



**KOERS
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May 30, 2022
2237-01

District of Lantzville
PO Box 100
7192 Lantzville Road
Lantzville, BC V0R 2H0

Attn: Fred Spears, Director of Public Works

**RE: 6701 Harwood Drive
OCP & Zoning Amendment Application for Proposed 15 Lot Residential Subdivision
Preliminary Municipal Servicing Review**

As requested, we have carried out a preliminary servicing review of the request to amend the OCP and rezone this 2.03 ha property from the current Estate zoning to Residential 2 (R2) zoning to allow for a proposed 15 lot residential subdivision (see attached Conceptual Site Servicing Plan Dwg No. SK1, Rev A by Cascara Consulting Engineering Ltd.).

The information we have consulted in carrying out this review is listed in **Table 1**.

Table 1 - Project Documents/Reports/Studies

<i>Document</i>	<i>Date</i>	<i>Author</i>
<i>Proposed Development Documents</i>		
1 Application covering letter (2 pages)	Mar 24, 2022	Seward Development Inc.
2 Conceptual Servicing Report (9 pages)	Mar 4, 2022 Rev 1	Cascara Consulting Engineers Ltd.
3 Environmental Review (9 pages)	Feb 9, 2022	Toth and Associates Environmental Services
4 Site Plan Showing Proposed Lots 1 to 15, Layout 3	Feb 1 2022	Harbour City Land Surveying Ltd.
<i>District of Lantzville Water, Sanitary Sewer & Storm Drainage Studies</i>		
5 Water Master Implementation Strategy	Feb 26, 2021	Koers ⁽¹⁾
6 Lantzville Upper Reservoir Replacement, Preliminary Design Brief, Tech. Memo No. 2	Dec 8, 2017	Koers ⁽¹⁾
7 Water Master Plan	Nov 2017	Lanarc Consultants Ltd.
8 Storm Drainage Study	March 2007	Koers ⁽¹⁾
9 Sanitary Sewer Servicing Feasibility Study	May 2005	Koers ⁽¹⁾
<i>District of Lantzville Bylaws</i>		
10 Bylaw No. 175, 2020 Subdivision and Development of Land	Feb 10, 2020	District of Lantzville
11 Bylaw No. 226, 2020 Water (Demand) Standard	Feb 10, 2020	District of Lantzville

.../2

⁽¹⁾ Koers & Associate Engineering Ltd.

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1 WATER

The property is located within the District's water system service area (OCP Map 6).

1.1 Water Supply

The proposed development is located within the District's 158 m pressure zone which is serviced by the Harwood Road reservoir (158 m HGL). This reservoir can be provided water from three separate water supply sources in the following order of priority:

- District of Lantzville wellfield (via the booster pump station at the Ware Rd reservoir,
- City of Nanaimo water connection, and in an emergency from the
- Foothills well(s)) via the upper 342 m reservoir and a series of PRV stations

We recommend that prior to the submission of the detail design drawings for subdivision, further study be undertaken to confirm that adequate water supply exists to meet the proposed development's domestic and fire fighting demands.

1.2 Pressure Zone, Property Elevation, & Available Pressure

The property is located within the service area of the Harwood Road reservoir (158 m HGL).

Based on the contours (2 m interval) shown on the Conceptual Site Servicing Plan Dwg SK1, Rev A by Cascara Consulting Engineering Ltd, ground elevations on the property range from a high of 126 m in the southwest corner to a low of 116 m in the northeast corner. The resulting estimated maximum available static pressure on the property ranges from:

- 313 kPa (45 psi) in the southwest corner, to
- 415 kPa (60 psi) in the northeast corner

The District's design standards note that watermains shall not be extended unless the residual pressure during peak daily demand will be greater than 275 kPa (40 psi).

We recommend that prior to the submission of the detail design drawings for subdivision, further study and computer modelling analysis be undertaken to confirm if the minimum residual pressure of 275 kPa (40 psi) could be provided during future (OCP Build-Out) peak daily demand when serviced from the 158 m pressure zone or if other water system improvements are required.

1.3 Reservoir Storage

The Harwood Road reservoir presently has 1/3rd (660 m³) of the recommended ultimate design storage volume of 1,963 m³ (see *Lantzville Upper Reservoir Replacement, Preliminary Design Brief, Technical Memorandum No. 2, December 8, 2017* by Koers & Associates Engineering Ltd. for the District of Lantzville).

.../3

District of Lantzville
Fred Spears

The current storage volume can provide a specific fire flow and service to a limited number of residential properties. A preliminary assessment, based on the reservoir sizing capacity formula in the MMCD Design Guidelines, 2014 would be needed to confirm the current storage allotment for fire flow and remaining capacity available to service single family residential properties based on the District's design water demand of 2.28 m³/day per connection for 1/3rd acre (0.135 ha) sized properties. It is understood the reservoir presently services 225 residential properties.

We maintain our recommendation that the planned expansion to the 158 m reservoir be undertaken prior to the ultimate build-out within the 158 m pressure zone service area. This expansion should be undertaken before the extension of the water distribution system to other neighbourhood areas shown in the District of Lantzville Water Master Plan, Nov 2017, e.g., the Winds Area, Clark Drive Area, Fernmar Road Area, Owen Road Area. We also recommend that prior to the submission of the detail design drawings for subdivision, further study be undertaken to confirm the number of single-family houses that can be serviced based on the available storage volume currently contained in the partially completed 158 m reservoir.

1.4 Fire Flow Availability, Watermain Extension & Looping

Fire fighting capabilities in this area are limited because of the low system pressure and available reservoir storage volume. Watermains should be looped and dead-ended mains should be avoided as much as possible to improve system operation and assist in maintaining water quality.

We recommend that the watermain design should be installed along both the north and west frontages of the property to enable future extension to lands beyond to the south and east and enable looping to Aulds Road.

If the future watermain extension is to service lands above the 130 m contour, the 158 m pressure zone will not provide the required 40 psi residual pressure and alternate water servicing will be required.

2 SANITARY SEWER SERVICING

The property is not located within the District's sanitary sewer collection system service area (OCP Map 7), and an expansion of the District's sanitary sewer service area is required to service this property. We also note that the District's sanitary sewer system feasibility study, dated May 2005, served as the basis for the development of the District's sanitary sewer system and was based on the District's OCP at that time.

We recommend that prior to the submission of the detail design drawings for subdivision, further study of the existing sanitary sewer collection system's ability to accommodate the flows from the proposed development be assessed and whether further downstream upgrades are required to service this development.

.../4

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3 STORM DRAINAGE

The property is located within the District's Huddlestone storm drainage catchment area. Stormwater runoff from the property enters the roadside ditch fronting the property along Aulds Road and then flows east to Harwood Dr, where it then flows north in the ditch down Harwood Drive towards Andrea Crescent. Drainage problems have been identified in the downstream reaches of this catchment area and the capacity and condition of the existing receiving drainage ditching and culverts downstream of the property are limited.

The District's *Bylaw No. 175, 2020 Subdivision and Development of Land* has specific requirements regarding the management of rainwater from development as noted in **Part 2: Professional Engineering Specifications, 2.5 Rainwater Management**, such as:

Item 9

- Live storage volume for the minor event (approximately 2 years) of 200 m³/ha of impervious surface,
- Maximum release rate of 5 L/s per ha of total catchment area.

Item 22

- Stormwater management system will normally be constructed on private property or on non-roadway lands dedicated to the Municipality.

We recommend that prior to the submission of the detail design drawings for subdivision, a stormwater management plan be prepared for this development which includes an assessment of the existing capacity and condition of the downstream drainage system. We further recommend that due to the known drainage issues within this catchment area, adequate space for onsite storm water storage facility be implemented as part of the overall site layout.

4 TRANSPORTATION

Based on our review of the District's Bylaw 175, we understand the following:

- For a Rural Local Road classification, development of a 3 m wide asphalt path is required along with an open drainage ditch on one side, and overhead hydro/tel/cable as per District Standard Dwgs No. RL1 (LV) and RL1.
- For an Urban Local Road classification, development of a 1.5 m wide concrete sidewalk on both sides (only one side for a low volume road) is required along with concrete curb and gutter and street trees on both sides, and underground hydro/tel/cable as per District Standard Dwgs No. UL1 (LV) and UL1.

.../5

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Fred Spears

We recommend that prior to the submission of the detail design drawings for subdivision, the District confirm whether Aulds Road is to be classified as a Rural or Urban Local Road under the proposed rezoning, and if the road would be classified as Low Volume.

5 HYDRO/TEL/CABLE/GAS

Depending on the road classification for Aulds Road, hydro/tel/cable service would be by overhead (Rural) or underground (Urban). For either classification, gas service will be required.

We recommend that prior to the submission of the detail design drawings for subdivision, the proposed road template be established and that the third-party utility providers be consulted to confirm that their infrastructure has adequate capacity to service this proposed development.

6 GEOTECHNICAL

A geotechnical report has not been submitted for this development.

Before proceeding to the detailed design stage, we recommend that a detailed geotechnical assessment of the proposed subdivision be undertaken to assess whether there are any problematic soil conditions or groundwater conditions that could negatively impact the proposed development.

We trust this review is sufficient for your needs at this time. Please contact us should you have any questions or if we can be of further assistance.

Yours truly,

KOERS & ASSOCIATES ENGINEERING LTD.

Chris Holmes, P. Eng.
Project Engineer



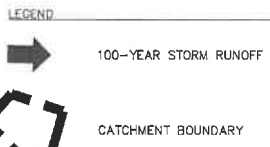
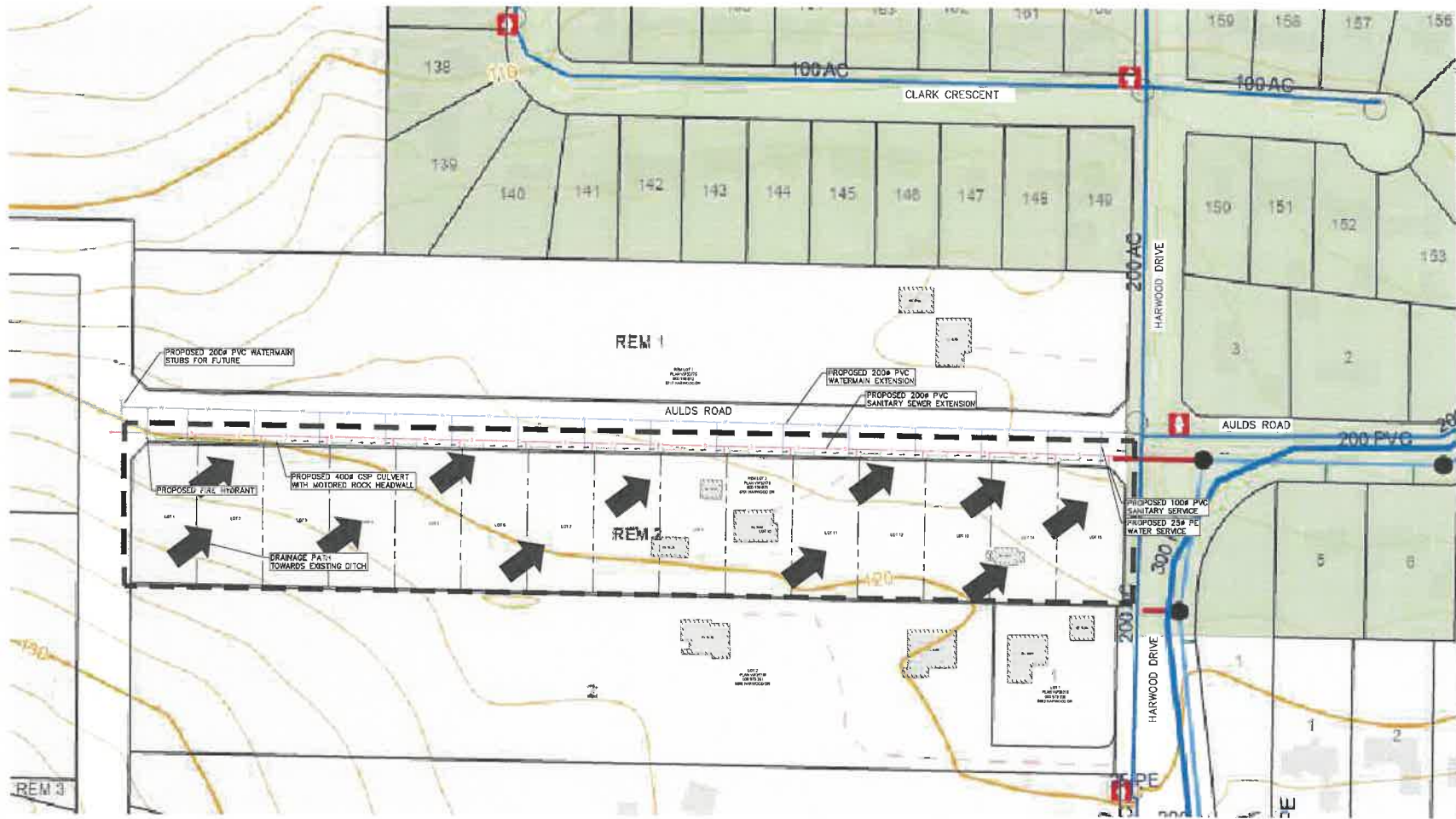
Rob Hoffman, P. Eng.
Project Manager

Permit to Practice No. 1001658

Attach.

- Cascara Conceptual Site Servicing Plan, Dwg No. SK1, Rev A

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PRELIMINARY
NOT FOR CONSTRUCTION



CLIENT R DOLAN CONSTRUCTION				
PROJECT 6701 HARWOOD DRIVE 15 LOT SUBDIVISION				
LOCATION LANTZVILLE, B. C.				
DRAWING TITLE CONCEPTUAL SITE SERVICING PLAN				
 CASCARA CONSULTING ENGINEERS LIMITED ERIC PERMIT No. 1000784 #206-335 WESLEY STREET NANANAO, BC V8R 2T5 TEL: 250.591.7364 EMAIL: info@cascara.ca				
DESIGN BY: BGF		CHECKED BY: COR		
DRAWN BY: BGF		APPROVED BY:		
SCALE:		SCALE: HORIZ: 1:750 VERT: N/A		
DATE: 2024/04/15		SHEET: 1 OF 1		
FILE NUMBER:		CITY DWG # PROJECT # 138-001 138-001		
DRAWING NUMBER: SK1		REV: A		

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