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December 16, 2022 File: 2257-02 (Rev. 1)

Comox Valley Regional District 770 Harmston Avenue Courtenay, BC, V9N 0G8

Attention:	Mr. Caley Leimert, EIT
	Engineering Analyst

RE: Radford Road & Curtis Road Area Conceptual Local Water Service Area Review (Revision No. 1)

We are pleased to present our letter report summarizing the conceptual plan developed for the potential creation of a Local Water Service Area (WLSA) operated by the Comox Valley Regional District for properties in the Radford Road & Curtis Road area.

1 STUDY AREA

1.1 Proposed WLSA Boundary

The boundary of the proposed WLSA and the properties to be serviced are shown below.



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Two servicing options were to be reviewed:

Option 1 – Properties in Area 1 (Radford Road area) Option 2 – Properties in Area 1 + Area 2 (Curtis Road area)

1.2 Water Model Analysis

The impact of servicing the Radford Road and Curtis Road area from the watermain on Lazo Road was reviewed by Koers & Associates under a previous assignment. Our letter to the CVRD dated January 20, 2022 (file no. 2169-01), indicates this proposed WLSA would have negligible impact on the existing CVRD and Town of Comox water systems.

2 CONCEPTUAL SERVICING PLAN

1.3 Water Distribution System

The conceptual servicing layout plan is shown in **Figure 1**. A Statutory Right-of-Way will be required across at least one property if Area 2 (Curtis Road area) is to be included in the proposed Water Local Service Area. A summary of the anticipated water system infrastructure for each service area is presented in **Table 1**.

Description N	lotes	Area 1 (Radford Rd area)	Area 2 (Curtis Rd area)	Combined Total
Bulk Water Meter	(1)	1	-	1
No. of Water Service Connections	(2)	69	31	100
Length of Watermain Pipe		1,285	705	1,990
No. of Fire Hydrants	(3)	10	5	15
No. of Air Release Valves	(4)	5	1	6

Table 1 – Water Distribution System Infrastructure Summary

Notes:

- (1) A single bulk water meter would meter all water entering the WLSA. Bulk metering of the WLSA is required because it would be part of the Comox Valley water system.
- (2) All properties within Area 1 and Area 2 would be provided a metered water service connection.
- (3) It is assumed fire hydrants would be installed at a maximum spacing of 150 m.
- (4) Air release valves would be installed at all high points along the watermain.



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1.4 Master Meter Location

The water system would connect to the existing Town of Comox owned watermain (300 mm dia.) along Lazo Road. A single connection to the main would be made and it would be equipped with a bulk meter. For this servicing study, the connection is shown at the Lazo Rd/Radford Rd intersection because of its central location within the study area. An alternate connection location would be at the Wallace Cres/Lazo Rd intersection.

1.5 System Pressures

The Lazo Road watermain is serviced by two water storage reservoirs (Comox Reservoir and Crown Isle Reservoir), both with a top water level elevation of 89 m geodetic. The estimated resulting static pressures within each servicing area is summarized below.

Area 1 – Radford Road area

The elevation of the ground ranges from:

- a low of ±4 m geodetic (south end of Andrew Road)
- a high ±17 m geodetic (at the south end of Kinnikinik Way on 527 Kinnikinik Way).

These elevations will generate a static pressure ranging from:

- a high of 830 kPa (121 psi) south of Andrew Road and
- a low of 705 kPa (102 psi) at the south end of Kinnikinik Way.

Area 2 – Curtis Road area

The elevation of the ground ranges from:

- a low of ±3 m geodetic (north end)
- a high ±24 m geodetic (at the south end on 356 Curtis Rd).

These elevations will generate a static pressure ranging from:

- a high of 840 kPa (122 psi) at the north end of Curtis Rd
- a low of 635 kPa (92 psi) at the south end on 356 Curtis Rd

A Pressure Regulating Valve (PRV) would be required at each property. PRVs on private property are typically installed inside the home and are the responsibility for the homeowner to maintain.



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3 COST ESTIMATE

3.1 Definition, Class D

The estimated costs in this report are Class D (\pm 50%) as defined by Engineers and Geoscientists BC as:

"A preliminary estimate which, due to little or no site information, indicates the approximate magnitude of cost of the proposed project, based on the client's broad requirements. This overall cost estimate may be derived from lump sum or unit costs for a similar project. It may be used in developing long term capital plans and for preliminary discussion of proposed capital projects."

3.2 Source Data

Cost estimates are derived from on our in-house construction lump sum and unit cost data of similar municipal infrastructure construction projects for the mid-Vancouver Island area.

3.3 Time Frame

Construction cost estimates have a limited life span and are subject to inflation and market conditions. The estimates in this report are as of <u>August 2022</u> when the Engineering News Record Construction Cost Index (ENR CCI) was <u>13,171</u> and the local (Vancouver Island) construction market was considered to be active.

Significant inflationary pressures began to occur earlier this year and are expected to continue over the immediate term. The estimated project costs (Class D) will need to be reviewed and updated as part of future project budget planning processes, beginning as early as next year.

3.4 Cost Estimate Summary

A summary of the project cost estimate (Class D) for Option 1 (Area 1) and Option 2 (Area 1 + Area 2) is presented in **Table 2**. A cost breakdown of the individual items and the contingency allowances included in each estimate are presented in the attached **Table 3** and **Table 4**.

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lt o vo		Estimated Cost (Class D)			
No.	Description	Option 1 (Area 1)	Option 2 (Area 1 & 2)		
Α	A Water System Cost		\$ 2,323,695		
В	B No. of Water Service Connections		100		
Estimated Cost per Connection		\$ 24,135	\$ 23,237		
CVWS Capital Improvement Cost Charge		\$ 3,389	\$ 3,389		
Estimated Total Cost per Connection		\$ 27,524	\$26,626		
Estimated Total Cost per Connection (Rounded)		\$ 27,500	\$26,600		

Table 2 – Water Distribution System Estimated Cost (Class D)

Notes:

A Water System Cost

The estimated costs include installation of bulk water meter, watermains, fire hydrants, air release valve assemblies, service connections from the main to the property line, water meter (meter box and lid, meter setter, water meter) road reconstruction for 50% of the watermain trench and where trenching across the road is required for service connection installations, and boulevard reinstatement.

The estimated Water System Cost (Item No. A) includes allowances for:

- Project contingency
- Engineering
- Construction cost inflationary allowance of 5% per year for two years (10% cumulative) assuming project approvals, preparation of detailed design drawings, project tendering and project award, would be completed by November 2024.

No specific allowances have been made for:

- Land acquisition
- Archeological Investigation or permitting
- Environmental Assessment
- Federal or Provincial project grant funding reporting requirements
- CVRD administration
- Legal surveying
- Interim financing
- Installation of water and sewer services by each homeowner from the property line to their home
- Decommissioning on-site water well(s).

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B CVWS Capital Improvement Cost Charge

This cost is payable by each parcel owner whose parcel is added to the Comox Valley water supply system as per the Comox Valley Water Supply Capital Improvement Charge Bylaw No. 2350, 2001. The \$3,389 per connection is for Single Family Residential use and has been included in the Estimated Total Cost per Connection shown in **Table 2**.

4 CLOSURE

We trust this report is sufficient for your needs at this time and we would be pleased to assist the CVRD in advancing the project further with the development of preliminary design drawings, which would facilitate the updating of the construction cost estimates.

Please call if you have any questions.

Yours truly,

KOERS & ASSOCIATES ENGINEERING LTD.

Matt Palmer, P.Eng. Principal

Permit to Practice No. 1001658

Attachs.

- Figure 1 Conceptual Servicing Plan
- Table 3 Radford Road Area Project Cost Estimate
- Table 4 Radford Road Area & Curtis Road Area Project Cost Estimate



SCALE	1:2500			
DWG No.		FIGURE	1	J





Comox Valley Regional District	File:	2257
Radford & Curtis Road Area	Date:	Dec 16, 2022
Water Local Servicing Area Review		

Item	Descrption		Quanti	ty	Unit	Estimated Cost
No.	•				Cost	(Class D)
	Service Area 1 (Radford Rd)					
1	Bulk Water Meter in Kiosk/Chamber		1	ea.	\$ 150,000	\$ 150,000
2	Watermain Pipe Installation & Tie-ins		1,285	lm	\$ 350	\$ 449,750
3	Water Service Connections		69	ea.	\$ 2,600	\$ 179,400
4	Fire Hydrants		10	ea.	\$ 7,000	\$ 70,000
5	Air Release Valves		5	ea.	\$ 5,000	\$ 25,000
6	Paved Surface Restoration		1,545	m²	\$ 75	\$ 115,875
7	Boulevard Restoration		1,285	lm	\$ 15	\$ 19,275
					Subtotal:	\$ 1,009,300
			30%	. (Contingency:	\$ 302,790
			20%		Engineering:	\$ 201,860
					Subtotal:	\$ 1,513,950
		Inflation Allowa	nce to Year	2024	10%	\$ 151,395
					Total:	\$ 1,665,345
			N	o. of	Connections:	69
			Cos	st per	Connection:	\$ 24,135

Table 3 - Radford Road Area Project Cost Estimate (Class D), Rev. 1

Notes:

1 Class D estimate (±50%):

"A preliminary estimate which, due to little or no site information, indicates the approximate magnitude of cost of the proposed project, based on the client's broad requirements. This overall cost estimate may be derived from lump sum or unit costs for a similar project. It may be used in developing long term capital plans and for preliminary discussion of proposed capital projects."

- 2 Cost estimate in 2022 dollars (as of Aug 2022 when ENR CCI = 13,171)
- 3 This estimate was made without a flaura and fauna assessment, a geotechnical soils investigation, or an Archeaological Overview Assessment.
- 4 No specific allowance has been made for:
 - Land acquisition
 - Archeological Investigation or permitting
 - Environmental Assessment
 - Federal or Provincial project grant funding reporting requirements
 - CVRD administration
 - Legal surveying
 - Interim financing
 - Installation of water and sewer services by each homeowner from the property line to their home
 - Decommissioning on-site water well(s)
- 5 This cost estimate was prepared by Koers & Associates Engineering Ltd. for the CVRD and the material in it reflects the best judgment of Koers & Associates in light of the information available to it at the time of preparation. Any use which a Third Party makes of this estimate, or any reliance on decisions to be made upon it, are the responsibility of such parties.
- 6 Koers & Associates accepts no responsibility for damages, if suffered by any Third Party as a result of the decision made or actions based on this estimate.



Comox Valley Regional District Radford & Curtis Road Area Water Local Servicing Area Review File: 2257 Date: Dec 16, 2022



					Estimated
Item	Descrption		Quantity	Unit	Cost
No.				Cost	(Class D)
	Service Area 1 (Radford Rd)				
1	Bulk Water Meter in Kiosk/Chamber		1 ea.	\$ 150,000	\$ 150,000
2	Watermain Pipe Installation & Tie-ins		1,285 lm	\$ 350	\$ 449,750
3	Water Service Connections		69 ea.	\$ 2,600	\$ 179,400
4	Fire Hydrants		10 ea.	\$ 7,000	\$ 70,000
5	Air Release Valves		5 ea.	\$ 5,000	\$ 25,000
6	Paved Surface Restoration		1,545 m ²	\$ 75	\$ 115,875
7	Boulevard Restoration		1,285 lm	\$ 15	\$ 19,275
			Radford Rd A	rea Subtotal:	\$ 1,009,300
	Service Area 2 (Curtis Rd)				
1	Watermain Pipe		705 lm	\$ 300	\$ 211,500
2	Water Service Connections		31 ea.	\$ 2,600	\$ 80,600
3	Fire Hydrants		5 ea.	\$ 7,000	\$ 35,000
4	Air Release Valves		1 ea.	\$ 5 <i>,</i> 000	\$ 5 <i>,</i> 000
5	Paved Surface Restoration		751 m ²	\$ 75	\$ 56,325
6	Boulevard Restoration		705 lm	\$ 15	\$ 10,575
			Curtis Rd A	rea Subtotal:	\$ 399,000
			Comb	ined Subotal:	\$ 1,408,300
			30%	Contingency:	\$ 422,490
			20%	Engineering:	\$ 281,660
				Subtotal:	\$ 2,112,450
		nflation Allowand	e to Year 202	4 10%	\$ 211,245
				Total:	\$ 2,323,695
			No. of	Connections:	100
			Cost pe	Connection:	\$ 23,237

Notes:

1 Class D estimate (±50%):

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- 6 Koers & Associates accepts no responsibility for damages, if suffered by any Third Party as a result of the decision made or actions based on this estimate.