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**CITY OF KELOWNA**  
**MEMORANDUM**

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**Date:** November 16, 2020  
**File No.:** Z20-0096  
**To:** Suburban and Rural Planning (TC)  
**From:** Development Engineering Manager (JK)  
**Subject:** 1870 Treetop Rd

<b>SCHEDULE</b>	<b>A</b>
This forms part of application # Z20-0096	
Planner Initials	TC
 <b>City of Kelowna</b> DEVELOPMENT PLANNING	

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**WORKS AND SERVICES REQUIREMENTS**

The City's Development Engineering Branch has the following comments and requirements with regard to this application to rezone the subject lot from A1 to RH3 to support the development of a 17-lot subdivision. The Development Engineering Technician for this project is Sarah Kelly ([skelly@kelowna.ca](mailto:skelly@kelowna.ca)). The following Works and Services will be a requirement of this development.

**1. GENERAL**

- a) This proposed development may require the installation of centralized mail delivery equipment. Please contact Arif Bhatia, Delivery Planning Officer, Canada Post Corporation, 530 Gaston Avenue, Kelowna, BC, V1Y 2K0, (250) 859-0198, [arif.bhatia@canadapost.ca](mailto:arif.bhatia@canadapost.ca) to obtain further information and to determine suitable location(s) within the development.
- b) The following requirements are valid for two (2) years from the reference date of this memo, or until the application has been closed, whichever occurs first. The City of Kelowna reserves the rights to update/change some or all items in this memo once these time limits have been reached.

**2. DOMESTIC WATER AND FIRE PROTECTION**

- a) The subject lot is within the Black Mountain Irrigation District (BMID) water supply area. The Developer is required to make satisfactory arrangements with BMID for all water and fire protection-related issues. All charges for service connection(s) and upgrading costs, as well as any costs to decommission existing services, shall be the responsibility of the Developer.
- b) The Developer's Consulting Mechanical Engineer will determine the fire protection requirements of this proposed development and establish hydrant requirements and service needs. All fire flow calculations approved by BMID are to be shared with the Development Engineering Branch upon submittal of off-site civil engineering drawings.
- c) Provide an adequately sized domestic water and fire protection system complete with individual lot connections. The water system must be capable of supplying domestic and fire flow demands of the project in accordance with the Subdivision, Development &


Servicing Bylaw. No. 7900. Provide water flow calculations for this development to confirm bylaw conformance. Ensure every building site is located at an elevation that ensures water pressure is within the bylaw pressure limits. Note: Private pumps are not acceptable for addressing marginal pressure.

### 3. **SANITARY SEWER SYSTEM**

- a) The 17 lots proposed to be added to the catchment area of the Treetop Rd Lift station triggers requirement of a lift station operating assessment, which is to be completed by a qualified professional Engineer registered in the Province of British Columbia. The scope of the assessment is to include re-evaluation of the current pump trigger elevations (level bulb set points) with respect to pump cycles, emergency storage volumes, and flow rates. A pump flow test will also be required to ensure the additional expected volume can be accommodated within the pump design curve.
- b) Recommendations are to be provided to the City based on the results of the operating assessment. Any recommended changes to the current lift station configuration will be a requirement of this development.
- c) Provide an adequately sized sanitary sewer system complete with individual lot connections.
- d) Arrange for individual lot connections before submission of the subdivision plan, including payment of connection fees (provide copy of receipt).

### 4. **STORM DRAINAGE**


- a) The property is located within the City of Kelowna drainage service area. The hillside areas of Kelowna are not suitable for groundwater recharge or disposal of on/offsite drainage via infiltration. Roof or site drainage for this subdivision must discharge directly to the City of Kelowna's storm system. The City will not permit infiltration to ground except for foundation drainage. Each lot shall require a storm system service connection.
- b) Provide the following drawings:
  - i. A detailed Lot Grading Plan (indicate on the Lot Grading Plan any slopes that are steeper than 30% and areas that have greater than 1.0 m of fill);
  - ii. A detailed Stormwater Management Plan for this subdivision; and,
  - iii. An Erosion and Sediment Control Plan is to be prepared by a Professional Engineer proficient in the field of erosion and sediment control. The plan is to be prepared as per section 3.14 of Schedule 4 of Bylaw 7900. If a line item for ESC is not included in the Engineer's cost estimate for off-site work, then an additional 3% will be added to the performance security based on the total off-site construction estimate.
- c) On-site detention systems are to be compliant with Bylaw 7900, Schedule 4, Section 3.11.1 *Detention Storage*.
- d) As per Bylaw 7900, Schedule 4, Section 3.1.3 *Climate Change*, the capacity of storm works will include an additional 15 percent (15%) upward adjustment and applied to the rainfall intensity curve stage (IDF) in Section 3.7.2.
- e) Show details of dedications, rights-of-way, setbacks and non-disturbance areas on the lot Grading Plan.

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- f) Register right of ways on private properties for all the storm water infrastructure carrying, conveying, detaining and/or retaining storm water that is generated from the public properties, public road right of ways, and golf course lands.
- g) Identify clearly on a contour map, or lot grading plan, all steep areas (>30 %). Provide cross sections for all steep areas at each property corner and at locations where there are significant changes in slope. Cross sections are to be perpendicular to the contour of the slope. Show the proposed property lines on the cross sections. Not all areas have a clear top of bank; and therefore, field reconnaissance by City staff and the applicant may be needed to verify a suitable location for property lines.
- h) If individual lot connections are required, ensure that payment of connection fees has been completed (please provide receipt).
- i) Where structures are designed or constructed below the proven high groundwater table, permanent groundwater pumping will not be permitted to discharge to the storm system. The City will approve designs that include provisions for eliminating groundwater penetration into the structure, while addressing buoyancy concerns. These design aspects must be reviewed and approved by the City Engineer.

## 5. ROADS

- a) Provide connection, through Turnberry St, to Birkdale Ave via existing driveway access easement at south west property corner.
- b) Turnberry St is included in the City of Kelowna's 2030 Official Community Plan (OCP) as a Minor Collector and its be designed as a modified SS-H6. Connecting development road should intersect Turnberry St at 90 degrees and must provide adequate site lines.
- c) A three-dimensional sight line and stopping distance analysis will be required to support the proposed Laneway along the south end of property. Ensure the sight and stopping distances are considered as per Bylaw 7900 Schedule 4 Section 4.1 General AND Section 7. Hillside Street Standards TABLE 2 Alignment Design Criteria.
- d) The proposed development includes access from Treetop Rd. As a result, upgrades will be required to the Treetop Rd cul-de-sac. Cross section to be used is modified SS-R17.
- e) Submit a roads plan complete with standard cross section designations from the Bylaw.
- f) Temporary asphalt cul-de-sacs or turn-a-round, will be required at each terminal end of roads that will be extended in the future which provide sufficient turn radius for emergency vehicles, snow removal, and garbage collection. Additional dedication or a Statutory Right-of-Way may be needed.
- g) Provide traffic control and street name signs where required. The City will install all signs and traffic control devices at the Developer's expense. The developer will sign a third-party work order and pay the cost of traffic sign installation prior to the registration of the subdivision.
- h) Grade the fronting road boulevards in accordance with the standard drawing. Major cut/fill slopes must start at the property lines.
- i) Landscaped boulevards, complete with underground irrigation, are required on proposed roadways. This will be included as a line item in the estimate for the Servicing Agreement performance security. Details and plant selection are to be approved by the City of Kelowna Parks department.

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- j) Verify that physical driveway access will satisfy City requirements for all lots. For steeper lots (15% and greater), show driveways on the lot grading plan with grades or profiles.
- k) Roads 1, 2, and 3 are to be dedicated to the City of Kelowna with a 14.1m wide right of way (SS-H12).
- l) A 6.0 m corner rounding will be required on corner lots of intersecting public roads.
- m) Provide all necessary Statutory Rights-of-Way for any utility corridors required, including those on proposed or existing City Lands and private lands.
- n) Driveway access to 1865,1940, and 1960 Treetop Rd is to be maintained

## **6. POWER AND TELECOMMUNICATION SERVICES**

- a) Underground services will be required for all power and telecommunications to each lot in the proposed subdivision.
- b) Streetlights must be installed on all roads. All streetlighting designs are to be approved by the Development Engineering Branch at the same time as other "issued for construction" drawings.
- c) Make servicing applications to the respective Power and Telecommunication utility companies. The utility companies are required to obtain the City's approval before commencing construction.
- d) Before making application for approval of your subdivision plan, please make arrangements with Fortis for the pre-payment of applicable charges and tender a copy of their receipt with the subdivision application for final approval.
- e) Re-locate existing poles and utilities, where necessary. Remove aerial trespass (es).
- f) Provide all necessary Statutory Rights-of-Way for any utility corridors required, including those on proposed or existing City Lands.
- g) If any road dedication affects lands encumbered by a Utility right-of-way (such as B.C. Gas, etc.) please obtain the approval of the utility prior to application for final subdivision approval. Any works required by the utility as a consequence of the road dedication must be incorporated in the construction drawings submitted to the City's Development Manager.

## **7. GEOTECHNICAL STUDY**

- a) Provide a geotechnical report prepared by a Professional Engineer competent in the field of hydro-geotechnical engineering to address the items below: NOTE: The City is relying on the Geotechnical Engineer's report to prevent any damage to property and/or injury to persons from occurring as a result of problems with soil slippage or soil instability related to this proposed subdivision.
- b) The Geotechnical reports must be submitted to the Development Services Department (Subdivision Approving officer) for distribution to the Development Engineering Branch and Inspection Services Division prior to submission of Engineering drawings or application for subdivision approval.

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- i. Area ground water characteristics, including any springs and overland surface drainage courses traversing the property. Identify any monitoring required.
  - ii. Site suitability for development.
  - iii. Site soil characteristics (i.e. fill areas, sulphate content, unsuitable soils such as organic material, etc.).
  - iv. Any special requirements for construction of roads, utilities and building structures.
  - v. Recommendations for items that should be included in a Restrictive Covenant.
  - vi. Recommendations for roof drains, perimeter drains and septic tank effluent on the site.
  - vii. Any items required in other sections of this document.
- c) If any blasting is proposed as part of this subdivision, a Soil Removal and Deposit Application must be made to the City for such works. The proposed blasting work is to comply with Amendment No. 1 to the Soil Removal and Deposit Regulation Bylaw No. 9612, specifically Section 6 PERMIT REQUIREMENTS – (k) and (g).
- d) Should any on-site retaining walls surpass the following limits, an Over Height Retaining Wall Permit will be required:

“Retaining walls on all lots, except those required as a condition of subdivision approval, must not exceed a height of 1.2 m measured from natural grade on the lower side, and must be constructed so that any retaining walls are spaced to provide a 1.2 m horizontal separation between tiers. The maximum number of tiers is two with a maximum total height of 2.4 m. Any multi-tier structure more than 2 tiers must be designed and constructed under the direction of a qualified professional engineer.”

The design of all retaining walls is to conform with Engineer & Geoscientists British Columbia’s *Professional Practice Guidelines for Retaining Wall Design*. Submission requirements for the Over Height Retaining Wall Permit include Engineer of Record documents (Appendix A of *Retaining Wall Design Guideline*) and any necessary independent reviews (as per EGBC’s *Documented Independent Review of Structural Designs*).

- e) Any modified slopes having a finished slope greater than 2H:V1 (50%) and an elevation change greater than 1.2 m must be installed under the direction of a qualified professional engineer.
- f) Any exposed natural rock surface on a lot that has the potential for materials to displace causing a hazardous condition, must be reviewed by a qualified professional engineer with the appropriate and measures undertaken as prescribed by the engineer. For adequate Rockfall Protection adjacent to walls and rock cuts, please consider BC MoTI Supplement to TAC Geometric Design Guide 440, page 440-8, which outlines a ditch bottom width depending on wall height. Sidewalks and utilities should be kept out of this protection area. Additional ROW may be required.

Where walls are on the high side, the City’s preference is that the walls remain setback and on private property. Where the walls hold up a public road, the City’s preference is that additional dedication be provided, and the walls be owned by the City. Please design any geogrids or tie-backs so that they do not encroach into the required road ROW.

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**8. DEVELOPMENT PERMIT AND SITE-RELATED ISSUES**

- a) All retaining walls are to be contained within privately-owned lots.

**9. DESIGN AND CONSTRUCTION**

- a) Design, construction supervision and inspection of all off-site civil works and site servicing must be performed by a Consulting Civil Engineer and all such work is subject to the approval of the City Engineer. Drawings must conform to City standards and requirements.
- b) Engineering drawing submissions are to be in accordance with the City's "Engineering Drawing Submission Requirements" Policy. Please note the number of sets and drawings required for submissions.
- c) Quality Control and Assurance Plans must be provided in accordance with the Subdivision, Development & Servicing Bylaw No. 7900 (refer to Part 5 and Schedule 3).
- d) A "Consulting Engineering Confirmation Letter" (City document 'C') must be completed prior to submission of any designs.
- e) Before any construction related to the requirements of this subdivision application commences, design drawings prepared by a professional engineer must be submitted to the City's Works & Utilities Department. The design drawings must first be "Issued for Construction" by the City Engineer. On examination of design drawings, it may be determined that rights-of-way are required for current or future needs.

**10. SERVICING AGREEMENTS FOR WORKS AND SERVICES**

- a) A Servicing Agreement is required for all works and services on City lands in accordance with the Subdivision, Development & Servicing Bylaw No. 7900. The applicant's Engineer, prior to preparation of Servicing Agreements, must provide adequate drawings and estimates for the required works. The Servicing Agreement must be in the form as described in Schedule 2 of the bylaw.
- b) Part 3, "Security for Works and Services", of the Bylaw, describes the Bonding and Insurance requirements of the Owner. The liability limit is not to be less than \$5,000,000 and the City is to be named on the insurance policy as an additional insured.
- c) Should it be determined that any Park-related work be included under the scope of the Servicing Agreement, the Development Engineering Branch reserves the right to require a performance security for these works. Note: The Development Engineering Branch's Engineering and Inspection Fee will not include the scope of any Parks-related work.


**11. CHARGES, FEES, AND SECURITIES**

- a) Development Cost Charges (DCC's) are payable
- b) Fees per the "Development Application Fees Bylaw" include:
  - i) Street/Traffic Sign Fees: at cost (to be determined after design).
  - ii) Survey Monument Fee: \$50.00 per newly created lot (GST exempt).

**SCHEDULE** A

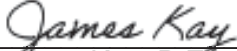
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- iii) Survey Monument, Replacement Fee: \$1,200.00 (GST exempt) – only if disturbed.
- iv) Engineering and Inspection Fee: 3.5% of construction value (plus GST).


  
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James Kay, P.Eng.  
Development Engineering Manager

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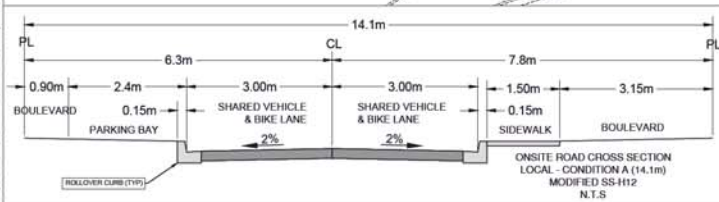
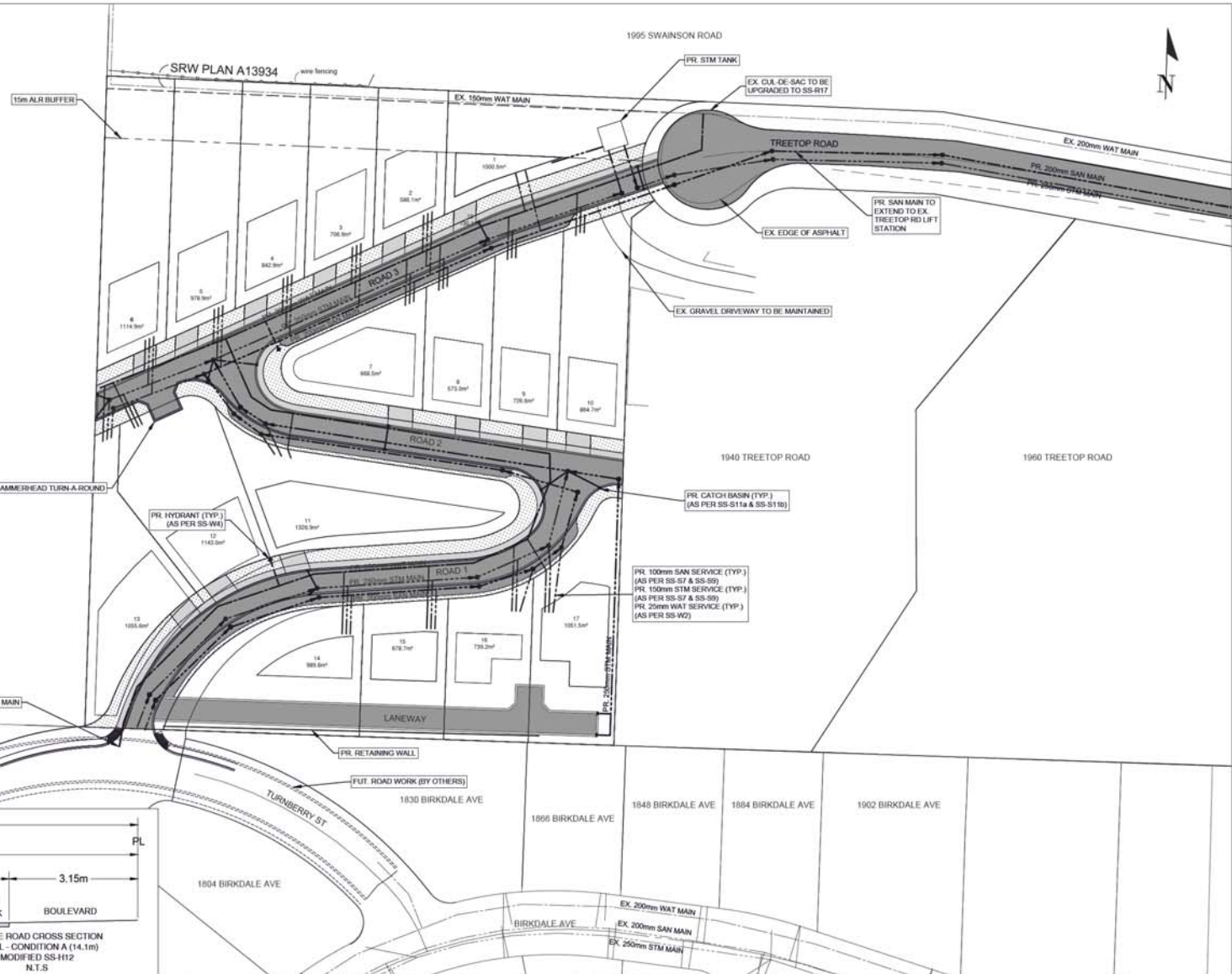
# ATTACHMENT A

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<b>LEGEND</b> WATER: --- SAN SEWER: --- STORM SEWER: --- GAS: --- U/G TELEPHONE: --- U/G ELECTRICAL: ---	<b>LEGEND</b> MAN-HOLE: ○ UTILITY POLE: ● POWER POLE: ● LAMP STANDARD: ○ CATCH BASIN: □ HYDRANT: ○ TREES: ○ SURVEY MONUMENT: ○	<b>LEGEND</b> PR ASPHALT: [Pattern] PR CONCRETE: [Pattern] PR LANDSCAPE AREA: [Pattern]	INSURION BASE POINT= 300,000, 5,500,000 Locations and offsets of existing utilities shown on this plan are not guaranteed to be accurate and must be verified on the field prior to construction. THE CITY OF KELOWNA does not guarantee that existing conditions shown on this plan are correct. THE CITY OF KELOWNA accepts no liability for use of these files or information.	 NEW TOWN ARCHITECTURE URBAN PLANNING CIVIL ENGINEERING	NO: YMMGD BY: REVISION: CHKD:	 J.P. 202201024 SCALE: HORIZ 1:500 VERT:	<b>CITY OF KELOWNA</b> DESIGN AND CONSTRUCTION <b>PROPOSED SITE PLAN</b> <b>PROPOSED 17 LOT SUBDIVISION</b> <b>1870 TREETOP ROAD</b>	FILE NO: Z20-0096
								SHEET NO: 1 OF 2



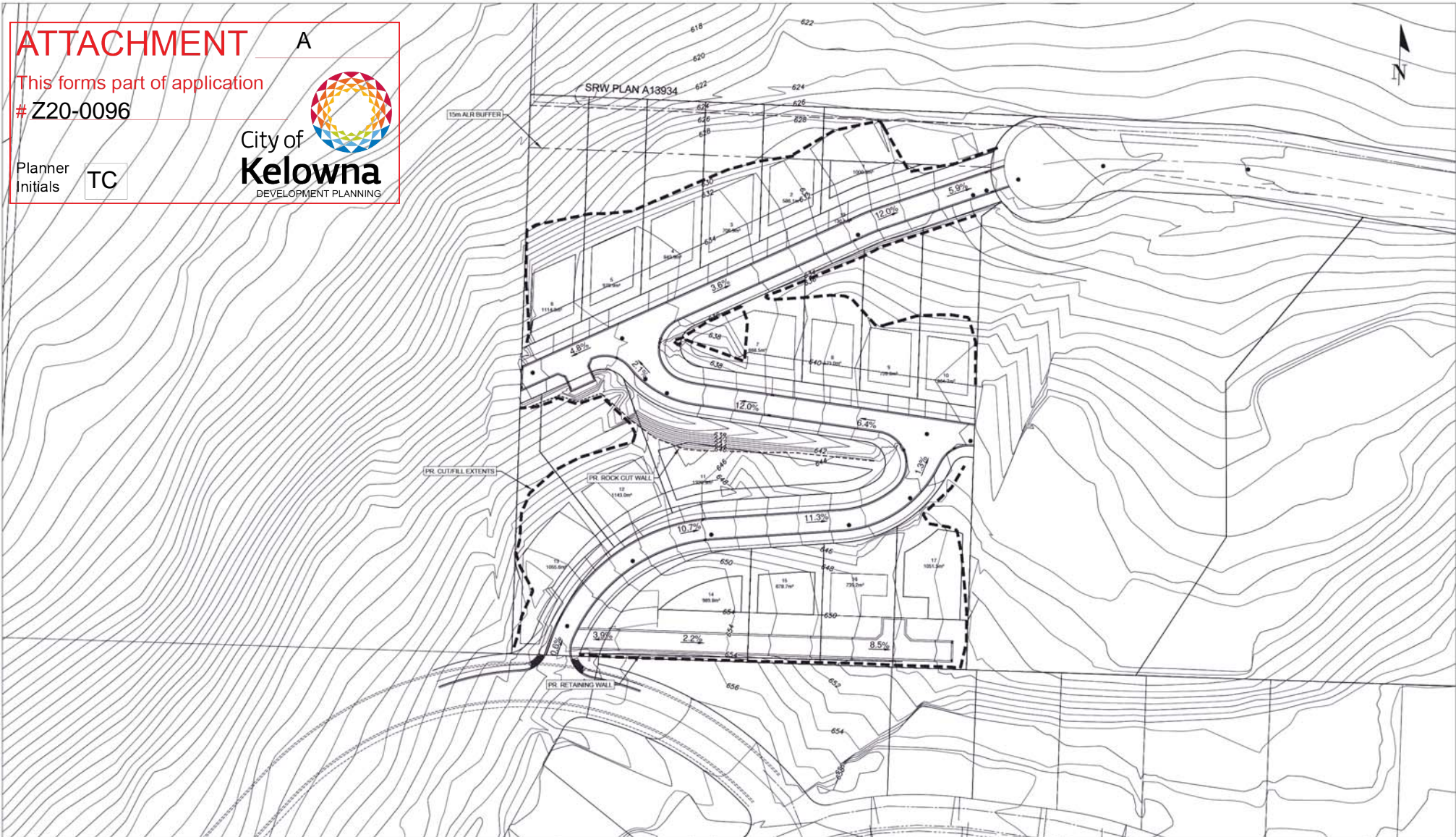
**ATTACHMENT A**


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<b>LEGEND</b> WATER: ———— SAN. SEWER: - - - - - STORM SEWER: - - - - - GAS: - - - - - U/G TELEPHONE: - - - - - U/G ELECTRICAL: - - - - -		MAN-HOLE: ○ M UTILITY POLE: ● M POWER POLE: ● P LAMP STANDARD: □ L CATCH BASIN: □ CA HYDRANT: □ H TREES: ○ T SURVEY MONUMENT: ○		INSERION BASE POINT= 300,000 , 5,500,000 Locations and offsets of existing utility lines on this plan are not guaranteed to be accurate and must be verified on the field prior to construction. The City of Kelowna does not rely on these measurements and should verify all information shown on this site plan and other appropriate methods. The City of Kelowna cannot be held liable for use of these files or information.		 <b>NEW TOWN ARCHITECTURE URBAN PLANNING CIVIL ENGINEERING</b> www.newtownarchitecture.com		<table border="1"> <tr> <td>BASE</td> <td>AR</td> <td>DESIGN</td> <td>AR</td> </tr> <tr> <td>APPROVED</td> <td>JP</td> <td></td> <td></td> </tr> <tr> <td>DATE:</td> <td colspan="3">2022/01/24</td> </tr> <tr> <td>SCALE:</td> <td colspan="3">HORIZ: 1:500</td> </tr> <tr> <td></td> <td colspan="3">VERT:</td> </tr> <tr> <td colspan="4"><b>SCALE NOT ACCURATE OVER LONG DISTANCES</b></td> </tr> </table>		BASE	AR	DESIGN	AR	APPROVED	JP			DATE:	2022/01/24			SCALE:	HORIZ: 1:500				VERT:			<b>SCALE NOT ACCURATE OVER LONG DISTANCES</b>				<b>CITY OF KELOWNA</b> DESIGN AND CONSTRUCTION <b>PROPOSED GRADING PLAN</b> <b>PROPOSED 17 LOT SUBDIVISION</b> <b>1870 TREETOP ROAD</b>		FILE NO: Z20-0096 SHEET NO: 2 OF 2 DRAWING NO: 002 REV NO: 0	
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