

A draft project charter is presented in Attachment 1 for LTC consideration in order to advance the first phase of this multi-year project.

ANALYSIS

The LTC indicated during the business case development stage of this project that they believe there would need to be a public engagement effort larger in scope than could be accommodated by existing staffing resources and should therefore be led by consultants. Consultant involvement puts the scope of the project into an operational category that staff have been classifying as “extraordinary.” A Regional Planning Team member or Island Planner

may be the project manager to oversee the retention of a consultant who would be responsible for designing and facilitating public engagement prior to March 2023. The draft project charter identifies the role of the Denman Island Advisory Planning Commission as central in supporting the consultant early on, to develop the draft engagement plan for future LTC consideration. The public engagement is not prescribed in the workplan but is proposed to be commence in the fall/winter 2022, with a final report of recommendations to the LTC by March 2023. Phase two of the project would commence in the next fiscal year with a reduced budget to focus on the drafting of necessary bylaw amendments and the legislative and legal review.

RATIONALE FOR RECOMMENDATION

Staff is recommending that the LTC endorse the project charter as presented in order to initiate the first phase of the project prior to the local government elections.

ALTERNATIVES

1. **Amend the draft Project Charter.** The LTC can amend the draft project charter to further clarify the objectives, scope, out of scope and work plan components. If minor amendments are necessary the following resolution can be considered in addition to the staff recommendation on page one of this report:

“That the Denman Island Local Trust Committee amend the draft project charter for the “Denman Island Housing and Short Term Rental Review Project” by (specify amendments).”

NEXT STEPS

Upon LTC approval of the Project Charter, staff will create a project web page and initiate the necessary procedure to secure a contractor to undertake the first phase of this project.

Submitted By:	Sonja Zupanec, RPP, MCIP, Island Planner	April 21, 2022
Concurred By:	Robert Kojima, Regional Planning Manager	April, 21, 2022

ATTACHMENTS

1. Draft Project Charter – April 29, 2022

Denman Island Housing and Short Term Rentals Review Project - Charter v1

Denman Island Local Trust Committee

Date: April 29, 2022

Purpose: Through the use of a consultant, engage the APC, community members and stakeholders to assist in identifying necessary updates to the Denman Island Official Community Plan and Land Use Bylaw to increase housing options for affordable and attainable housing. Develop recommendations for policy and regulatory amendments that will minimize impacts of housing generally to better protect the environment while supporting equity, diversity and inclusion.

Background: Low diversity of housing types on Denman Island and low rental vacancy are the prominent housing challenges on Denman Island. The Denman Island Local Trust Committee initiated a budget request in 2021 for a consultant to conduct public engagement related to housing on Denman island and Trust Council approved \$13,500 for the 2022/23 fiscal. An additional estimated \$8,000 will be required in fiscal 2023/24 to develop the necessary bylaw amendments and conduct the legislative and legal review to complete the project.

Objectives

Meaningful engagement with First Nations, residents, title holders, local organizations and external agencies to explore possible policy updates to the Official Community Plan and regulatory improvements to the Land Use Bylaw that strengthen housing options across the island.

In Scope

Secure a contractor to design and facilitate a community engagement process to explore the following topics:

- Recommendations in the 2018 Islands Trust Northern Housing Needs Assessment;
- Section 473 of the Local Government Act regarding housing policies;
- Secondary suite, travel trailer and short term rental regulations;
- Flexible housing.

Out of Scope

- Review of Development Permit Areas.
- Review of land use designations or zoning categories.
- Review of housing on parcels in the Agricultural Land Reserve (*in-scope for Farming Regulations Review Project 2022/23*).

Workplan Overview

Deliverable/Milestone PHASE 1	Date
Planning staff to finalize consultant contract	May-July 2022
Consultant to co-develop engagement plan with Advisory Planning Commission for LTC endorsement	Summer-Fall 2022
Consultant and Island Planner to coordinate and facilitate First Nation consultation	ongoing
Mapping, data analysis and administrative support for public engagement	ongoing
Public Engagement (surveys, workshop, focus group meetings or combination as determined by plan)	Winter 2022/23
Consultant present final report of recommendations to LTC	March 2023

Project Team

<i>Island Planner</i>	<i>Project Manager</i>
<i>Consultant</i>	<i>Project Lead</i>
<i>Advisory Planning Commission</i>	<i>Early engagement resource for consultant</i>
RPM Approval: <i>Robert Kojima</i> Date: April 29, 2022	LTC Endorsement: Resolution #: Date:

Budget

Budget Sources:		
Fiscal	Item	Cost
2022/23	Consultant	\$10,000
	First Nations Consultation	\$2500
	Mapping, data analysis, admin	\$1000
	Total	\$13,500

